THREE NEW SPECIES OF THALASSINIDEA (DECAPOD CRUSTACEA) FROM SOUTH-WEST JAPAN

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With Plate XI and 4 Text-figures

Three new species of Thalassinidea are here recorded from south-west Japan, two belong to the Upogebiidae, *Upogebia* (*Upogebia*) *miyakei* sp. nov. and *Gebicula monodactyla* sp. nov. and the other to the Callianassidae, *Callianassa* (*Calliactites*) *longicauda* sp. nov.

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1. *Upogebia* (*Upogebia*) *miyakei* sp. nov.

(Pl. XI A, Fig. 1)

Diagnosis.—Lateral frontal teeth strong, and an ocular spine distinct. First legs slender, dactylus bears 8–9 tubercles in distal half of upper margin, fixed finger bears proximally a tubercle on cutting edge, and palm bears three spines on upper margin. Eggs large.

Description.—Holotypic female. Body-length 18.5 mm. The rostrum triangular, a little longer than broad at its base, the lateral margin bears four blunt spines, lower surface unarmed. The lateral frontal teeth strong, their tip failing to reach the middle of the rostrum. The longitudinal ridge bears a row of eight tubercles. The median groove of the gastric region marked obscurely in the anterior two-thirds, ending in a blunt tubercle. The hind margin of the cervical groove armed laterally with two small tubercles. The anterior margin of the carapace bears a distinct ocular spine. The eyes reach almost to the tip of the rostrum, the cornea faintly black in alcohol. The first segment of the antennular peduncle bears a small distal spine on the lower margin. In the antennal peduncle the third segment bears a distal spine on the lower margin, scaphocerite bispinose. The epistome forms a blunt spine (Fig. 1, A–B).

The third maxilliped has the exopod, of which the proximal segment reaches

slightly beyond the ischium, and the flagellum shows an indication of segmentation, failing to reach the distal end of the merus (Fig. 1, C).

In the first legs the dactylus shows a smooth ridge on the cutting edge, the upper surface smooth, bounded above by a row of 8–9 tubercles in the distal half, and the inner surface shows a row of hairs along the dorsal margin. The fixed finger shows a slender tooth, its cutting edge bearing a tubercle at the proximal third. The palm

