

THREE NEW SPECIES OF THALASSINIDEA
(DECAPODA, CRUSTACEA) FROM JAPAN

BY

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In the course of my research on Thalassinidea of southern Japan, three new species referable to three families, have been obtained and I take this opportunity of describing them. The new species are: *Calocaris* (*Calastacus*) *mimasensis* sp. nov. in Axiidae, *Upogebia* (*Upogebia*) *acanthochela* sp. nov. in Upogebiidae and *Callianassa* (*Callichirus*) *nakasonei* sp. nov. in Callianassidae. Types of the new species will be deposited in the Zoological Laboratory, Kyusyu University.

It is great pleasure to extend my hearty thanks to Dr. Sadayoshi Miyake of our laboratory for affording me the facility to the study.

1. *Calocaris* (*Calastacus*) *mimasensis* sp. nov.

Diagnosis.—Body length about 30 mm. The rostrum slender, triangular, with two lateral spines. A little behind the proximal rostral spine a pair of spines are distinct. Of the three gastric carinae, the lateral one bears four teeth, the submedian one seven, and the median one nine. The hind part of the carapace bears a rudimentary dorsal carina. The first legs are subequal and normal in position; the chela and carpus hairy, the palm bears three slender spines on the upper margin. The telson is 1.3 times as long as broad, without any median spine on the posterior margin.

Description of female holotype.—The carapace much depressed. The rostrum slender and triangular, armed with two lateral spines. At some distance behind the proximal rostral spine a pair of distinct spines is present. The lateral carina on the gastric region bears four teeth, the submedian carina with seven small, irregularly arranged teeth, and the median carina, which does not reach the cervical groove, bears anteriorly three teeth, medially one distinct tooth and posteriorly five obtuse teeth. Three distinct tufts of hairs are present between the median and submedian carinae. The hinder part of the carapace is broken on the left side, but it is clear that a

trace of the dorsal carina is present in the posterior part (Fig. 1A~B).

The eyes reach slightly beyond the middle of the rostrum, and their cornea minutely faceted and its interior blackish (Fig. 1A~B). The antennular peduncle reaches slightly beyond the tip of the rostrum. The antennal peduncle with its distal segment reaches beyond the rostrum; the first segment bears a distal spine on the lower margin; the stylocerite is sharp, two-thirds as long as the second segment, and the scaphocerite much longer than the stylocerite (Fig. 1C).

The carpus of the third maxilliped bears a distal spine on the inner margin. The merus 1.3 times as long as the carpus, and its inner margin distally bears two spines, of which the distal one is more distinct. The ischium is about as long as the merus, and its inner margin bears three small spines in the proximal two-thirds (Fig. 1D).

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

	Maxillipeds			Pereiopods				
	1	2	3	1	2	3	4	5
Pleurobranchs	—	—	—	—	1	1	1	—
Arthrobranchs	—	?	2	2	2	2	2	—
Podobranchs	—	r	1	1	1	1	—	—
Epipods	1	1	1	1	1	1	1	—

The first legs are subequal. In the larger right leg, the cutting edge of the dactylus is armed with a broad tooth and an obtuse triangular one. The cutting edge of the fixed finger bears five teeth; of which two are rounded, one is triangular and the remainder truncated. The palm is about as long as the dactylus and slightly longer than broad, and its upper margin with three slender, anteriorly directed teeth. The carpus two-thirds as long as the palm; the upper margin bears a distal spine, the lower margin is also bears a spine a little behind the anterior end, and the outer surface three small spines in the upper part. The merus unfortunately broken, however it is much probable that the upper margin bears a spine a little behind the distal end, and the lower margin provided with a row of spines (Fig. 1E).

In the smaller left leg the cutting edge of the dactylus bears only one obtuse tooth in the proximal third. The fixed finger is broken at the tip, however its cutting edge bears a distinct, triangular proximal tooth and two truncated teeth. The palm distinctly shorter than the dactylus, and its upper margin bears three slender teeth. The merus is twice as long as the carpus; the upper margin distally armed with two spines, and the lower margin with

a row of five spines (Fig. 1F).

