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Four New Deep-Sea Cumacean Crustaceans from Japanese Waters

By

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Résumé. Quatre nouvelles espèces de Cumacés appartenant aux genres *Bathycuma* (Bodotriidae), *Makrokylindrus* et *Vemakylindrus* (Diastylidae) des eaux profondes du Japon sont décrites. Trois espèces, *Bathycuma rotunditectorum*, *Makrokylindrus* (*Coalescuma*) *jubatus* et *Vemakylindrus grandidentatus* sont récoltées au nord de l'Ile Miyako-jima (l'Archipel des Ryūkyū), 1650 m de profondeur. Une autre espèce, *V. oxycanthus* a été capturée au large de Kamaishi (au nord-est de Honshū) à des profondeurs de 1270-1280 m.

The present paper deals with four new deep-sea cumacean crustacans, which were collected from Japan and its adjacent waters by the research vessel "*Hakuho-Maru*" of the Ocean Research Institute, University of Tokyo, using beam-trawls.

Three of them, *Bathycuma rotunditectorum* sp. nov., *Makrokylindrus* (*Coalescuma*) *jubatus* sp. nov., and *Vemakylindrus grandidentatus* sp. nov., were taken from far off north of the Miyako-jima Island (the Ryūkyū Islands), depth 1650 m, during the cruise KH-68-2 of the *Hakuho-Maru*. The another one, *Vemakylindrus oxycanthus* sp. nov., was obtained from far off Kamaishi (the north-eastern districts of Japan), depth 1270-1285 m, during the cruise KH-67-2.

The holotype specimens will be deposited in the collection of the Ocean Research Institute, University of Tokyo, and the paratypes will be reserved in the collection of the National Science Museum, Tokyo.

The author wishes to express his sincere thanks to Professor Masuoki Horikoshi of the Chiba University for his interest and help. And his thanks are also due to the staff menbers of the research vessel for their general assistance and the members of the Institute who gave him their kind help in many ways.

Family Bodotriidae
Subfamily Vaunthompsoniinae

Bathycuma rotunditectorum sp. nov.

(Figs. 1, 2)

Material examined. Holotype immature male without posterior abdomen; St. T-13 (KH-68-2), 26°03.8′N, 125°00.8′E-26°03.8′N, 125°01.0′E, depth 1650 m, far off north of Miyako-jima I., Ryūkyū Is.; 25 May, 1968. Gear: Beam-trawl.

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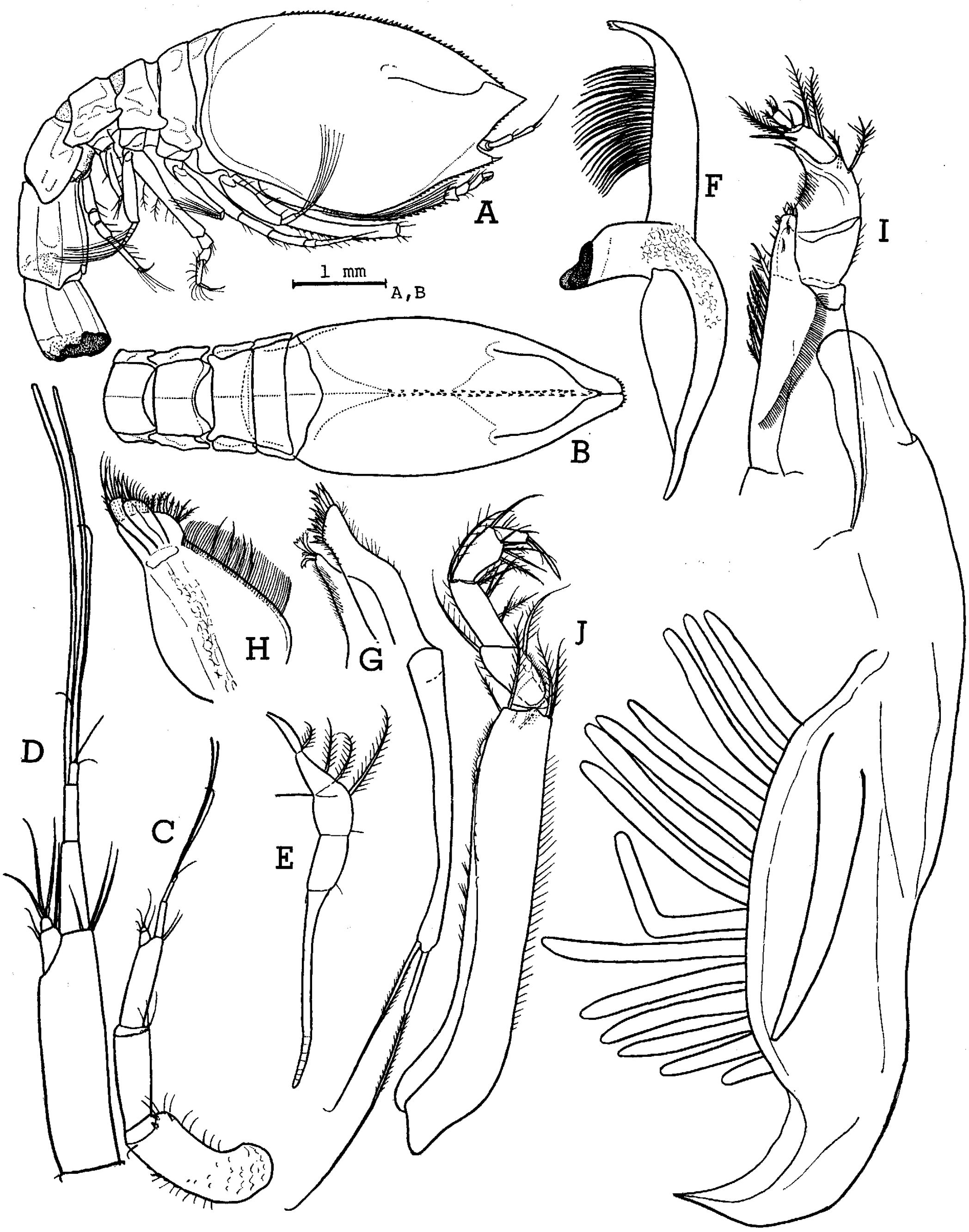

Fig. 1. *Bathycuma rotunditectorum* sp. nov., holotype immature male, length of cephalothorax about 5.9 mm. A, anterior portion of body, lateral view; B, carapace with five free thoracic segments, dorsal view; C, antennule; D, distal portion of antennule, enlarged; E, antenna; F, mandible; G, maxillule; H, maxilla; I, first maxilliped; J, second maxilliped.

Description. The holotype is an immature male, damaged and without posterior portion of abdomen. The length of cephalothorax is measured about 5.9 mm. The integument is moderately calcified.

The carapace (Fig. 1, A, B) is much less than 2/3 of the length of cephalothorax, twice as long as the width, and 1 2/3 times as long as the depth. As seen from the side, the dorsal outline is entirely vaulted. The dorsomedian carina is provided with a double row of small spines, which runs backward from the tip of the ocular lobe and occupis about three-quarters of its dorsal margin. The sides of carapace have no lateral ridges or teeth. The antennal notch is rather deeply concave, and its lateral angle is sharply pointed and emphasized by an acute spine. The anterolateral or lower margin of carapace bears small serrations on its anterior portion. The ocular lobe is narrow, triangular in shape and without visual elements. The pseudorostral lobes are a little directed downward, and meet in front of the ocular lobe for a distance about 1/10 of the carapace length and about 1 1/3 times as long as the ocular lobe.

The combined length of all the free thoracic segments (Fig. 1, A, B) is slightly more than the carapace length. The side plates are prominent.

The abdomen (Fig. 1, A) is damaged and missing except for the first two segments. There are two longitudinal lateral ridges or carinae on each side. The pleopods are missing except for the first rudimentary pair on the first abdominal segment (Fig. 1, A and Fig. 2, H).

The antennule (Fig. 1, A, C and D) is slender, cylindrical, and bears two long aesthetascs. The first peduncular segment is about 1 1/2 times as long as the second, and provided with a few spinules on the distal margin and sparse hairs on the lateral margin; the second segment is subequal to the third. The main flagellum is nearly 3/4 as long as the third peduncular segment, and 3-segmented; the first segment is slightly longer than the distal two segments combined; the third segment is the shortest, about 1/3 of the second. The accessory flagellum is minute, about 1/2 as long as the first segment of main lash, and 2-segmented; the distal segment is very minute.

