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Araiopontonia odontorhyncha gen. et sp. nov., a new
shrimp from the Ryukyu Islands, Japan (Decapoda,
Palaemonidae, Pontoniinae)*

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Recently the authors had an opportunity to examine an interesting pontoniid shrimp in the collection of the decapod crustaceans from the Ryukyu Islands, made by His Majesty the Emperor of Japan. This material proves to be apparently new to science and necessary to establish a new genus for it. The new genus *Araiopontonia* shares a character of the possession of horn-shaped processes on the epistomal region and of a dagger-shaped rostrum bearing a distinct midrib with the Indo-West Pacific genus *Parapontonia* Bruce, 1968. However, *Araiopontonia* is readily discernible from *Parapontonia* by the fact of having a well-dentated rostrum and of the absence of a hepatic spine.

The holotype has been preserved in the Biological Laboratory of the Imperial Household.

The authors' deep gratitude is due to the staffs in the Biological Laboratory, Imperial Household for the facilities to make this study.

Araiopontonia gen. nov.

Definition. Body elongate, smooth. Well-developed rostrum with distinct teeth. Antennal and supra-ocular spines present. Epistome

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with a pair of strong, horn-shaped processes. Pleura rounded. Telson elongate with two pairs of spines dorsally. Eyes well developed. Antennular and antennal peducles normal. Antennal scale large, elongate with distinct lateral tooth. Mandible without palp; incisor process well developed, dentate; molar process stout with triangular knobs having tufts of bristles. Maxillula with bifid palp and upper broader and lower narrower laciniae. Maxilla with bilobed endite, palp and narrow scaphognathite. First maxilliped with developed palp, exopod with distinct caridean lobe, bilobed epipod and unilobed endite. Second maxilliped normal with developed exopod and epipod. Third maxilliped pediform with exopod, rigid epipod and a rudimentary arthrobranch. First pereopod normal, slender. Second pereopods elongate, robust and symmetrical. Third to fifth pereopods stout, posteriorly smooth; dactyli broad, curved and biunguiculated. Pleopods typical. Uropod normal; exopod distally with small tooth and a movable spine.

Type species: *Araiopontonia odontorhyncha* sp. nov.

Araiopontonia odontorhyncha sp. nov.

(Figs. 1-4)

Description of holotype (ovigerous female). A median sized pontoniid shrimp with a rather slender and compressed body form. The well-developed, compressed rostrum is directed downwards, somewhat exceeding the end of the antennular peduncle. The upper border is gently curved with six not erected but anteriorly directed teeth; the first tooth is in advance of the orbit and the distal is separated from the apex by a considerable distance. The interval between the fourth and the fifth teeth is the shortest, the other teeth being rather equidistantly and more spaced. The margin between the neighbouring teeth is entire only with hairs at the base of each tooth. The lower border is smooth and slightly concave, only with a distinct tooth at the place a little in advance of the upper second distal tooth. The apex is pointed and lanceolate in lateral view. The midrib is well developed with laterally a horizontal projection over the ophthalmic somite, proximally expanded to merge with the orbital margin.

The carapace, which is somewhat longer than the rostrum, is glabrous and entirely smooth. There is a large supra-ocular spine which is obtuse, and broad at the base, and whose lateral margin forms the border of the orbital depression. The inferior orbital angle is not produced triangularly but is squarely angled. The anterior margin of the carapace below the orbital angle is smooth and more or less concave. Anteroventrally the carapace is rounded. Only a strong antennal spine

stands slightly behind the anterior margin of the carapace and the tip exceeds the margin. Hepatic spine is absent.

The epistome bears a pair of large, stout, depressed and divergent processes directed anteroventrally beneath the base of the antennular peduncle.