The telson is 1.3 times as long as broad; the lateral margin proximally armed with a distinct spine, and the outer surface with two pairs of spinules in the proximal half and another pair at the postero-lateral angle. The posterior margin is rounded without any median spine. The exopod of the uropods is about as long as the telson, and its anterior margin broadly rounded, spinulate in the distal half. The anterior rib is obscure and bears a row of spinules. The distal lobe is distinct. The endopod is slightly shorter than the exopod, and its anterior margin and the mid-rib bear a row of spines (Fig. 1G).

Colour in life.—The body white with broad, orange stripes.

Material examined.—1♀, Zoological Laboratory, Kyusyu University (Z LKU), Cat. No. 12086. Tosa Bay, 200m deep, obtained by a trawl-net, Nov. 3~15, 1963, K. Sakai Coll.

Measurements (in mm).

	Holotype, ♀
Body length.....	30
Carapace length.....	10
Carapace width.....	5
Rostal length.....	2
Left first leg.....	13
Right first leg.....	13

Type locality.—Tosa Bay, Kochi prefecture, Japan.

Remarks.—This is the first record of the genus *Calocaris* (*Calastacus*) in Japan. The female specimen is almost similar to the male of *Calocaris* (*Calastacus*) *euophthalma* (de Man), however it may be characterized as follows:

The lateral carina of the gastric region bears four teeth, and the submedian carina seven ones. The chela and carpus of the first legs are beset with numerous tufts of hairs, and the palm with three slender, anteriorly directed teeth on the upper margin. In the larger first leg, the cutting edge of the dactylus bears a broad tooth and an obtuse triangular tooth, and that of the fixed finger irregularly denticulated, while in the smaller first leg the cutting edge of the dactylus is proximally armed with an obtuse triangular tooth, and that of the fixed finger with a distinct proximal tooth and two truncated ones.

2. *Upogebia (Upogebia) acanthochela* sp. nov.

Diagnosis.—Length of body 25mm. The rostrum 1.5 times as long as broad, and its lower surface bears 2~3 spines. The lateral frontal teeth are short. The antero-lateral margin of the carapace spinulate. The second segment of the antennal peduncle bears 2~3 spinules on the upper margin, and the penultimate segment bears 3~4 sharp spines on the lower margin. The scaphocerite bispinose. The palm of the first legs bears a row of spines on the upper margin and three rows of spines on the inner surface. The carpus of the second legs bears a row of spines on the upper margin.

Description of female holotype.—The rostrum is well-developed, 1.5 times as long as broad; the lateral margin is armed with 7~8 spines or tubercles, and the lower surface with 2 spines, of which the proximal one is simple, more distinct. The lateral frontal teeth of the carapace are short as in *U. (Upogebia) pugnax* de Man. The median groove of the gastric region is distinct in the anterior half, and behind it an obscure ridge extend with two tubercles backwards. The antero-lateral margin of the carapace bears 7~8 spinules, of which the upper five ones are more distinct. The hind margin of the cervical groove bears a distinct spine just before the crossing point with the *linea thalassinica* (Fig. 2A~B).

The cornea is faceated, yellowish in colouration. The first segment of the antennular peduncle bears a slender distal spine on the lower margin. In the antennal peduncle the second segment is armed with 2~3 spinules on the upper margin, the third segment with a spine at the distal end of the lower margin, and its right margin with another median spine, and the penultimate segment with 3~4 spines, of which the first and third ones on its left side are stronger. The scaphocerite is bispinose. The antennal flagellum is a little longer than the carapace. The epistome ends anteriorly in a simple tooth (Fig. 2A~B).

The exopod of the third maxillipeds is consisted of the proximal segment and flagellum; the proximal segment scarcely reaching the distal end of the ischium, the flagellum two-fifths as long as the proximal segment and its tip reaching slightly beyond the ischium.

The dactylus of the first legs is a little convex in the proximal part of the lower margin. The outer surface is marked with a distinct carina, the upper surface of which is concave and the lower surface bears two rows of hairs. The upper margin is marked with a ridge, with three proximal tubercles, and the inner surface hairy along the upper margin. The fixed finger is armed with a strong, anteriorly directed spine, and its lower margin with

two proximal spines, of which the distal one is prominent. The palm is one-third as long as the dactylus, and slightly more than twice as long as broad; the upper margin bears a row of 12 spines on the left side and 13 spines on the right side, the outer surface bears a distal spine a little below the articulation with the dactylus, the lower surface is hairy and armed with a row of tubercles, and the inner surface with three row of spines, of which the median row has a distal spine on the distal margin. The upper margin of the carpus is marked with a row of five spines, of which the distal one is on the distal margin; the outer surface bears several spines, and the lower surface with a smooth, longitudinal ridge on the outer margin (Fig. 2C~D). The propodus of the second legs bears a proximal spine on the upper margin, the carpus with a row of spines on the upper margin, and the merus distally with two spines on the upper margin (Fig. 2E).