The flagellum of antenna (Fig. 1, E) is undeveloped and very short.

The mandible (Fig. 1, F) is normally boat-shaped and beset with 12 setae on the right incisor process.

The maxillule (Fig. 1, G) has two filaments on the palp.

The maxilla is as shown in Fig. 1, H.

The first and second maxillipeds are shown in Fig. 1, I and J.

The length of basis (including outer distal projection) of third maxilliped (Fig. 2, A) is nearly 2 2/3 times as long as the remaining distal segments together. The basis has a row of about ten spines on the inner distal margin. Its outer distal angle is much produced, a little exceeding the end of merus, and provided with plumose hairs and a spine on the distal margin. The ischium is cylindrical in shape, a little shorter than the merus, and furnished with a few spinules on the outer distal margin. The merus is a little shorter than the carpus, and bears two small spines on its outer angle. The propodus is a little shorter than the carpus, and slightly longer than the dactylus.

The first peraeopod (Fig. 2, B) is damaged and its distal segments are missing. The basis is slender, cylindrical, moderately curved, and shorter than that of the third maxilliped. There is a row of short and long stout spines on the middle portion.

Fig. 2. *Bathycuma rotunditectorum* sp. nov., holotype immature male. A, third maxilliped; B, basis of first peraeopod; C, second peraeopod; D, third peraeopod; E-F, left (E) and right (F) of fourth peraeopods; G, fifth peraeopod; H, rudimentary first pleopod.

The second peraeopod (Fig. 2, C) is much longer than the basis of first peraeopod. The basis of second peraeopod is cylindrical in shape, and much shorter than the remaining distal segments together. The distal segments are rather setose and spinose. The ischium is very short. The merus is about as long as the carpus, which is 3 times as long as the propodus. The dactylus is as long as the carpus and propodus combined, and provided with short lateral spines and a long and three short plumose apical spines,

The third peraeopod (Fig. 2, D) is much shorter than the second; the basis is slightly more than 1 1/2 times as long as the remaining distal segments together. The fourth peraeopod (Fig. 2, E, F) are damaged on either side, the left one with only the proximal four segments remaining, and the right with only the one basal portion of basis. The fifth peraeopod is as shown in Fig. 2, G. The first four pairs of peraepods have well developed exopods.

The telsonic segment and uropods are missing.

Remarks. The absence of the posterior abdominal segments and uropods makes it difficult to assign to a genus, but it is referable to the genus *Bathycuma* by that the cephalothoracic and the first two abdominal segments have characteristic features of the genus.

B. rotunditectorum sp. nov. is closely related to *B. longicaudatum* Calman, 1912 from off San Diego, California, 1174-1218 m deep (Stebbing, 1913; Day, 1975), Sagami Bay, Japan, about 1000 m (Gamô, 1967), and the Mediterranean? 1227 m (Stephensen, 1915; Fage, 1951), and *B. magnum* Jones, 1969 from the Indian Ocean, 4040 m (Day, 1975), in having the lateral carinae on the abdominal segments. The new species is easily distinguished from the above-mentioned two described species by that the dorsal profile of the carapace is entirely vaulted.

The specific name "*rotunditectorum*" refers to the fact that the dorsal profile of the carapace is very like a vaulted roof.

Family Diastylidae

Makrokylindrus (*Coalescuma*) *jubatus* sp. nov.

(Figs. 3-6)

Makrokylindrus (*Coalescuma*) sp., Gamô, 1971: 254, fig. 1, D-F; Day, 1980: 244 (in key, as *M.* sp. GAMO.

Material examined. Holotype subadult female with developing oostegites; Allotype subadult male; 2 females with marsupium; 2 females with developing oostegites; 2 manca larvae (females) and 1 adult male, damaged, without posterior abdomen; St. T-13 (KH-68-2), 26°03.8′N, 125°00.8′E-26°03.8′N, 125°01.0′E, depth 1650 m, far off north of Miyako-jima I., Ryūkyū Is.; 25 May, 1968. Gear: Beam-trawl.

Description. Holotype is a subadult female with developing oostegites, length

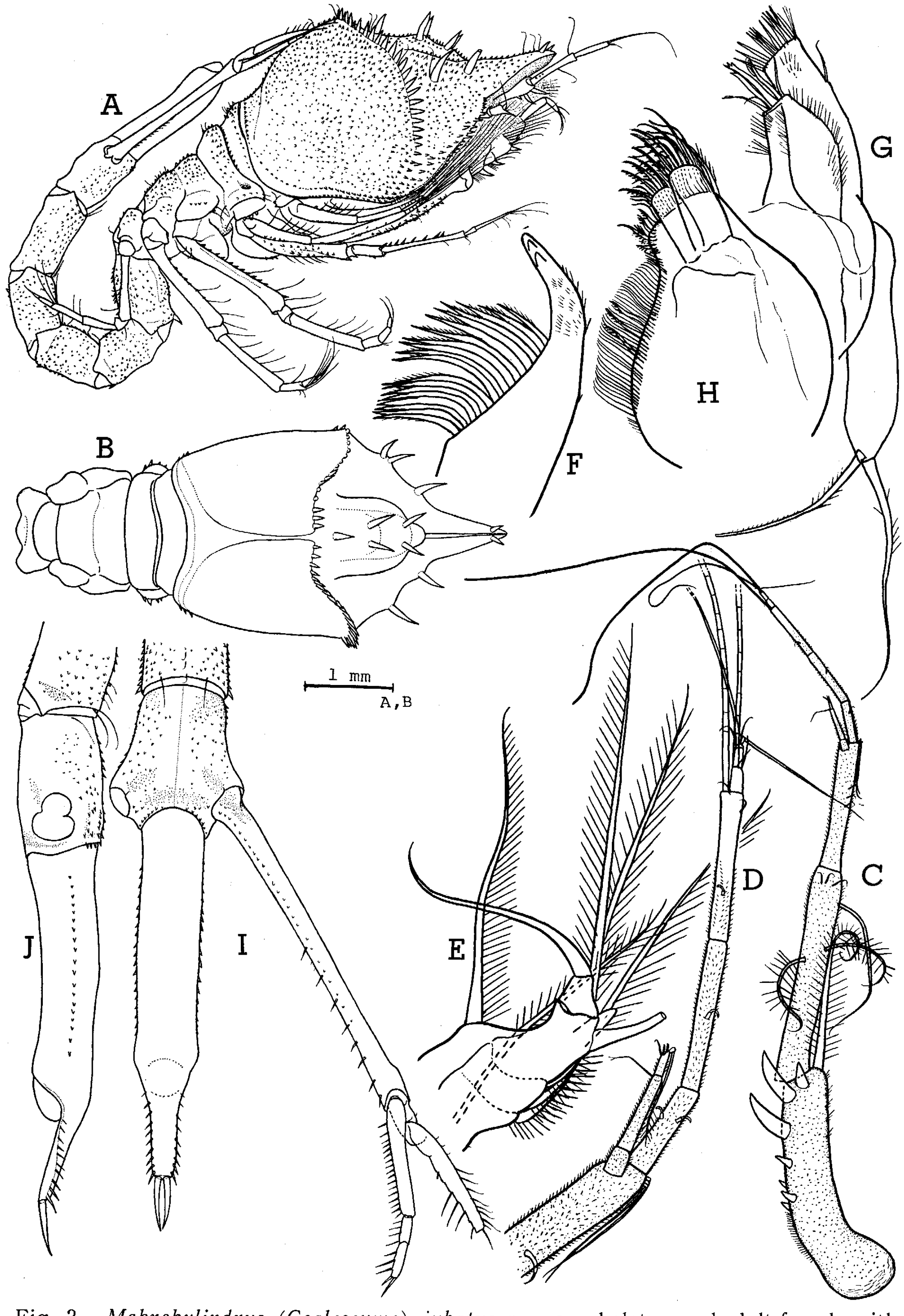

Fig. 3. *Makrokylindrus* (*Coalescuma*) *jubatus* sp. nov., holotype subadult female with developing oostegites, about 11.7 mm (including telson). A, lateral view; B, anterior portion of body, dorsal view; C–D, antennule and its distal portion (D); E, antenna; F, right mandible; G, maxillule; H, maxilla; I, last two abdominal segments with telson and left uropod; J, last two abdominal segments with telson, lateral view.

about 11.7 mm (including telson). The integument is moderately calcified and covered with minute spinules.