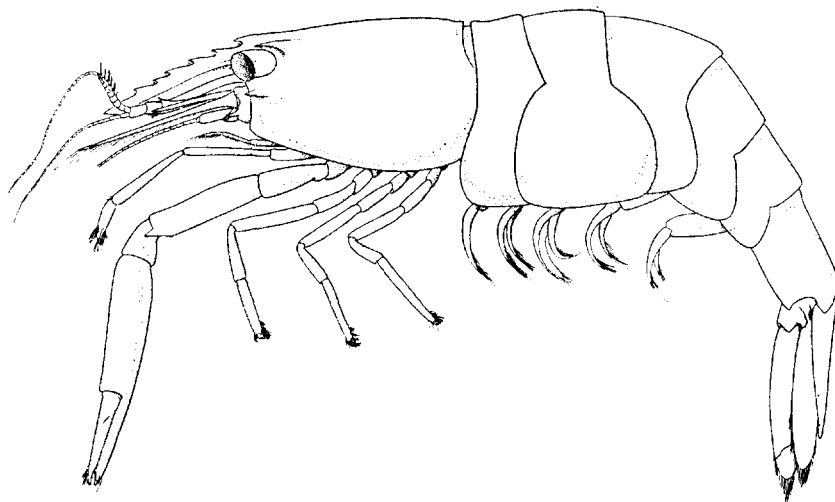


Fig. 1. *Araiopontonia odontorhyncha* gen. et sp. nov., holotype, ovigerous female, $\times 6.5$.

The abdomen is elongate and entire. The pleura of the first three somites are broadly and membranously expanded; the ventral margins are rounded. In the next two somites the pleura are much less expanded and more rigid than in the first three somites, and posteroventrally produced roundly. The sixth somite is long and subcylindrical, measuring one and a half the length of the fifth somite; it is posterolaterally produced to form a broad triangular process, and slightly projected and pointed posteroventrally.

The telson is elongate and slender, three and a half as long as the basal breadth, and longer than the sixth abdominal somite. Dorsally are present two pairs of minute spines; the anterior pair is apparently behind the middle and the posterior at the posterior third point of the length between the anterior pair and the posterior end of the telson; no spines nor hairs are visible on the posterior round margin.

The eye is well developed. The cornea is a trifle compressed and hemispherical, almost extending to the level of the base of the fourth tooth on the upper border of the rostrum when directed forward. A small ocellus is discernible. The peduncle is subcylindrical, much longer than the cornea.

The basal segment of the antennular peduncle is broad, the anterior margin reaching as far forward as the base of the fifth rostral tooth; the outer lateral margin is slightly convex, terminating in a well-defined tooth nearly touching the level of the end of the second segment; the anterolateral portion interior to the lateral tooth is produced forward roundly, extending to the middle of the second segment. The stylocerite is basally broad and then suddenly slender toward the sharply pointed tip which scarcely reaches the mid-point of the basal segment. The

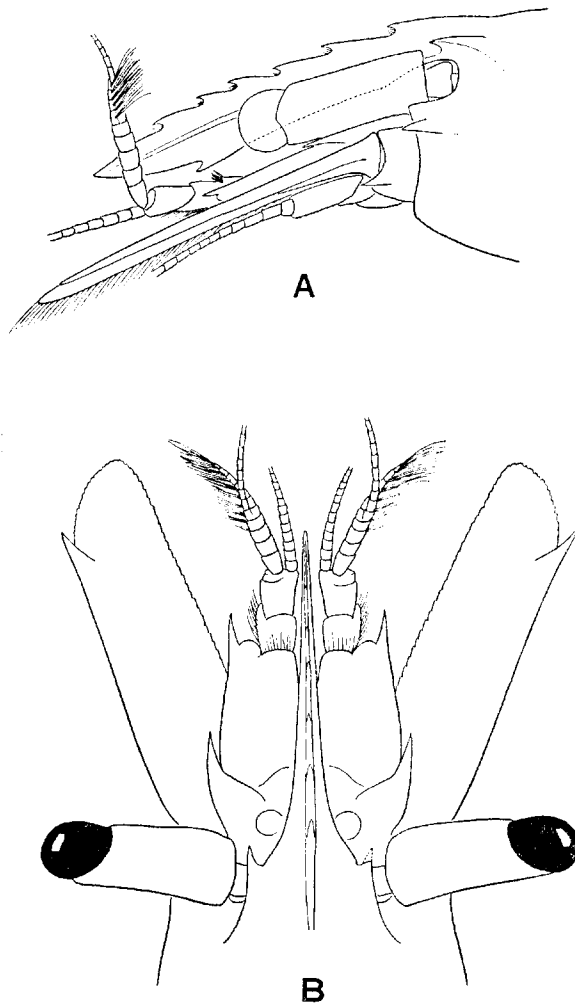


Fig. 2. *Araiopontonia odontorhyncha* gen. et sp. nov., holotype, ovigerous female. A, anterior part of body in lateral view, $\times 13.5$; B, anterior part of body in dorsal view, $\times 13.5$.

distal two segments are short; the second segment is shorter and broader than the third; the both combined are less longer than half the basal segment. The outer flagellum has the two rami fused basally for five joints, and the shorter free ramus is of four joints. The inner flagellum is also short and as long as the outer one.