The telson is slightly broader than long, and its posterior margin well concave in the middle part. The transverse and longitudinal carinae are well marked on the dorsal surface (Fig. 2G).

Paratypic specimens.—Both the male (ZLKU. Cat. No. 12847) and the female (ZLKU. Cat. No. 9621) measured 27mm in body length. In the male the lower surface of the rostrum bears three spines, and the lateral margin only six ones. The first legs are missing. In the female the lower surface of the rostrum bears three spines, of which the proximal one is bispinose. The dactylus of the right first legs bears four tubercles on the upper margin, the palm with 16 spines on the upper margin. The left leg is missing.

Measurements (in mm).

	Holotype		Paratype	
	♀	♂	♂	♀
Body length	25.0	27.0	27.0	27.0
Carapace length including rostrum	7.3	8.5	8.5	7.8
Carapace width	2.7	3.5	3.5	3.5
left first leg	12.0	—	—	—
Right first leg	12.0	—	—	15.0

Type locality.—Yellow Sea, 100m deep.

Material examined.—Holotype, ♀, ZLKU. Cat. No. 12848, Yellow Sea, by trawl-net, July 5, 1962, Hideo Yamashita leg. Paratype, ♂, ZLKU. Cat. No. 12847, obtained at the same time with the holotype. Paratype, ovig. ♀, ZLKU. Cat. No. 9621, Yellow Sea (29° 02'N, 125° 25'E), by trawl-net, June 29, 1962,

Hideo Yamashita leg.

Remarks.—The nearest kin of this species is *U. (Upogebia) spinifrons* (Haswell); namely, the rostrum is 1.5 times as long as broad, and its lower surface armed with two or three spines. The hind margin of the cervical groove bears a distinct lateral spine. The upper margin of the palm of the first legs bears a row of spines. The present species may be distinguished from that species by the short lateral frontal teeth and the upper margin of the carpus of the second legs which is provided with a row of spines.

3. *Callianassa (Callichirus) nakasonei* sp. nov.

Diagnosis.—Body length 39mm. The rostrum is triangular in outline and pointed at the tip. The lateral spine of the anterior margin of the carapace is well developed. In the larger first leg, the merus is slightly convex on the lower margin and marked with four inconspicuous, equidistant tubercles; the ischium smooth on the lower and upper margins. The exopod of the uropods is posteriorly protruded in the posterior half, and the endopod lanceolate in shape.

Description of female holotype.—The rostrum is pointed at the tip and triangular in outline, and its tip scarcely reaching the end of the first segment of the antennule. The lateral spine of the anterior margin of the carapace is well developed. On the carapace, the anterior transverse groove is well developed and the cervical groove situated in the posterior one-fifth of the carapace. The anterior part of the carapace ahead the cervical groove is marked with a thin transverse carina.

The inner surface of the eye-stalks touch with each other. The cornea is large, well faceted and dorsally protruded. The first segment of the antennular peduncle reaches slightly beyond the eye, and the ultimate segment is 1.3 times as long as the penultimate one. The penultimate and ultimate segments of the antenna are elongate and total length of these segments exceeds that of the antennule. The scaphocerite is wanting. The ultimate segment is about as long as the penultimate one (Fig. 3A).

The dactylus of the third maxilliped is slender, the propodus much longer than the dactylus and is slightly longer than broad; the lower margin broadly convex. The carpus is slightly longer than the propodus. The merus and ischium form a broad plate (Fig. 3B).

The first legs are unequal. In the left larger leg, the cutting edge of the dactylus bears a blunt tooth at the proximal one-third, and that of the fixed finger proximally incised, and behind this incision a broad, truncated

tooth is present. The palm about as long as the dactylus and slightly longer than broad. The carpus two-thirds as long as the palm, and slightly broader than long. The merus 1.3 times as long as the carpus, and its lower margin slightly convex, with four inconspicuous, equidistant tubercles. The ischium slightly shorter than the merus, and its upper and lower margins smooth (Fig. 3C). In the right smaller leg, the dactylus is slender, the palm 0.7 times as long as the dactylus and one-third as long as broad, the carpus about as long as the dactylus, the merus slightly shorter than the carpus, and the ischium slightly longer than the merus (Fig. 3D).