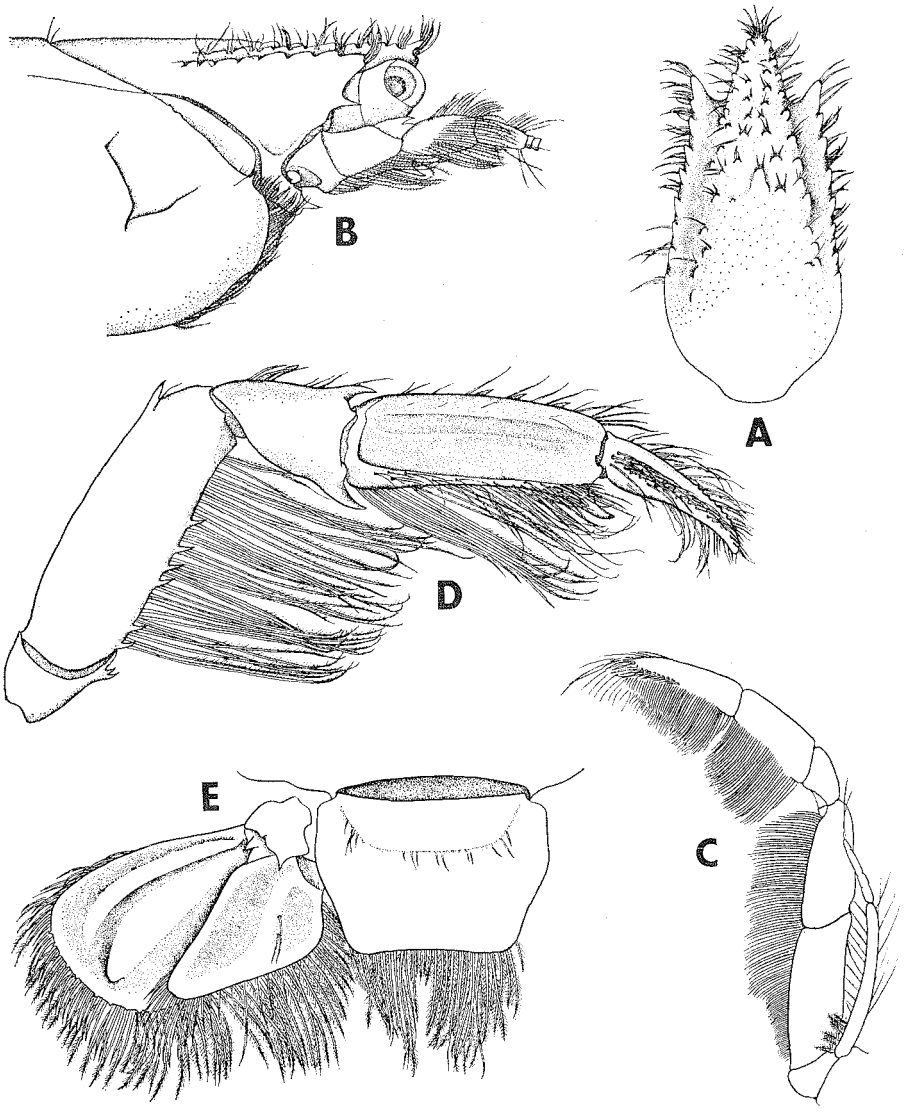

Fig. 1. *Upogebia* (*Upogebia*) *miyakei* sp. nov. A. Dorsal surface of gastric region, ×14; B. Lateral surface of gastric region, ×12; C. Third maxilliped in outer view, ×16; D. First leg, ×14; E. Telson and uropod, ×14.

one-fourth longer than the dactylus and 2.5 times as long as broad, the dorsal surface bears medially three sharp, anteriorly-directed spines, the lower surface also bears a spine a little behind the proximal part of the fixed finger, outer edge with distinct ridge, which extends backward along the posterior margin, the inner surface with scattered tubercles in the lower half, and bears three spines on the distal margin, of which one upper spine lies just below the articulation with the dactylus, and two lower spines are close to each other some distance from the upper one. The carpus less than one half the length of the palm, the dosral margin shows a smooth longitudinal ridge with a distinct distal spine, next to this distal spine the distal margin of the inner surface bears another sharp distinct spine, and the lower surface ends in a distal spine (Fig. 1, D).

The second legs have the carpus with a distal spine on the upper and lower margins.

The branchial formula is as follows (r=rudiment):

	Maxillipeds			Pereiopods				
	1	2	3	1	2	3	4	5
Pleurobranchs	–	–	–	–	–	–	–	–
Arthrobranchs	–	–	2	2	2	2	2	–
Podobranchs	–	–	–	–	–	–	–	–
Epipods	r	1	1	–	–	–	–	–
Exopods	1	1	1	–	–	–	–	–

The telson 0.7 times as long as broad, tapering in the posterior half, the transverse carina inconspicuous with scanty hairs (Fig. 1, E). The eggs large in size, measuring 1.7 mm in diameter.

Holotype.—One ovig. ♀, Zoological Laboratory, Kyushu University (ZLKU), Cat. No. 5201, Ishigaki-jima, Ryukyu Is., May 20, 1940, S. MIYAKE leg.

Measurements of holotype (in mm).—

Length of body 18.5
Length of carapace including rostrum 5.0
Width of carapace 2.4
Length of first leg on both sides 6.6

Remarks.—This species is closely related to *Upogebia* (*Upogebia*) *simsoni* (THOMSON) in the following points; the rostrum is unarmed on the lower margin, the lateral frontal teeth reach about halfway to the rostrum, the first legs are of equal length, the fixed finger measures only one-fifth the length of the dactylus. However, it is difficult to identify this material with THOMSON's species, because in this material the fixed finger is slender in shape, its cutting edge bearing only one tubercle, while in THOMSON's species the fixed finger is stout, its cutting edge bearing four small subacute teeth.

2. *Gebicula monochela* sp. nov.