The carapace (Fig. 3, A, B) is nearly 1/3 as long as the total body length, about 1 1/2 times as long as the width, which is a little more than as wide as the depth. Just behind the frontal lobe, there are a pair of transverse ridges running upward from the each side and almost encircling the carapace, but the ridges do not meet in the mid-dorsal line and are interrupted by a low mid-dorsal groove. The encircling ridges are closely set with stout spines. On the dorsal surface of the anterior portion of carapace, there are several large spines, which are arranged in a regular position as shown in Fig. 1, A and B. The antennal notch is shallowly sinuated. The pseudorostral lobes are almost horizontally projected forward in front of the round eyeless ocular lobe and meet for a distance about 1/4 of the total carapace length. The anterolateral or lower margin of carapace is spinose.

The combined length of all the free thoracic segments (Fig. 3, A, B) is about 1/2 of the carapace length. The third and fourth segments are dorsally fused together.

The abdomen (Fig. 3, A) is spinose, cylindrical, and much more than 1/2 of the total body length. The first four segments are about subequal in length; the fifth segment is the longest, about 1 1/3 times as long as the fourth, which is subequal to the sixth.

The telson (Fig. 3, I, J) is about 2 2/3 times as long as the sixth abdominal segment, and subequal to the combined length of the last two abdominal segments; the pre-anal portion is about 3/4 as long as the telson itself, and provided with a pair of longitudinal rows of about twenty spinules on each side; the post-anal portion is about 1/3 as long as the pre-anal portion, and furnished with about ten pairs of lateral spinules and a pair of long apical spines.

The antennule (Fig. 3, A, C, D) is rather long, slender and cylindrical in shape. The first peduncular segment is a little longer than the second, and provided with a row of several large spines on the distal half; the third segment is a little less than 2/3 as long as the second. The main flagellum is 5-segmented, nearly 1/3 as long as the peduncle, and beset with two long aesthetascs; the first segment is about 2/3 as long as the second, which is subequal to the third; the distal two segments are very minute, subequal, and their combined length is about 1/3 of the third segment. The accessory flagellum is nearly 1/4 as long as the main lash, and consists of 3 segments; the second segment is the longest, about 3 times as long as the first or the third one.

The antenna is as shown in Fig. 3, E.

The mandible (Fig. 3, F) is normal type and bears 14 setae on the right incisor process.

The maxillule and maxilla are as shown in Fig. 3, G and H.

The first and second maxillipeds are shown in Fig. 4, A and B.

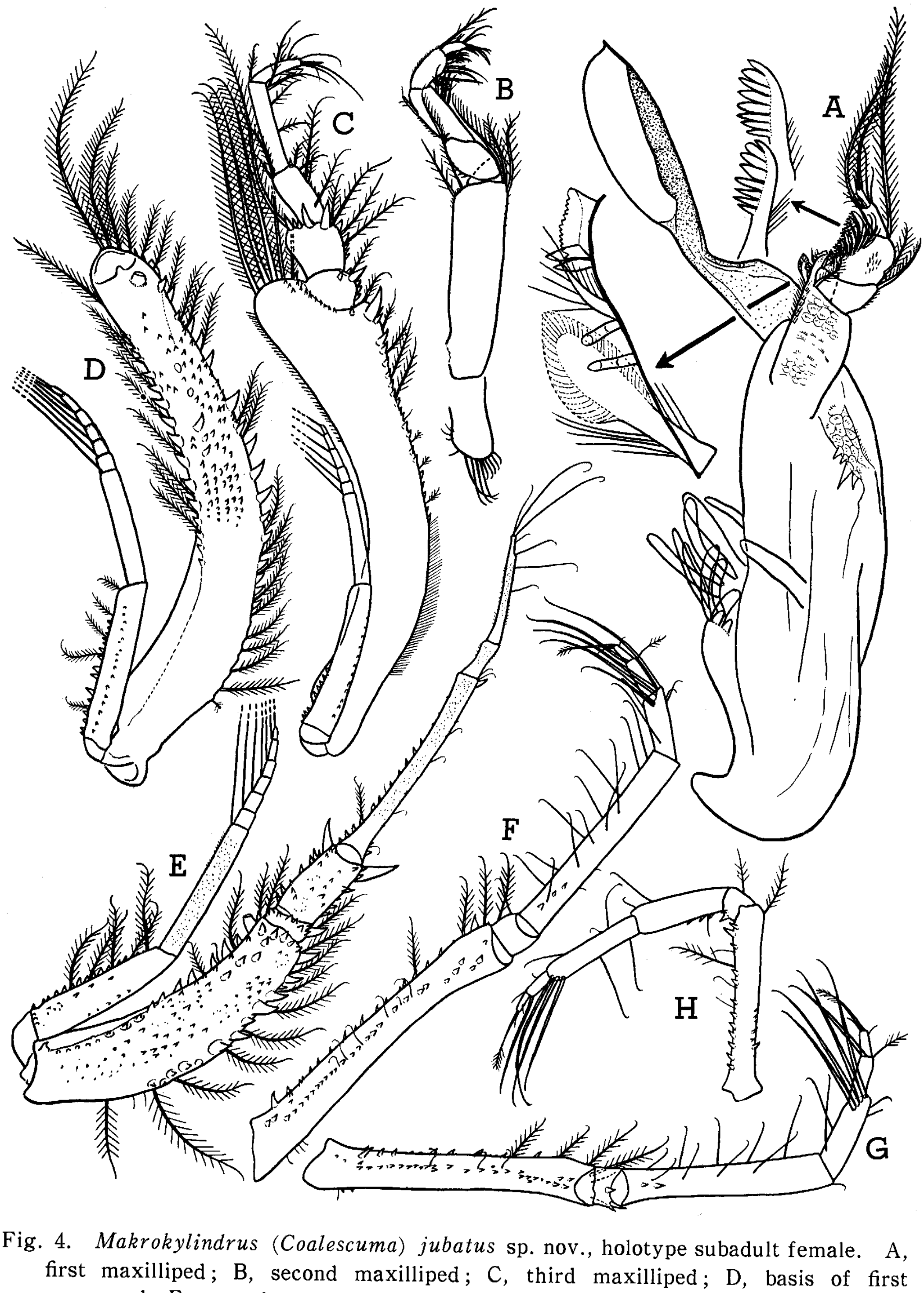

Fig. 4. *Makrokylindrus* (*Coalescuma*) *jubatus* sp. nov., holotype subadult female. A, first maxilliped; B, second maxilliped; C, third maxilliped; D, basis of first peraeopod; E, second peraeopod; F–G, third (F) to fifth (H) peraeopods.

The basis of third maxilliped (Fig. 4, C) is moderately curved, slightly expanded distally, about 1 3/4 times as long as the remaining distal segments together, and provided with spines on the inner margin; its outer distal projection reaches the end of ischium, and beset with spinules near the inner margin. The ischium is about 3/4 as long as the merus, and provided with spines on the inner margin. The merus is a little shorter than the carpus, and bears several spines on the inner and distal margin. The carpus is cylindrical, about 2/3 as long as the propodus, and spinulose on the inner margin. The propodus is 1 1/3 times as long as the dactylus.

The basis of first peraeopod (Fig. 4, D) is spinose, cylindrical, moderately curved, and furnished with stout spines on the lateral margin. It is measured about 1 1/7 times as long as that of the third maxilliped. The remaining distal segments are missing.

Only an adult female paratype specimen with marsupium, length about 11.5 mm (Fig. 6, A, B), has the first peraeopods with complete distal segments. The basis is very similar to that of the holotype female, and more than 1/3 as long as the remaining distal segments together. The ischium is 2/3 as long as the merus, and bears a stout spine on the inner margin. The merus is about 1/4 as long as the carpus, and provided with two stout spines on the inner margin. The carpus is about 4/5 as long as the propodus, and furnished with spinules on the basal portion of the inner margin. The dactylus is a little less than 1/2 as long as the propodus.

The basis of second peraeopod (Fig. 4, E) is spinose, rather slender, about 2/3 as long as the remaining distal segments together, and provided with stout spines on the lateral and distal margin. The ischium is very short, and bears spines. The merus is cylindrical, slightly more than 1/3 as long as the carpus, and provided with spines on the lateral margin and a pair of stout spines on the distal end. The carpus is long and slender, about 1 1/3 times as long as the propodus and dactylus combined, and furnished with small spines on the outer basalm argin and a few spinules near the basal portion and a small spine on the inner distal margin. The peduncle of exopods of the first two pairs of peraeopods has a few longitudinal rows of spinules.