The basicerite is armed laterally with a well-marked tooth. The carpocerite is cylindrical and robust, nearly reaching the proximal third of the antennal scale. The antennal scale is elongated and far exceeds the apex of the rostrum; the lateral margin is almost straight and tipped with a strong lateral tooth far surpassing the anterior margin of the lamella which is strongly expanded forward, and which narrows at the inner angle.

The mouthparts on the left side are removed and examined. The mandible is devoid of the palp; the molar process is robust and distally bears five triangular, chitinous and setiferous processes; the incisor process is well developed to form an excessively broadened lamina; it becomes much broader distally and with nine triangular denticles; the uppermost one is very large and long with the tip obtuse, and the lowermost is much smaller and spinular. The maxillula is normal; the upper lacinia is broad with distally strong spines and coarse setae, and the lower lacinia much more slender than the upper and provided with bristles; the crooked palp is shallowly cleft distally with a distinct spine. The endite of the maxilla is well developed and deeply cleft to make two equal, slender lobes which are terminally with similar setae; the palp is broad and bears a single plumose seta basally; the scaphognathite is normal and narrows posteriorly. The endite of the first maxilliped is broad and unilobed; the palp is broad and unilobed with distally a seta; the moderately developed exopod has a broad caridean lobe; the triangular epipod is rigid and slightly notched in the middle of the distal margin. The second maxilliped is typical; the penultimate segment is anteriorly expanded roundly; the subrectangular epipod is present. The third maxilliped is slender; the ultimate segment is somewhat shorter than the penultimate, and the both are fringed with coarse, long and serrate setae; the antepenultimate segment is broader than the distal segments, about twice as long as the ultimate; the exopod just reaches the end of the antepenultimate segment; the epipod is round and rigid; a rudimental arthrobranch is visible.

The first pereopod is slender and long, overreaching the anterior margin of the lamella of the antennal scale by the whole length of the chela. The fingers are slender and slightly shorter than the palmar portion and posteriorly hollowed throughout their length; some tufts of long setae are present on the surface; the cutting edges are entire without any teeth or serrations. The palmar portion is depressed, about