(Pl. XI B, Fig. 2)

Diagnosis.—Rostrum bears an apical spine and three pairs of lateral spines. Lateral frontal teeth well developed. Anterior margin of carapace bears four equal-

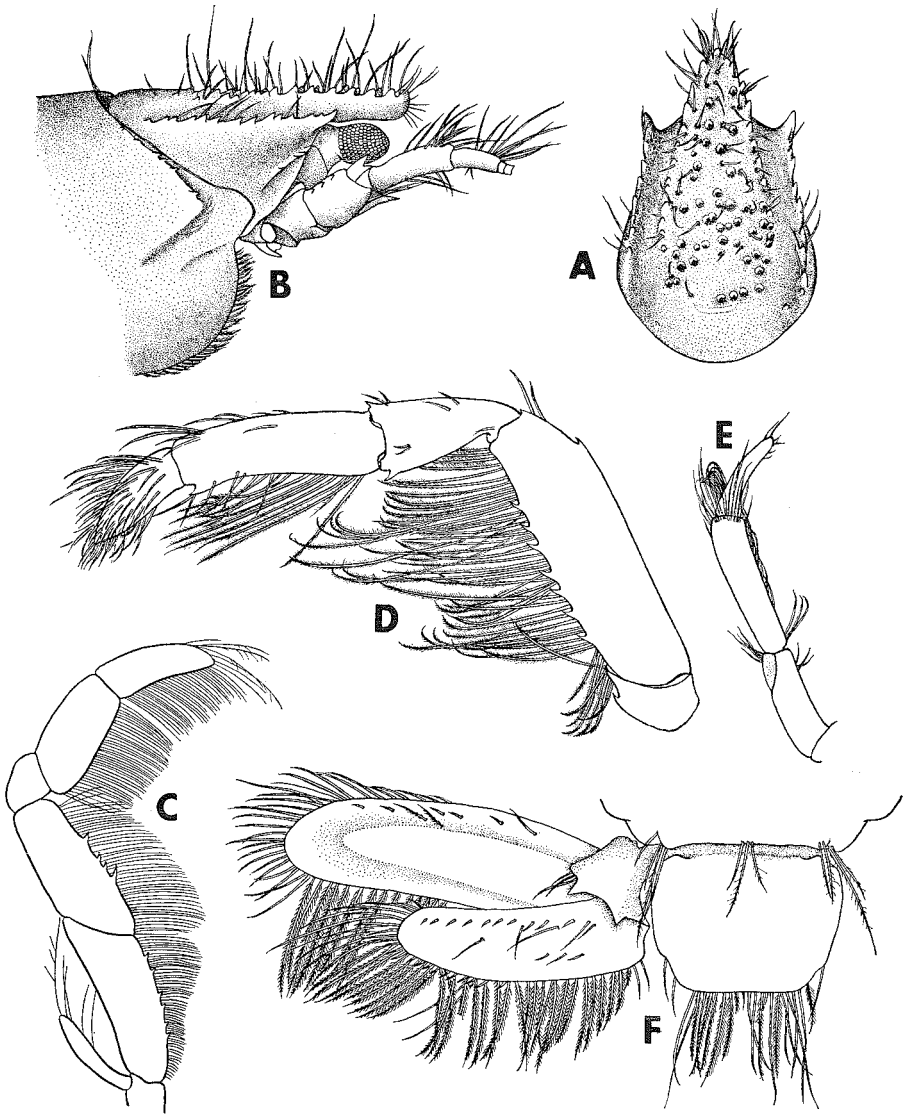

Fig. 2. *Gebicula monochela* sp. nov. A. Dorsal surface of gastric region, ×20; B, Lateral surface of gastric region, ×20; C. Third maxilliped in outer view, ×30; D. First leg, ×18; E. Dactylus of left fifth leg, ×40; F. Telson and uropod, ×20.

ly spaced spines. No flagellum on exopod of third maxilliped. First legs almost simple. Exopod of uropods distinctly longer than telson.

Description.—Holotypic female. Body-length measures 14 mm. The rostrum about as long as broad with an apical spine and three pairs of lateral spines, its lower surface unarmed. The lateral frontal teeth more or less out-stretched, and the longitudinal ridge bears a row of several tubercles. The median groove of the gastric region inconspicuous. The hind margin of the cervical groove bears 6–7 spinules laterally. The anterior margin of the carapace provided with four equally spaced spines. Eyes almost reach the tip of rostrum, and the cornea well faceted in yellow colour. The antennular peduncle reaches with the first segment beyond the rostrum, the first segment bears a small distal spine on the lower and upper margins. In the antennal peduncle the second segment bears a row of three spines on the upper margin, the third segment shows a spine at the distal end, scaphocerite bispinose, the penultimate one bears no spine on the lower margin, flagellum 1.3 times as long as the carapace. The epistom ends in a simple tooth (Fig. 2, A–B).