The third peraeopod (Fig. 4, F) is much shorter than the second; the basis is about 6/7 as long as the remaining distal segments together, and furnished with some longitudinal rows of small spines on the lateral margin. The fourth peraeopod (Fig. 4, G) is shorter than the third, and its basis is about 3/4 as long as the remaining distal segments together. The fifth peraeopod (Fig. 4, H) is a little more than 2/3 as long as the fourth, and the basis is slightly more than 2/3 of the combined length of the remaining distal segments.

The peduncle of uropod (Fig. 3, I, J) is about as long as the telson, and provided with eight spines on the distal half of the inner margin. The endopod is 3-segmented, about 1/2 as long as the peduncle; the first segment is a little less than twice as long as the distal two segments together, and furnished with

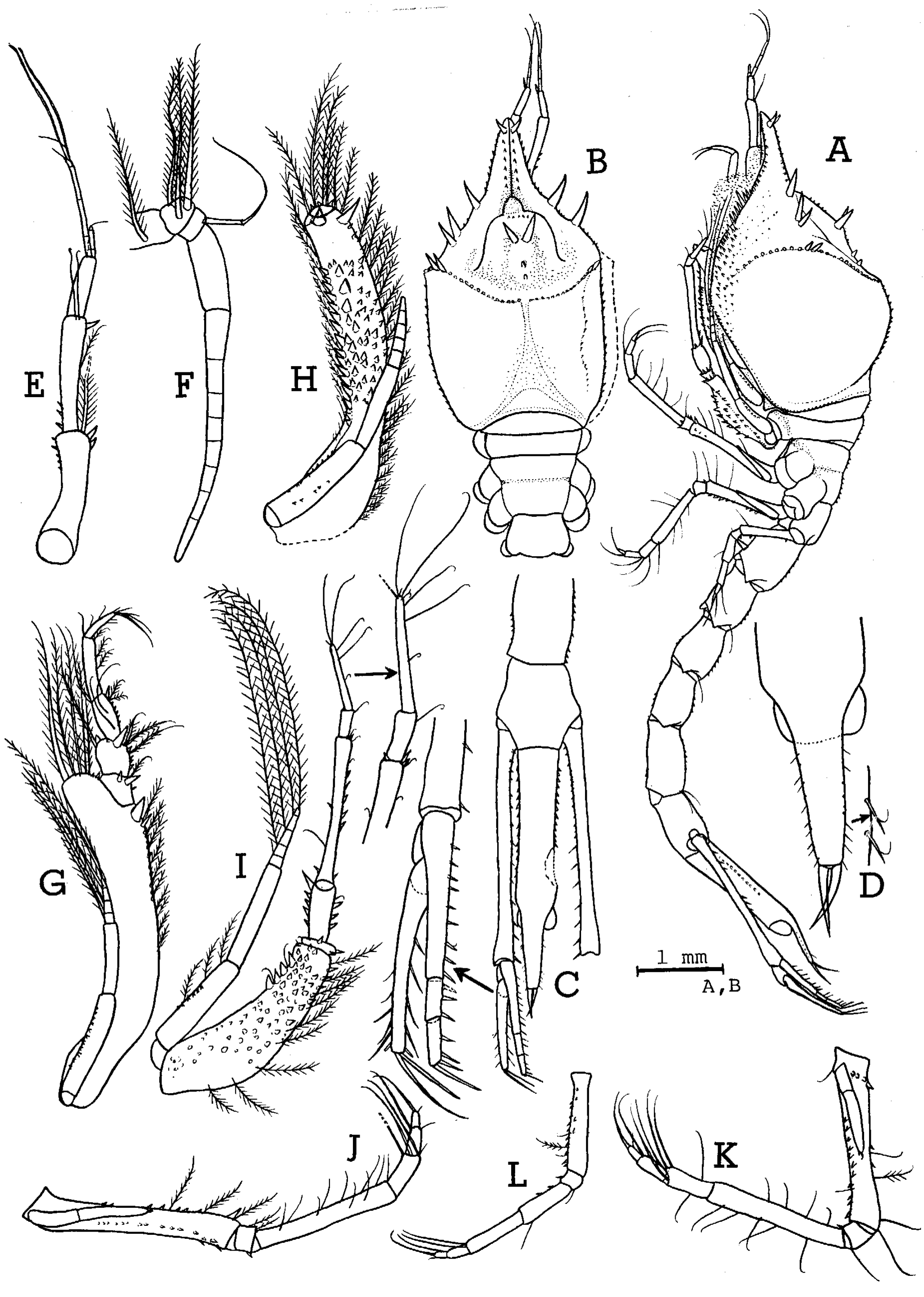

Fig. 5. *Makrokylindrus* (*Coalescuma*) *jubatus* sp. nov., allotype young male, length about 11.3 mm (including telson). A, lateral view; B, anterior portion of body, dorsal view; C, last two abdominal segments with telson and uropods; D, distal portion of telson, dorsal view; E, antennule; F, antenna; G, third maxilliped; H, first peraeopod; I, second peraeopod; J-L, third (J) to fifth (L) peraeopods.

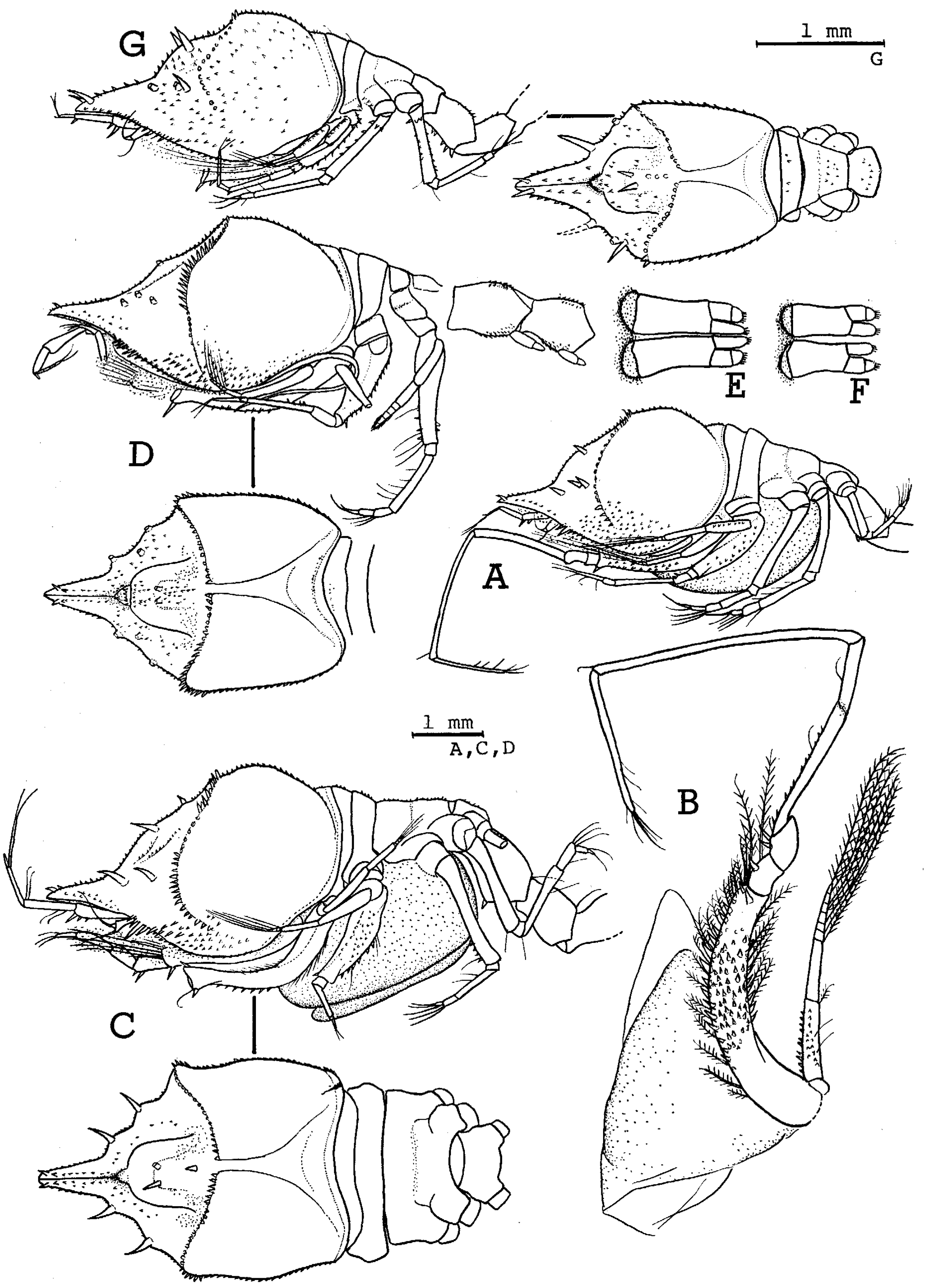

Fig. 6. *Makrokylindrus* (*Coalescuma*) *jubatus* sp. nov., paratype specimens. A–B, female with marsupium, length about 11.5 mm (A) ; B, first peraeopod. C, female with marsupium, length about 13.5 mm. D–F, subadult male without posterior portion of body, carapace length about 4.3 mm (D). E–F, first (E) and second (F) pleopods. G, manca larva (female), about 6.3 mm.