The pleopod of female is composed of two segments, of which the ultimate one is 1.5 times as long as the proximal (Fig. 3E). The second pleopod is biramous and foliaceous; the endopod bears an appendix interna in the inner half of the distal margin (Fig. 3F).

The telson is 1.5 times as broad as long; the distal margin broadly rounded, and the lateral margin convex at the proximal angle. The exopod of the uropod 1.8 times as long as the telson, and its posterior half posteriorly protruded. The endopod is lanceolate in shape, much shorter than the exopod.

Material examined.—♀, ZLKU. Cat. No. 12408, east coast of Tonaki I., Okinawa-group, Ryukyu Is., sand-beach, July 9, 1963, Yukio Nakasone leg.

Measurement (in mm).

	Holotype, ♀
Body length.....	39.0
Carapace length.....	9.0
Carapace width.....	5.0
Left first leg.....	10.5
Right first leg.....	8.0

Type locality.—East coast of Tonaki I., Okinawa-group, Ryukyu Is.

Remarks.—The present species closely related to *C. (Callichirus) martensi* Miers, however, it may be characterized as follows.

The lower margin of the ischium of the larger first leg not crenelate, but smooth without any denticles, and the lower margin of the merus not serrated. The smaller first leg has the dactylus distinctly longer than the palm.

Literature

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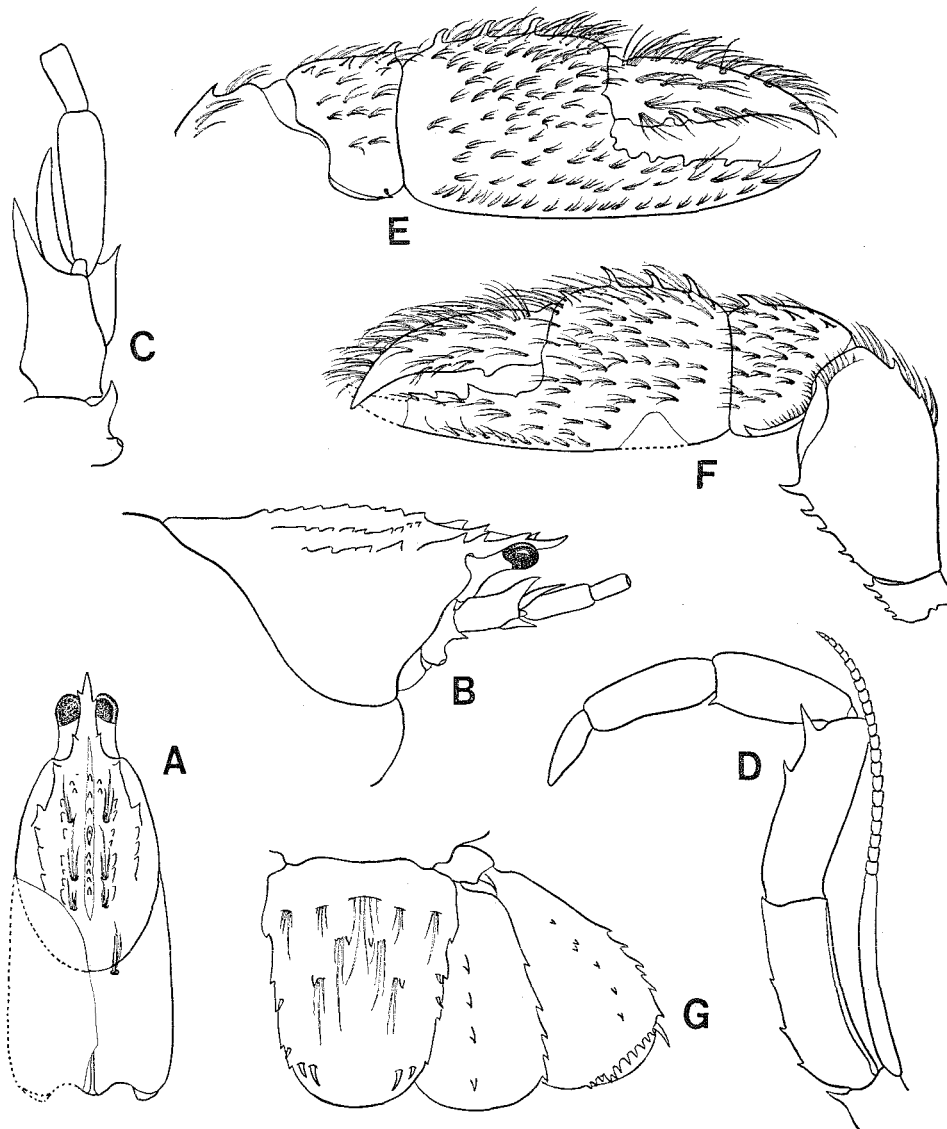