Third maxillipeds with the inner margin of the merus bearing four spines, and that of the ischium bearing six spines. The exopod simple as in *Upogebia* (*Upogebia*) *yokoyai* MAKAROV (SAKAI, 1965), and its tip reaches about the middle of the ischium (Fig. 2, C).

First legs equal and almost simple. The dactylus slightly convex medially on the cutting edge, the outer surface roundly convex and hairy, and the inner surface bears distally a row of yellowish spinules along the dorsal margin. The palm more than 1.5 times as long as the dactylus and about three times as long as broad, the upper margin unarmed, and the lower margin provided distally with a small spine, not forming a chelicera with the dactylus. The carpus about three-fourths the length of the palm (Fig. 2, D).

In the second legs the upper margin of the carpus bears a spine some distance from the anterior margin, lower margin also bears a distal spine. Fifth legs simple, although BORRADAIL's definition to this genus in 1903 shows that it is chelate (Fig. 2, E).

The branchial formula is as follows (r=rudiment):

	Maxillipeds			Pereiopods				
	1	2	3	1	2	3	4	5
Pleurobranchs	–	–	–	–	–	–	–	–
Arthrobranchs	–	–	2	2	2	2	2	–
Podobranchs	–	–	–	–	–	–	–	–
Epipods	r	r	r	–	–	–	–	–
Exopods	1	1	1	–	–	–	–	–

The exopod of the uropods leaf-like in shape, about twice as long as the telson and about three times as long as broad, dorsal surface rather convex in the median

part, bearing some spinules along the outer margin. The endopod also leaf-like in shape, some spinules arranged along the outer margin (Fig. 2. F).

Holotype.—One ♀, ZLKU. Cat. No. 10557, Uze off Tomioka, Amakusa, Kumamoto prefecture, shell and rocky bottom, 38 m deep, Apr. 14, 1964, AKIO TAKI (Amakusa Marine Laboratory, Kyushu University) leg.

Measurements of holotype (in mm).—

Length of body	14.0
Length of carapace	4.0
Width of carapace	1.5
Length of first leg on the left side	5.5

Remarks.—The species is more closely related to *Upogebia* (*Upogebia*) *fallax* DE MAN than *Gebicula exigura* ALCOCK, which is one of the two species belonging to the genus *Gebicula*, to which BORRADAILE (1903) alluded, as the shape of the uropods of the present species is distinct. However, this species is distinguished from DE MAN's one by the following points: the antennal penultimate segment bears no spine on the lower margin, the dactylus of the first legs is smooth on the upper margin, the fixed finger is almost inconspicuous, the palm is not spinose, its distal margin of the outer surface bears no spine, the carpus bears only one distal spine on the upper margin, and the fifth legs are simple.

3. *Callianassa* (*Calliactites*) *longicauda* sp. nov.

(Pl. XI C, Figs. 3, 4)

Diagnosis.—Rostrum represents a narrow spiny protrusion. Merus of third maxillipeds slightly broader than long, and its distal margin bears a distinct tooth medially. Propodus of third legs twice as long as broad. Telson a little longer than broad, without spines on lateral margin. Exopod of uropods slender, and 1.3 times as long as telson.

Description.—Holotypic male. Body-length 15 mm. The rostrum a spiny protrusion, which is curved downward at the tip. The cervical groove lies in the posterior fourth of the carapace excluding the rostrum (Fig. 3, A–B). Eyes square in shape, and curved downward at an angle of 45°, outer-distal angle concaved to fill a transparent cornean part. In the antennular peduncle the first segment reaches beyond the tip of eyes, and the distal segment about three times as long as the penultimate segment. The antennal peduncle reaches with its distal segment beyond the antennular peduncle, the scaphocerite present, its tip pointed, the penultimate segment slightly more than three times as long as the second segment and about two times as long as the distal segment (Fig. 3, A–B).