seventeen spines on the inner margin; the second segment is a little shorter than the third, and bears four spines on the inner margin; the third segment has three spines on the inner margin and two spines at the apex. The exopod is a little exceeding the end of the second segment of endopod, and setose on the lateral margins.

Allotype young male, length about 11.3 mm (Fig. 5) is very similar to the holotype female in general appearance. The second peduncular segment of antennule is a little dilated distally (Fig. 5, E). A pair of rudimentary pleopods are present on each of the first two abdominal segments. The first four pairs peraeopods have exopods.

In general appearance, the other paratype specimens are as shown in Fig. 6, and they are also similar to the holotype female and allotype male. However, some different distributions of stout spines on the anterior carapace surface are observed as shown in Fig. 3, A, B; Fig. 5, A, B; Fig. 6, A, C, D and G, but these different spinations may be related to growth and sexual variations.

Remarks. This species is very like *Diastylis utinomii* Gamô, 1968 from Sagami Bay, about 1000 m deep, in some aspects, from which it is distinguished by its broader carapace (about 2/3 as braod as long in *M,* (*C.*) *jubatus*, much less than 2/3 as broad as long in *D. utinomii*) and by the absence of stout spines on the spinulose anterior carapace surface. The new species is most related to *M.* (*C.*) *cingulatus* (Calman, 1905) from Gulf of Bone, Sulawesi, 1158 m deep, and Banda Sea, 2789 m (Stebbing, 1913: Day, 1980) in that the carapace has an encircling ridge closely set with stout spines, but the carapace of the later has no stout spines on the anterior carapace surface and the encircling ridge is not enterrupted by a mid-dorsal groove. The new species is also allied to *M.* (*C.*) *cinctus* Jones, 1969 from off south of Bali, 780 m deep. However, the later species has two encircling ridges with stout spines on the carapace. The specific name of the new species is derived from the fact that the carapace has a cluster of stout spines like a mane.

Vemakylindrus grandidentatus sp. nov.

(Figs. 7, 8)

Makrokylindrus (*Vemakylindrus*) sp. (B), Gamô, 1971: 254, fig. 2, C, D; Day, 1980: 239 (in key, as *V.* sp. A (Gamo, 1971)).

Material examined. Holotype female; St. T-13 (KH-68-2), 26°03.8′N, 125°00.8′E-26°03.8′N, 125°01.0′E, depth 1650 m, far off north of Miyako-jima I., Ryūkyū Is.; 25 May, 1968. Gear: Beam-trawl.

Description. Holotype is a female, length about 7.6 mm (including telson). The integument is rather thin, moderately calcified and spinose.

The carapace (Fig. 7, A, B) is nearly 2/5 of the total body length, and much more than 3 times as long as the width, which is a little more than the depth. It is covered with spinules, and provided with nine pairs of large spines

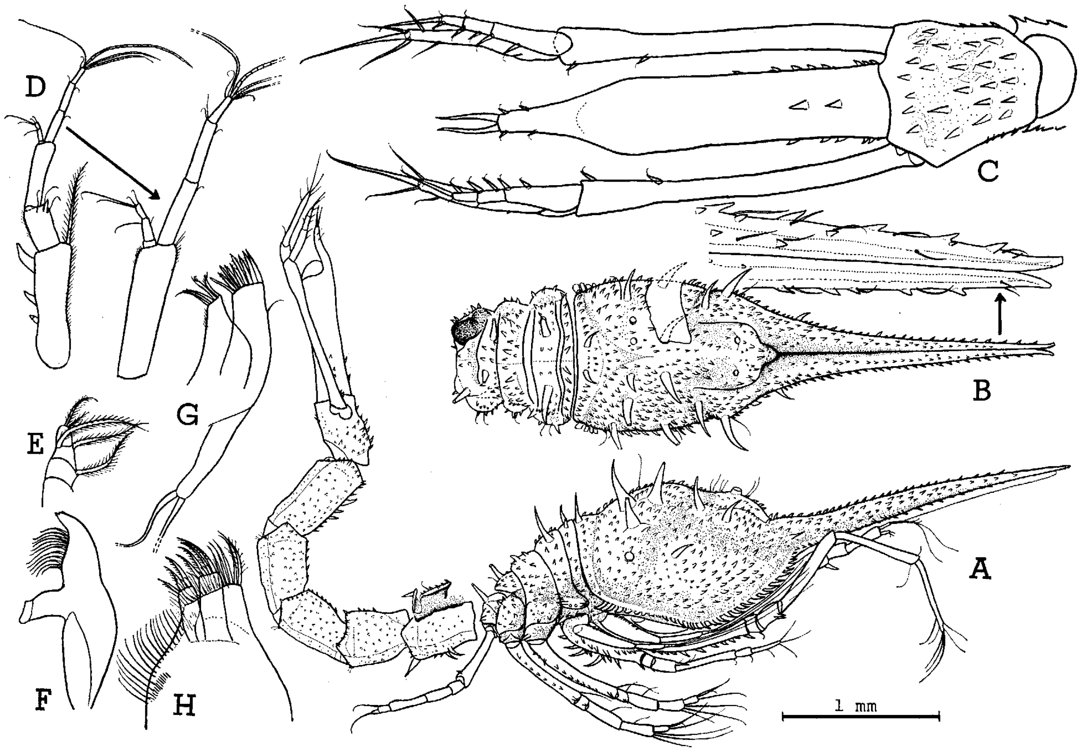

Fig. 7. *Vemakylindrus grandidentatus* sp. nov., holotype female, length about 7.6 mm (including telson). A, lateral view; B, anterior portion of body, dorsal view; C, last abdominal segment with telson and uropods; D, antennule; E, antenna; F, right mandible; G, maxillule; H, maxilla.

arranged in four circles. The pseudorostral lobes are spinose, almost horizontally projected forward in front of the round eyeless ocular lobe, and meet for a distance much more than 1/2 of the total carapace length; their distal portion is slightly bent outward. The antennal notch is shallowly concave. The antero-lateral or lower margin of carapace is furnished with large spines.

The combined length of all the free thoracic segments (Fig. 7, A, B) is about 1/4 of the total carapace length. The first segment is the shortest and spinulose. The posterior four segments are almost subequal in length, spinose, and each segment has two pairs of large spines.

The abdomen (Fig. 7, A) is rather slender, cylindrical, spinose, and about 1/2 of the total body length. The first four segments are about subequal in length. The fifth segment is the longest, a little longer than the fourth. The sixth segment is slightly less than 2/3 as long as the fifth.

The telson (Fig. 7, C) is 2 1/2 times as long as the last abdominal segment. The preanal portion has a pair of rows of lateral spines and two dorsal spines near the base. The post-anal portion is about 1/4 as long as the telson itself, and furnished with two pairs of small lateral spines and a pair of long apical spines, which is 1/7 as long as the telson.