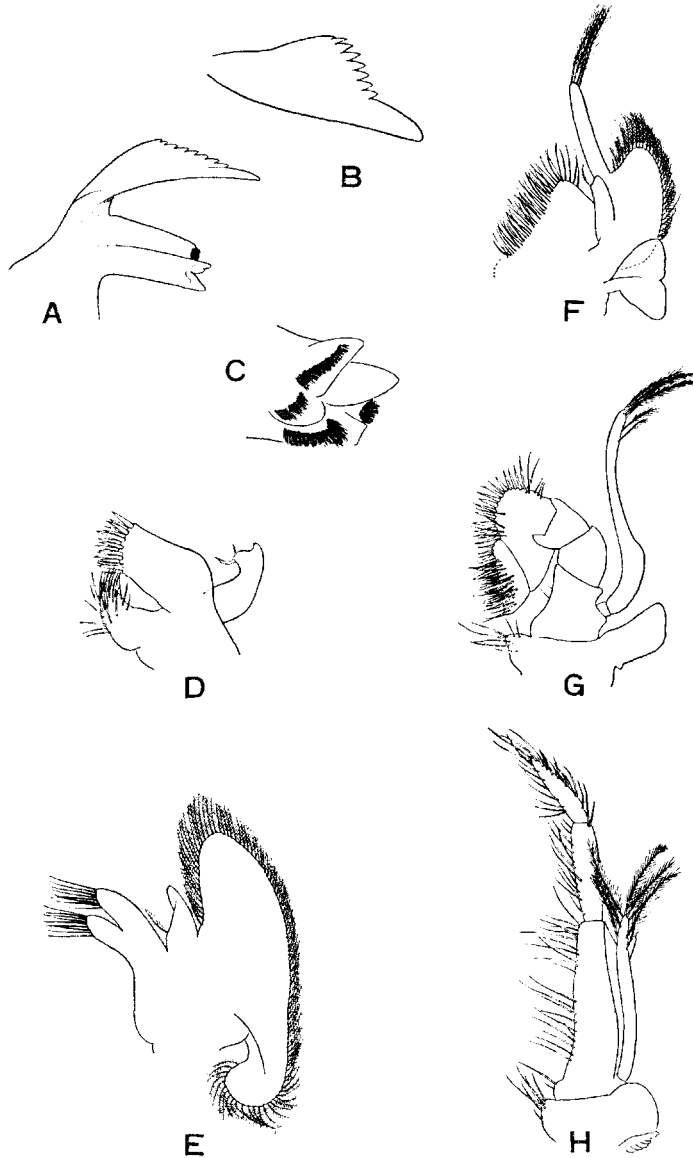


Fig. 3. *Araiopontonia odontorhyncha* gen. et sp. nov., holotype, ovigerous female, mouthparts. A, mandible, $\times 24.7$; B, incisor process of mandible, $\times 24.7$; C, distal part of molar process of mandible, $\times 29.7$; D, maxillula, $\times 63.0$; E, maxilla, $\times 26.3$; F, first maxilliped, $\times 17.5$; G, second maxilliped, $\times 21.0$; H, third maxilliped, $\times 17.5$.

twice as long as broad. Both of the carpus and the merus are subcylindrical and subequal in length, the former being claviform; the ischium is stout and half the length of the merus.

The second pereopods are large, elongate, equal and symmetrical, exceeding the end of the antennal scale by the length of the fingers and half the palm together. The movable finger is rather shallow, being highest in the distal third and slightly shallower proximally; the anterior margin is semicircular with the tip stout and bluntly pointed; the cutting edge is entire with several small tufts of setae. The immovable finger is almost straight with the hooked tip; it is somewhat broad near the base and longitudinally channelled on the cutting edge to form the inner lower and the outer higher margins which are merged distally where the groove disappears; into this groove the edge of the movable finger fits when closed; the inner margin is entire, while the outer laminar margin is armed with five low, vestigial teeth of equal size, and the interval between the neighbouring teeth becomes smaller proximally. The palm is cylindrical, a trifle more than three times as long as broad, and four-thirds the length of the movable finger. The carpus is short, unarmed and cup-shaped. The merus is somewhat shorter than the palm and armed with a strong tooth at the posterodistal corner of the outer margin; the posterior margin is smooth without any spines or tubercles. The ischium is short and half the merus in length.

The ambulatory legs (third to fifth pereopods) are stout. The dactylus of the third pereopod is short, curved, robust and distinctly biunguiculated; the anterior claw is much longer than the posterior, and both the claws are broadly gapped and divergent distally; anteriorly lie a longer and two shorter accessory spines; laterally a tuft of setae is present; the posterior margin is distinctly convex roundly. The propodus is stout, the posterior border lacking the spines, but having some tufts of long setae which conceal the distal part of the dactylus. The carpus is cylindrical and two-thirds the length of the propodus. The merus is somewhat longer than the propodus. The ischium is slightly longer than the carpus. The last two pereopods resemble the third but more slender.

The pleopods are normal. The endopod of the first pleopod is slender and setose, not reaching the middle of the exopod. All of the next four pleopods are well developed with the long appendix interna.

The uropods are subequal and elongate, exceeding the posterior margin of the telson. The slightly convex outer margin of the exopod terminally bears a small tooth inside with a short movable spine.

Measurements (mm).