In the third maxillipeds the propodus broadened proximally, 1.5 times as long as the dactylus and about as long as the carpus, the merus slightly broader than long, and broadened distally, bearing a distinct tooth at the middle part of the distal

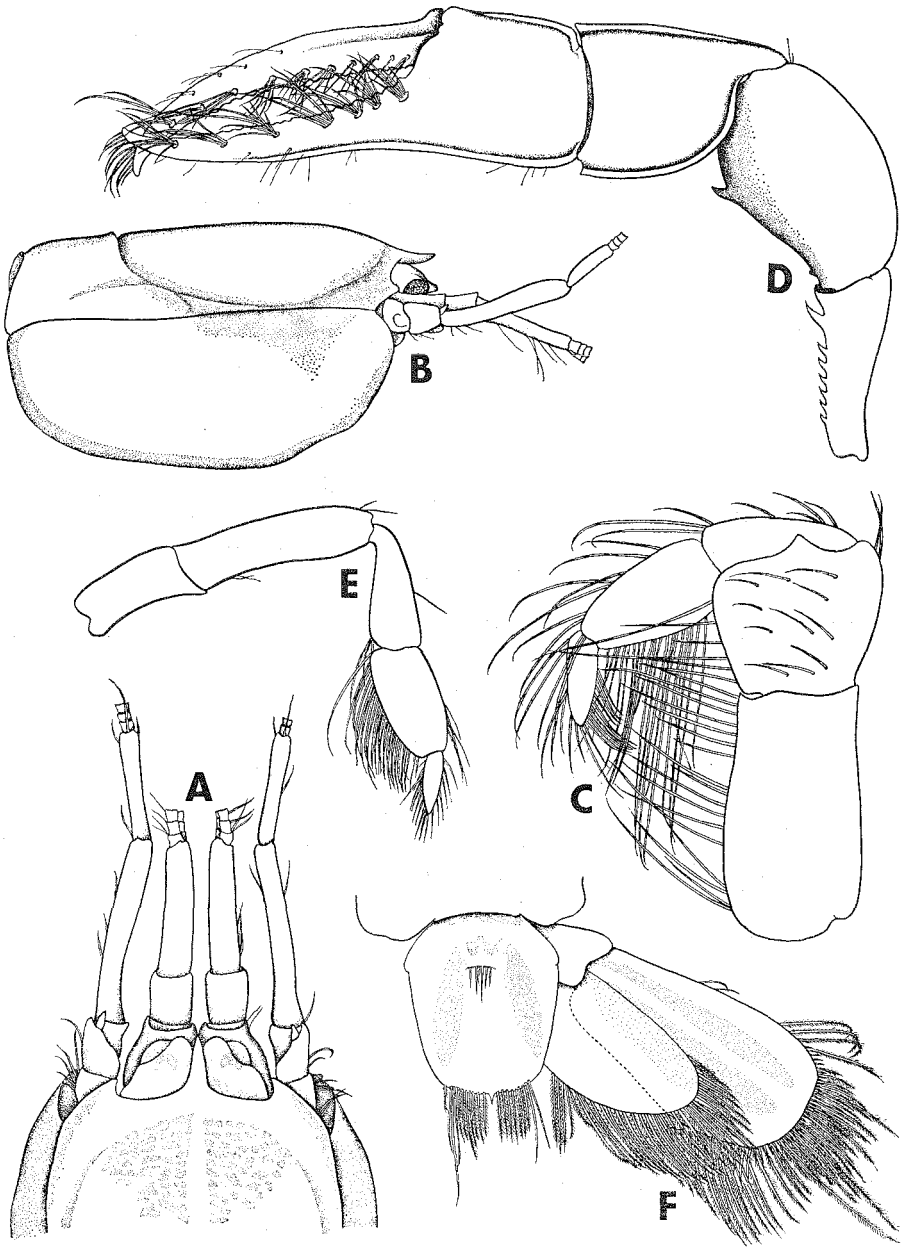

Fig. 3. *Callianasssa* (*Calliactites*) *longicauda* sp. nov. A. Anterior part of carapace, ×20; B. Lateral surface of carapace, ×20; C. Third maxilliped in outer view, ×28; D. First leg of left side, ×12; E. Third leg, ×15; F. Telson and uropod, ×15.

margin, the ischium 1.8 times as long as the merus and slightly less than twice as long as broad (Fig. 3, C).