Fig. 1 *Calocaris (Calastacus) mimasensis* sp. nov.

- A Carapace, $\times 5$.
- B Anterior part of carapace, $\times 6.5$.
- C Antennal peduncle in outer lateral view, $\times 12$.
- D Third maxilliped in outer view, $\times 1.5$.
- E Larger first leg in outer view, $\times 7$.
- F Smaller first leg in outer view, $\times 7$.
- G Telson and uropods, $\times 9$.

Yellow Sea, 100 m

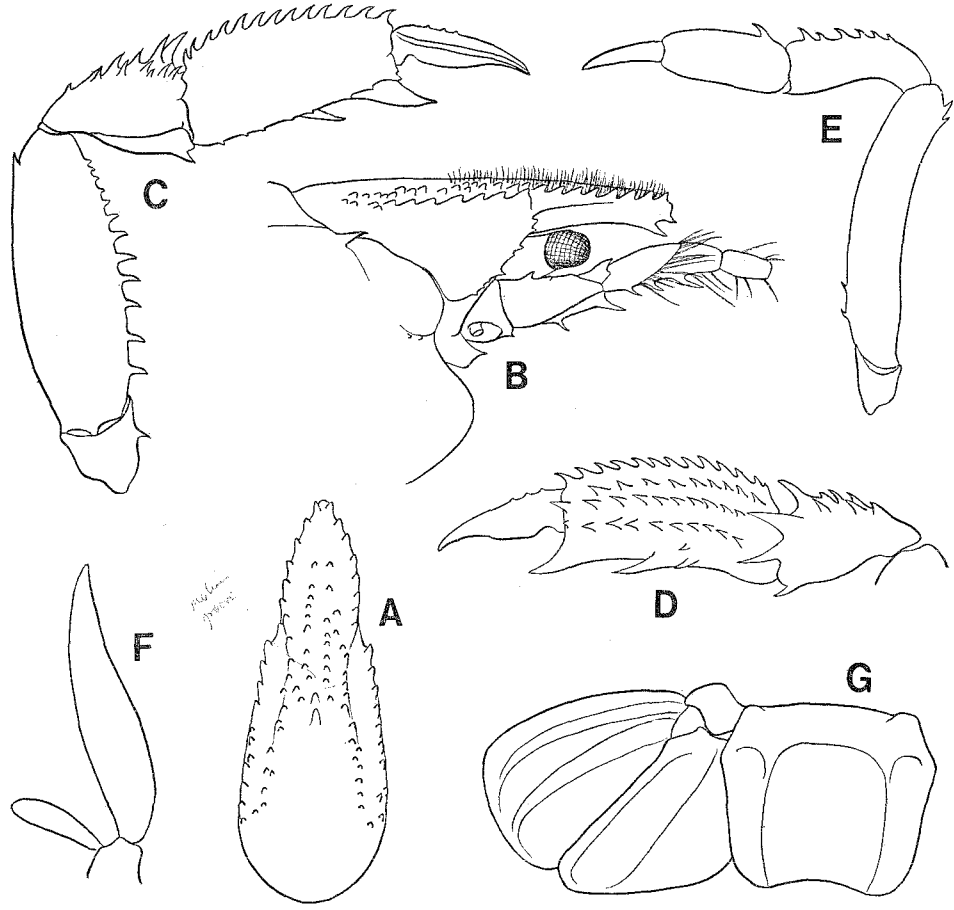


Fig. 2 *Upogebia (Upogebia) acanthochela* sp. nov.