The antennule (Eig. 7, A, D) is rather large and cylindrical. The first peduncular segment is much longer than the distal two peduncular segments combined, and bears three stout lateral spines; the second segment is about 2/3 as long as the third one, and has a spine near the distal end. The main flagellum is 3-segmented, a little longer than the distal peduncular segment;

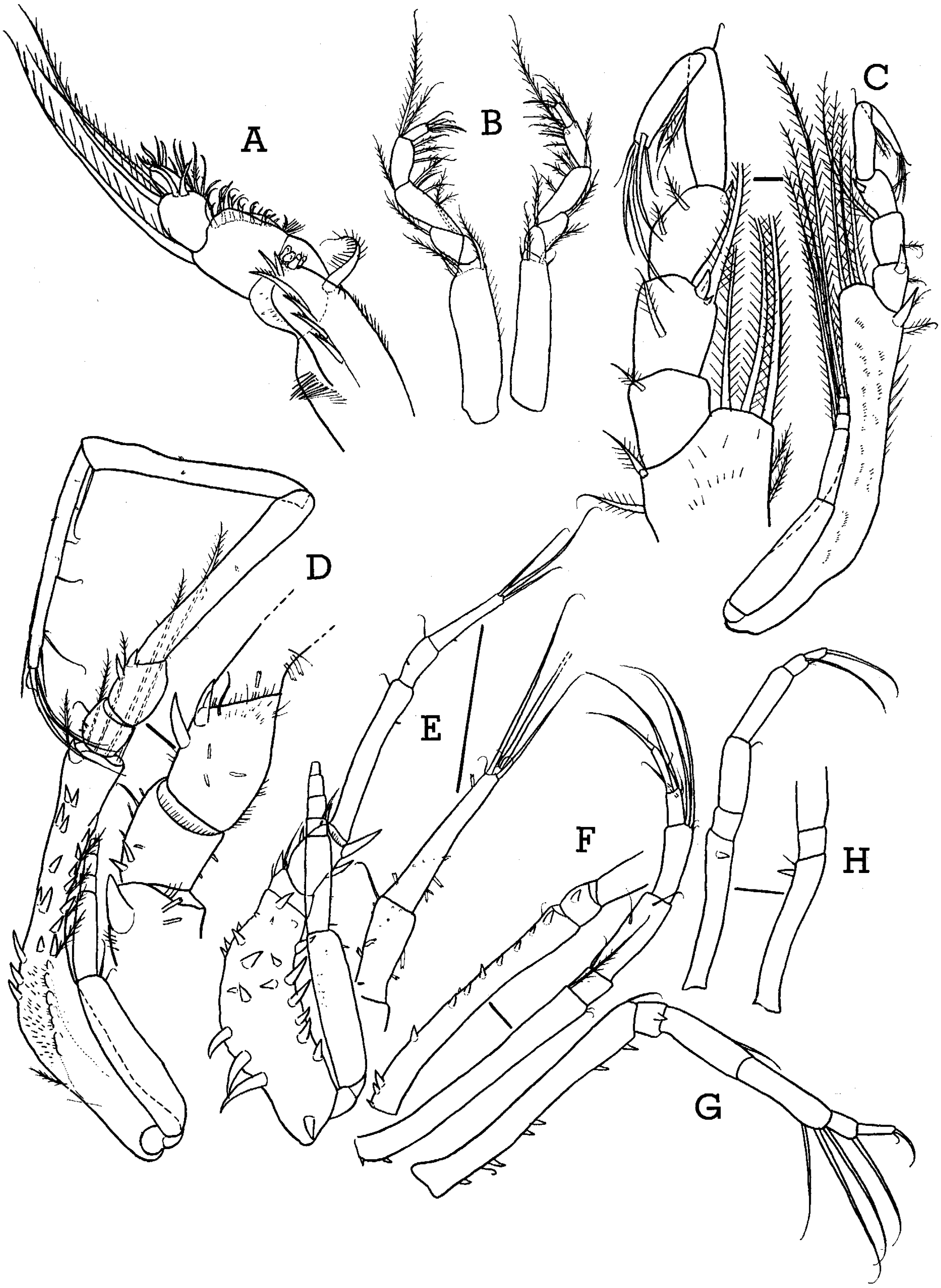

Fig. 8. *Vemakylindrus grandidentatus* sp. nov., holotype female. A, distal portion of first maxilliped; B, second maxillipeds; C, third maxilliped; D, first peraeopod; E, second peraeopod; F–H, third (F) to fifth (H) peraeopods.

the first segment is slightly longer than the second; the third segment is 1/2 as long as the second, and bears four aesthetascs. The accessory flagellum is about 1/4 as long as the main lash, and 3-segmented; the first segment is the shortest, about 1/4 as long as the second, which is about 1 1/2 times as long as the third.

The antenna is as shown in Fig. 7, E.

The mandible (Fig. 7, F) is normal type, and has 12 setae on the right incisor process.

The maxillule and maxilla are as shown in Fig. 7, G and H.

The first and second maxillipeds are also shown in Fig. 8, A and B.

The basis of third maxilliped (Fig. 8, C) is rather slender, a little more than 1 1/3 times as long as the remaining distal segments together, and provided with a stout spine on the inner distal angle; its outer distal projection reaches about middle portion of the ischium. The ischium has a stout spine on the inner angle. The ischium, merus and carpus are about subequal in length. The merus and carpus each have a stout spine on the outer angle. The propodus is cylindrical, about 1 1/2 times as long as the carpus, and 3/4 as long as the dactylus.

The basis of first peraeopod (Fig. 8, D) is rather slender, moderately curved, much less than 2/3 as long as the remaining distal segments together, and beset with stout lateral spines and a large spine on the inner angle. The ischium is about 1/2 as long as the merus, and provided with a few lateral spinules. The merus bears two spines near the inner angle and its length is measured about 1/3 of the carpus, which is about subequal to the propodus or dactylus.

The second peraeopod (Fig. 8, E) is much less than 2/3 as long as the first peraeopod. The basis is a little dilated laterally, about 2/3 as long as the remaining distal segments together, and beset wiuh stout lateral spines. The ischium is about 1/3 as long as the merus, and bears a stout spine on the inner angle. The merus has a stout lateral and a large terminal spine on each side, and the length of merus is about 1/3 of the carpus, which is about subequal to the propodus or dactylus.

The third peraeopod (Fig. 8, F) is about 6/7 as long as the second, and about as long as the fourth; the basis is nearly as long as the remaining distal segments together, but the basis of fourth peraeopod (Fig. 8, G) is much shorter than the combined length of distal segments. The fifth peraeopod (Fig. 8, H) is a little more than 2/3 as long as the fourth. There is a row of some spines on the basis of third and fourth peraeopods, while that of the fifth has only one spine near the distal end. The ischium of third and fourth peraeopods is also beset with a sigle lateral spine.

The peduncle of uropod (Fig. 7, C) is about 7/8 as long as the telson, and provided with two small spines on the inner distal margin. The endopod is 3-segmented, and much shorter than the exopod; the first segment is about 1 1/2