The first leg on the right side missing. Smaller first leg on the left side present. The dactylus and fixed finger slender, and their cutting edges throughout dentate. The palm less than half as long as the dactylus and about as long as broad, with carina on the upper and lower margins. The carpus about as long as the palm, its upper and lower margins also carinate. The merus assumes a spindle-form, of which the lower margin bears a distinct spine a little distal to the middle. The ischium shows a row of spines on the lower margin (Fig. 3, D). Third legs simple, the propodus about 1.8 times as long as the dactylus and twice as long as broad (Fig. 3, E).

The branchial formula is as follows:

	Maxillipeds			Pereiopods				
	1	2	3	1	2	3	4	5
Pleurobranchs	–	–	–	–	–	–	–	–
Arthrobranchs	–	–	2	2	2	2	2	–
Podobranchs	–	–	–	–	–	–	–	–
Epipods	1	–	–	–	–	–	–	–
Exopods	1	1	–	–	–	–	–	–

Male's first pleopods two-jointed, the ultimate segment slender and about twice as long as the proximal segment (Fig. 4, A). The male's second pleopods short, two-jointed (Fig. 4, B). The exopod of the uropods 1.4 times as long as the telson and less than twice as long as broad, the distal margin rather truncate, and the endopod about two-thirds as long as the exopod. The telson a little longer than broad, and its posterior margin bears a median spine (Fig. 3, E).

Paratypic female. The ischium of the third maxillipeds about twice as long as the merus. The smaller first leg similar in shape to the holotype, except the palm slightly longer than the dactylus and slightly longer than broad. The female's first pleopods simple and three-jointed (Fig. 4, C), and the second pleopods biramous in filiform (Fig. 4, D).

Holotype.—One ♂, ZLKU. 9620, East China Sea (32°N, 122°30′E), coll. by trawl-net, June 10, 1962, HIDEO YAMASHITA (Seikai Regional Fisheries Research Laboratory in Nagasaki) leg.

Paratype.—One ♀, ZLKU. 8943, East China Sea (29°58′5″N, 126°59′5″E), coll. by trawl-net, June 17, 1962, HIDEO YAMASHITA leg.

Measurements of types.—

	Holotype ♂	Paratype ♀
Length of body	16.0	11.0
Length of carapace	3.8	3.0
Width of carapace	2.6	1.5
Length of first leg on the left side	6.5	—
Length of first leg on the right side	—	6.0

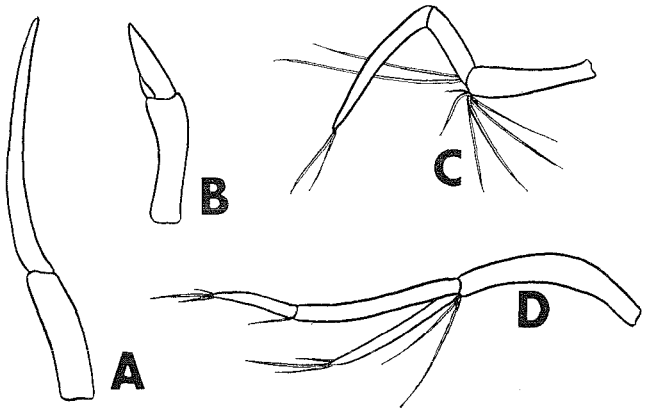

Fig. 4. *Callianassa* (*Calliactites*) *longicauda* sp. nov. A. Male's right first pleopod, underside, ×55; B. Male's left second pleopod, underside, ×67; C. Female's right, first pleopod underside, ×35; D. Female's left second pleopod, underside, ×46.

Remarks.—This species is closely related to *Callianassa* (*Calliactites*) *modesta* DE MAN by the third maxilliped and the smaller first leg. This species is characterized by the following points; 1) The endopod of the uropods bears no spine on the dorsal surface, although the present specimens are as large as DE MAN's largest specimens (ovigerous female 13.4 mm), in which the endopod of the uropods carries 4–5 slender spines at the distal border and other 2–3 similar spines not far from them. 2) The telson bears no spines at the posterior angle, while in DE MAN's species two smaller spines are inserted there. 3) The male's first pleopods are slender and longer than the second pleopods as shown in the figure 4, A–B, however in DE MAN's species the first pleopods are short, and the second ones are larger than the first.