- A Dorsal surface of gastric region, $\times 9$.
- B Anterior part of carapace, $\times 9$.
- C Female's first leg in outer view, $\times 7.5$.
- D Female's first leg in inner view, $\times 10$.
- E Second leg in outer view, $\times 5.5$.
- F Distal part of third pleopod, $\times 9$.
- G Telson and uropods in dorsal view, $\times 7.5$

Pl. V

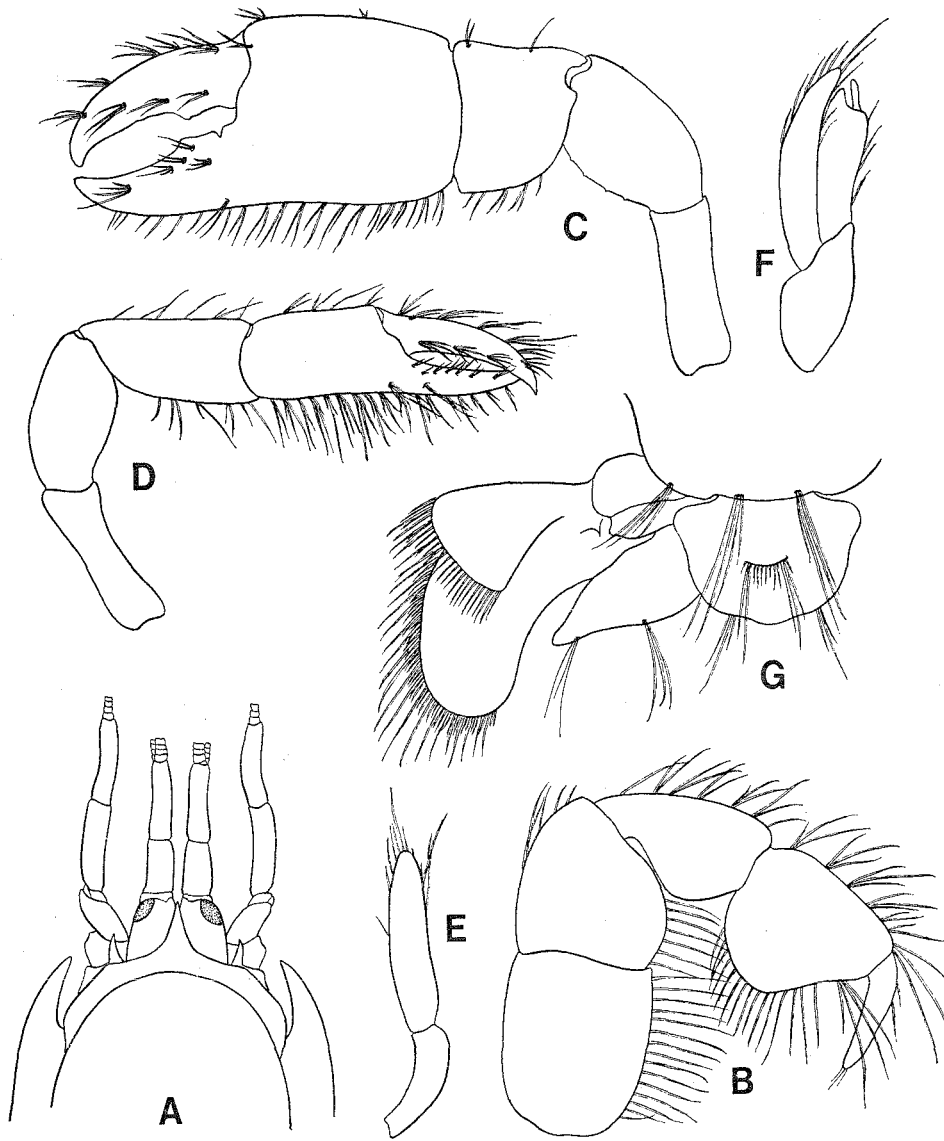


Fig. 3 *Callianassa (Callichirus) nakasonei* sp. nov.

- A Anterior part of carapace, $\times 14$.
- B Third maxilliped in outer view, $\times 26$.
- C Larger first leg, $\times 10$.
- D Smaller first leg, $\times 10$.
- E Left first pleopod of female in lower view, $\times 22$.
- F Right second pleopod of female in lower view, $\times 22$.
- G Telson and uropods, $\times 14$.