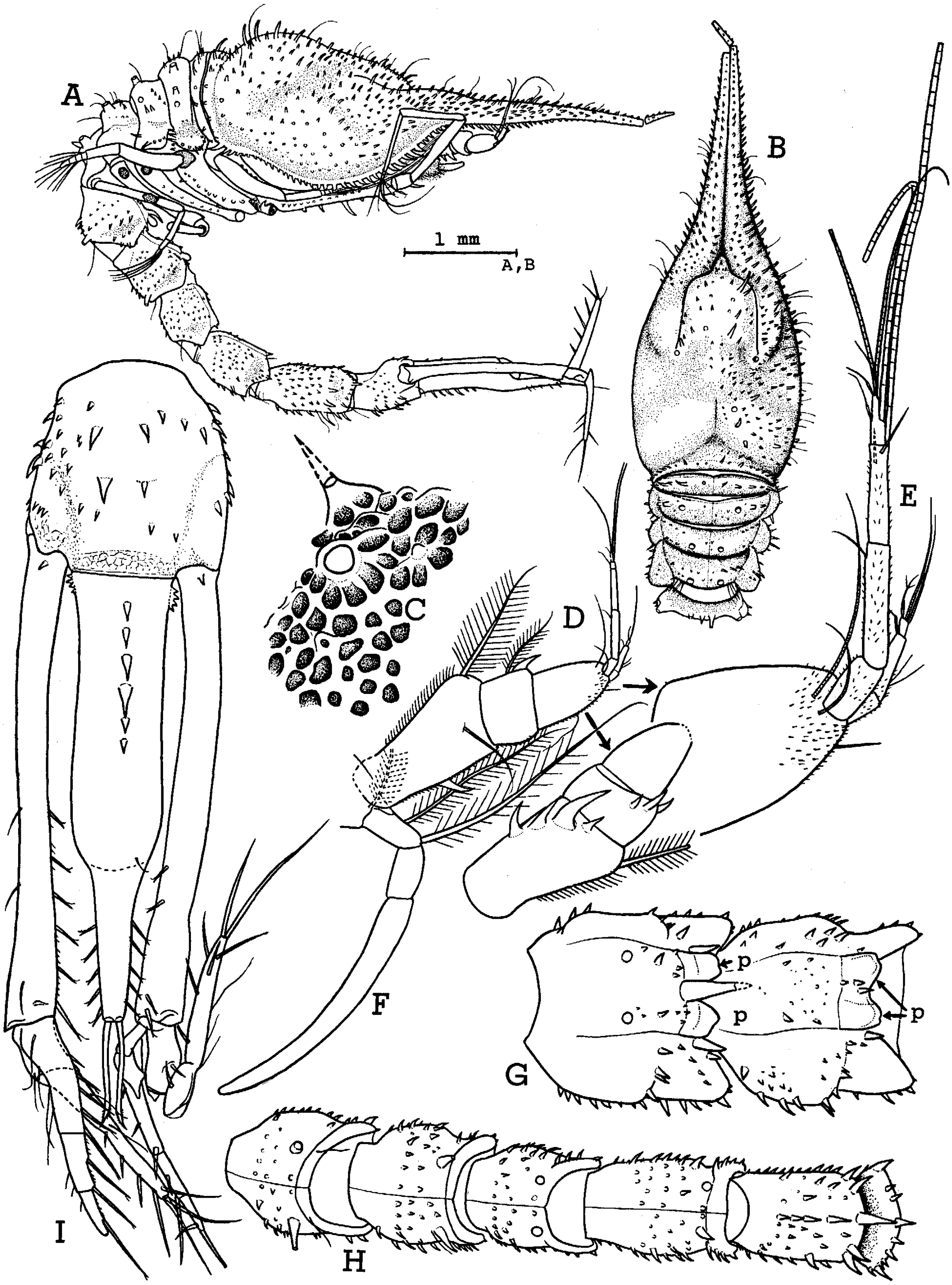

Fig. 9. *Vemakylindrus oxycanthus* sp. nov., holotype immature male, length about 10.3 mm (including telson). A, lateral view; B, anterior portion of body, dorsal view; C, texture of carapace surface; D, antennule; E, enlarged distal portion of antennule; F, antenna; G, first two abdominal segments with two pairs of rudimentary pleopods (p), ventral view; H, first to fifth abdominal segments, dorsal view.

times as long as the distal unequal two segments combined, and furnished with two spines on the inner margin; the second segment is slightly longer than the third, and bears two spines on the inner margin; the distal segment has a spine on the inner margin and a long spine at the apex. The exopod is a little less than 1/2 as long as the peduncle, and beset with two lateral setae and a long terminal seta.

Remarks. General appearance of this species is very like *V. oxycanthus* sp. nov. at a glance, but the former is easily distinguished from the later and other described species of the genus by that the carapace has characteristic large spines arranged in four circles. The specific name of the new species refers the fact that the carapace bears the characteristic large spines mentioned above.

Vemakylindrus oxycanthus sp. nov.

(Figs. 9, 10)

Makrokylindrus (*Vamakylindrus*) sp. (A), Gamô, 1971: 254, fig. 2, A, B; Day, 1980: 238 (in key, as *V.* sp. A (Gamo, 1971)).

Material examined. Holotype immature male; St. 4 (KH-67-2), 38°51.2′N, 142°46.3′E-38°52.1′N, 142°44.7′E, depth 1270-1280 m, far off Kamaishi, the north-eastern districts of Japan; 12 August, 1967. Gear: Beam-trawl.

Description. Holotype is an immature male, length about 10.3 mm (including telson). The integument is rather thin, moderately calcified, and covered with minute reticulated patterns with spinules (Fig. 9, C).

The carapace (Fig. 9, A, B) is slightly more than 4/10 as long as the total body length, nearly 3 times as long as the width, which is slightly more than as wide as the depth. The carapace surface is spinulose and beset with sparse fine hairs. The pseudorostral lobes are very long, almost horizontally projected forward in front of the triangular eyeless ocular lobe, and meet for a distance about 1/2 of the total carapace length. The antennal notch is shallowly concave. The anterolateral or lower margin of carapace is strongly serrated.

The combined length of all the free thoracic segments (Fig. 9, A, B) is a little less than 1/3 of the carapace length. The first segment is the shortest. The side plates are prominent.

The abdomen (Fig. 9, A, H) is cylindrical, and 1/2 of the body length. Each of the first two segments has a pair of rudimentary pleopods (Fig. 9, A, G). The fifth segment is the longest.

The telson (Fig. 9, I) is about twice as long as the last abdominal segment, and provided with a small serrated crest on each side near the base and a row of six spines in the middle of the dorsum. The pre-anal portion is about 2/3 as long as the telson. The post-anal portion has five pairs of lateral spines and a pair of long apical spines, about 1/4 as long as the telson.

The peduncle of antennule (Fig. 9, A, D, E) in robust and club-shaped; the first segment is much longer than the distal two segments combined, and beset

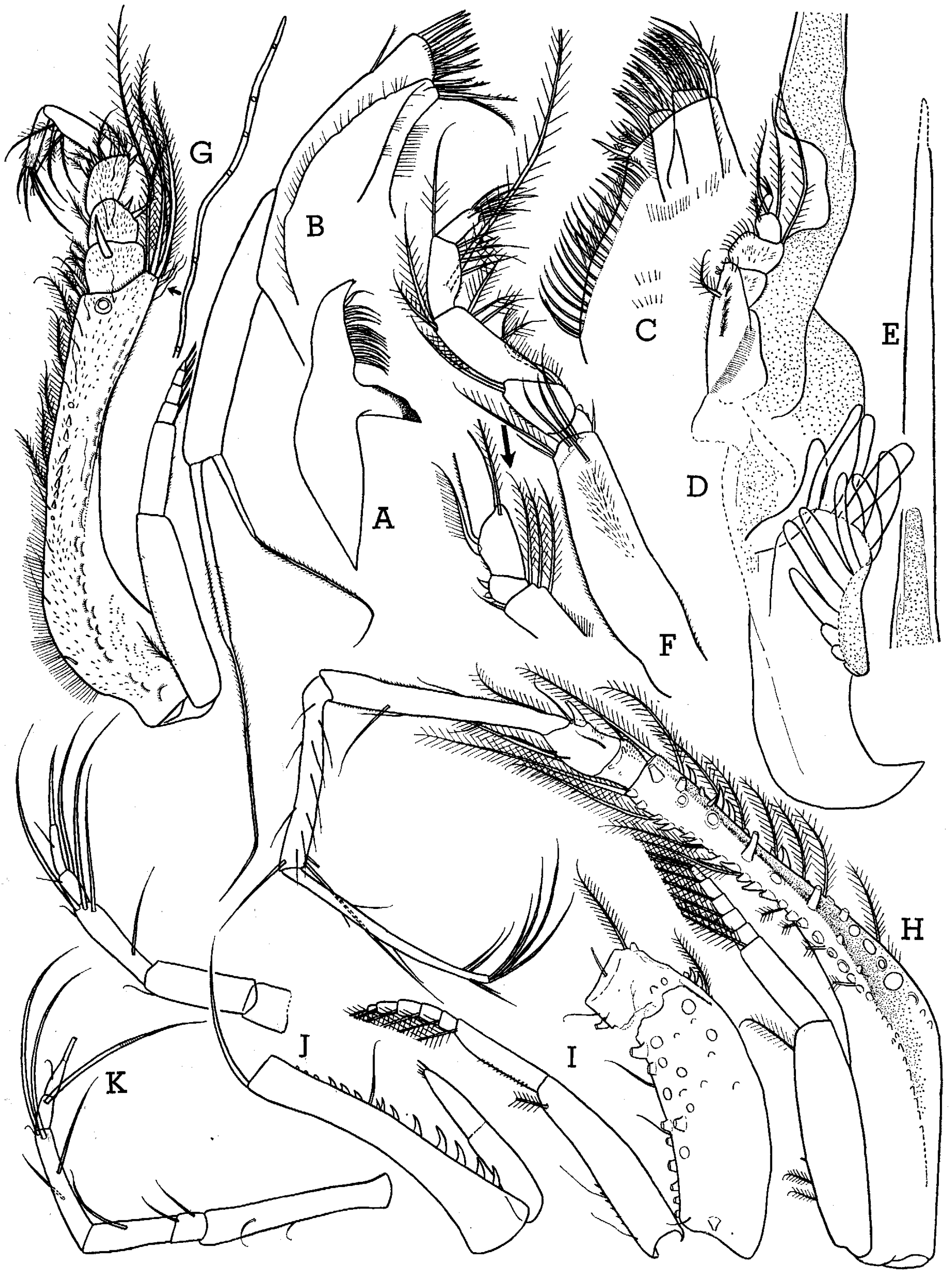

Fig. 10. *Vemakylindrus oxycanthus* sp. nov., holotype immature male. A, right mandible; B, maxillule; C, maxilla; D-E, first maxilliped; F, second maxilliped; G, third maxilliped; H, first peraeopod; I, basis of second peraeopod; J-K, third (J) and fifth (K) peraeopods.