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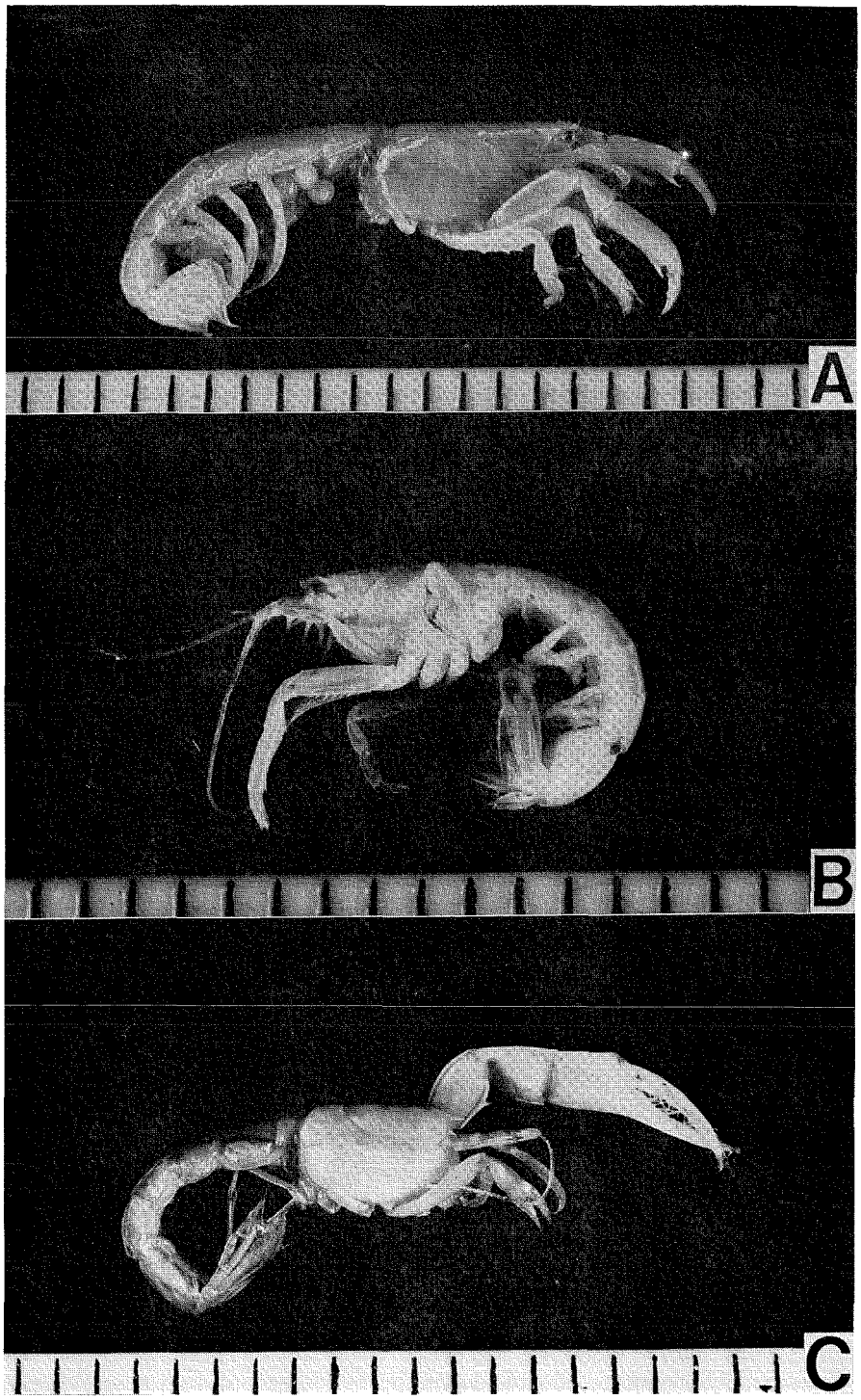
EXPLANATION OF PLATE XI

A. *Upogebia* (*Upogebia*) *miyakei* sp. nov.
B. *Gebicula monochela* sp. nov.
C. *Callianassa* (*Calliactites*) *longicauda* sp. nov.


A
B
C