with four lateral large spines; the second segment is short, about 2/3 as long as the third, and provided with three small spines distally; the third segment is somewhat bell-shaped. The main flagellum is rather long and slender, about as long as the distal two peduncular segments combined, and 4-segmented; the first segment is about 1/2 as long as the second, and 2/3 as long as the third, which is twice as long as the fourth; the distal segment has four aesthetascs. The accessory flagellum is about 1/3 as long as the main lash, and composed of 3 segments; the second segment is the longest, about twice as long as the first; the distal segment is very minute and bears two short aesthetascs.

The flagellum of antenna (Fig. 9, E) is very short and not yet fully developed.

The mandible (Fig. 10, A) is normal type and furnished with 13 setae on the right incisor process.

The maxillule and maxilla are as shown in Fig. 10, B and C.

The first and second maxillipeds are shown in Fig. 10, D–F.

The basis of third maxilliped (Fig. 10, G) is slender, moderately curved, about 1 5/6 times as long as the remaining distal segments together, and beset with a row of several spines along the inner margin and a large spine on the distal margin; its external angle is a little produced distally. The ischium is a little longer than the merus, and bears a long spine near the distal end. The merus has a spine on the outer margin. The carpus is a little dilated laterally, longer than the merus, about 2/3 as long as the propodus, and beset with several spines on the distal margin. The propodus is cylindrical, and longer than the dactylus.

The basis of first peraeopod (Fig. 10, H) is elongate, cylindrical, about 5/6 as long as the remaining distal segments together, and provided with large lateral spines arranged in three longitudinal rows. The merus is about twice as long as the ischium, and provided with a long spine on the inner angle. The carpus is about 1 1/3 times as long as the propodus and a little longer than the dactylus.

The second peraeopod (Fig. 10, I) is damaged and without distal segments. The basis is somewhat dilated laterally and spinose, and nearly as long as that of the first peraeopod.

The basis of third peraeopod (Fig. 10, J) is a little shorter than that of the second and shoter than the remaining distal segments together. The fourth peraeopod is a little less than the third and about 1 1/2 times as long as the fifth (Fig. 10, K). The bases of third and fourth peraeopods are about subequal in length and provided with row of spines on the outer margin. The first four pairs of peraeopods have exopods.

The peduncle of uropod (Fig. 9, I) is as long as the telson, and beset with six spines on the spinulose inner margin. The endopod is 3-segmented, subequal to the exopod in length; the first segment is about as long as the distal two segments combined; the second segment is a little longer than the third; there are five, two and one lateral spines present on the spinulose inner margin of the three segments respectively, and one apical spine. The exopod is about 1/2 as long as the uropodal peduncle, and provided with four spines on the outer margin, two spines near the distal end, and two long spines at the apex.

Remarks. The above-mentioned two new species are characterized by that the pseudorostrum is almost horizontally projected forward in front of the carapace. They are most closely related to *V. gladiger* (Băcescu, 1961), the type species of the genus, from off Colombia, 912 m deep, *V. costaricans* (Băcescu, 1961) from off Costa-Rica, 3718 m deep, and *V. prolatus* (Jones, 1969) from Kermadec Trench, 2470 m deep. However, the two new species have different ornamentation of spines on the carapace from the three described species.

The specific name of the new species is derived from the fact that the carapace is covered with sharp spines.

摘　要

東京大学海洋研究所の「白鳳丸」によって行われた日本海溝および付近海域の研究航海(KH-67-2) で, 1967年8月に釜石沖の水深 1,270-1,280 m の深海底よりビーム・トロールで採集された *Vemakylindrus* 属 (Diastylidae 科) の1種と, 東シナ海および隣接海域の研究航海 (KH-68-2) で, 1968年8月に宮古島北方沖, 水深 1,650 m から得られた *Bathycuma* 属 (Bodotriidae 科), *Makrokylindrus* 属と *Vemaklindrus* 属 (Diastylidae 科) にそれぞれ属すると考えられる3種は, 研究の結果, 次に述べる新種として記載される。

1. *Bathycuma rotunditectorum* sp. nov.: 宮古島北方沖 (1,650 m 深) 産の未成熟雄 (腹部後部を欠く, 頭胸部の長さ約 5.9 mm) 1匹を完模式標本として記載される。本種に最も近縁と考えられる種類に, カリフォルニア沖 (1,174-1,218 m 深) から記載され, 地中海 (1,227 深) ? (STEPHENSEN, 1915), および相模湾 (約 1,000 m 深) (GAMÔ, 1967) からも記録された *B. longirostris* CALMAN, 1912 と, インド洋 (4,040 m 深) より記載された *B. magnum* JONES, 1969 があるが, 本新種の背甲を側面よりみると, 背甲背縁が全長にわたり完全なアーチ状となっていることなどで, 上述の2既知種と明らかに異なっている。

2. *Makrokylindrus* (*Coalescuma*) *jubatus* sp. nov.: 宮古島北方沖 (1,650 m 深) から採集された。本新種は完模式標本に亜成体の雌 (体長 11.7 mm) を, 別模式標本に未成熟雄 (体長 7.4 mm) を指定, 他に副模式標本の4雌, 1亜成体の雄 (体後部を欠く) と 2 manca 幼生 (雌) によって記載される。本新種は第3, 4自在胸節が融合しており, *Coalescuma* 亜属 (BĂCESCU, 1961, 1962) に属する。本種に最も近縁と考えられる種類には, スラウエシ (セレベス) のボネ湾 (Gulf of Bone) の 1,158 m 深と, バンダ海の 2,789 m深より記載された *M.* (*C.*) *cingulatus* (CALMAN, 1905) と, バリ島南方沖の 780 m 深より記載された *M.* (*C.*) *cinctus* JONES, 1969 がある。*M.* (*C.*) *cingulatus* では, 本新種同様に, 背甲中程を横断し輪状に配列する棘1列を有するが, 背甲前部に大きな棘がないこと, *M.* (*C.*) *cinctus* では, 背甲を横断し輪状に配列する棘2列を有することなどで, 明らかに本新種と区別される。本新種は以前に, GAMÔ (1971) および DAY (1980) により *M.* (*C.*) sp. (GAMO, 1971) とされていたものである。

3. *Vemakylindrus grandidentatus* sp. nov.: 本種は DAY (1980) により *V.* sp. (B) (GAMO, 1971) とされていたものであり, 宮古島北方沖 (1,650 m 深) から採集された1匹の雌 (体長 7.6 mm) を完模式標本として記載される。本種は一見次に記載する種に類似しているが, 本新種の背甲には細かい棘の他に, 背甲を横断する様にほぼ4列に配列する大棘を有するなどで, 次の種と区別される。

4. *Vemakylindrus oxycanthus* sp. nov.: 本種は DAY (1980) により *V.* sp. (A) (GAMO,

1971）とされたものであり，釜石の沖，水深 1,270-1,280 の所より採集された1匹の未成熟雌（体長 10.3 mm）を完模式標本として記載される。上述の *V. grandidentatus* の他に，本種に近縁と考えられるものに，南米のコロンビア沖（912 m 深）産の *V. gladiator* (BĂCESCU, 1961)，中米のコスタリカ沖（3,718 m 深）産の *V. costalicans* (BĂCESCU, 1961) および，ケルマデック海溝（2,470 m 深）産の *V. prolatus* JONES, 1969 などがあるが，本新種の背甲上の棘の配置は上記3既知種の何れとも異なっており，明かに種を異にしている。

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