Body length	18.3
Carapace length	4.0

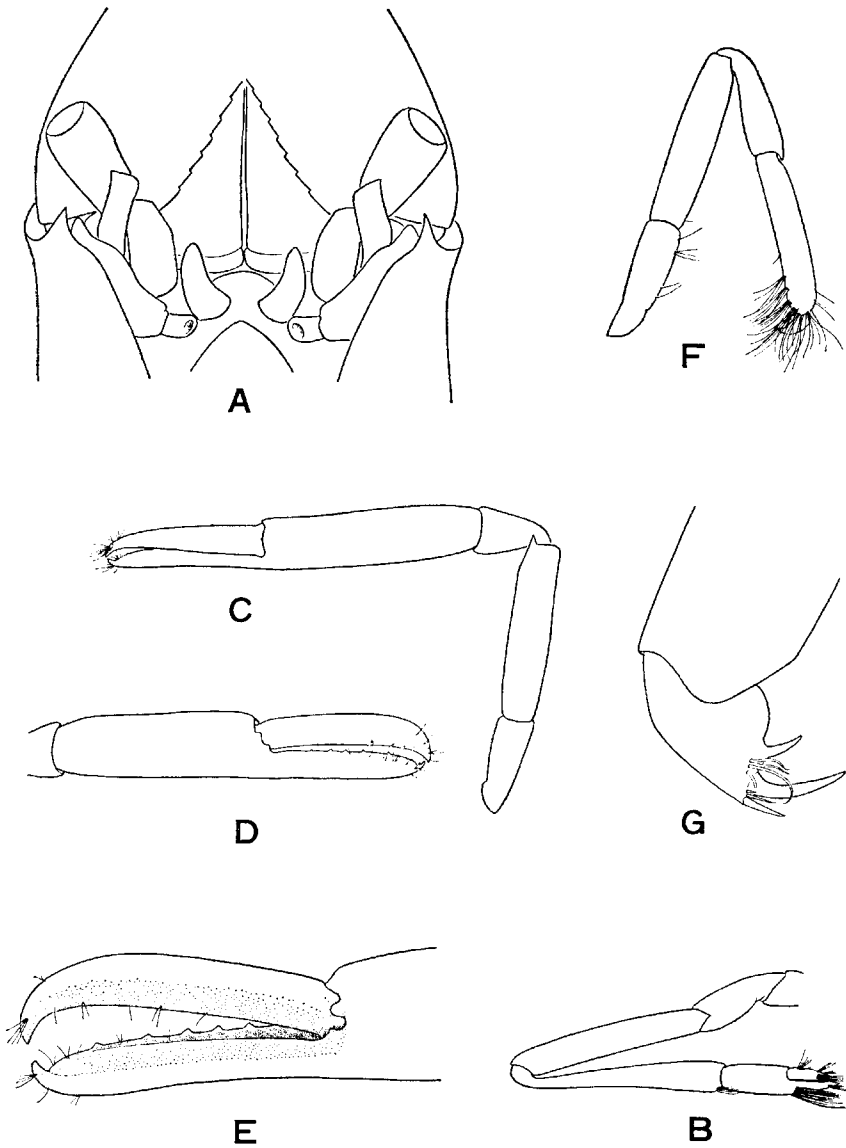


Fig. 4. *Araiopontonia odontorhyncha* gen. et sp. nov., holotype, ovigerous female. A, anterior part of carapace in ventral view, $\times 20.7$; B, first pereiopod, $\times 13.8$; C, second pereiopod in outer view, $\times 9.7$; D, chela of second pereiopod in outer view, $\times 9.7$; E, fingers of second pereiopod in inner view, $\times 18.4$; F, third pereiopod, $\times 13.8$; G, dactylus of third pereiopod, $\times 69.0$.

Carapace breadth	3.0
Rostrum length	3.6
Telson length	3.0
Length of antennal scale	3.6
Length of chela of second pereopods	4.9

Type. Holotype: Koniya, Amami-oshima I., Ryukyu Is., Japan, commensal host animals uncertain, Aug. 8, 1927 (ovig. ♀, BLIH, No. 113.

Remarks. With the possession of a pair of horn-shaped processes on the epistomal region and of a dagger-shaped rostrum having a distinct midrib the new genus *Araiopontonia* proves to be related to *Parapontonia* Bruce, represented by a single species, *P. nudirostris* Bruce, 1968, known from New Caledonia. Moreover, both of the genera are closely related in the other external characters, i. e., the compressed, elongate and smooth body, the presence of a supra-ocular spine, the similar, robust but elongate second pereopods, and a rudimentary arthrobranch on the third maxilliped. However, the both may be distinctly separable from each other in the following principal regards.

1. The rostrum in *Araiopontonia* bears on both the upper and the lower borders well-developed teeth, while it is edentate and entirely smooth in *Parapontonia*.

2. *Parapontonia* has a small antennal and a rather robust hepatic spine on the carapace. On the contrary, in *Araiopontonia* a strong antennal spine is present alone.

A morphological similarity to the new genus is also found in the Indo-West Pacific genera, *Pontoniopsis* Borradaile, *Stegopontonia* Nobili and *Tulcariocaris* Hipeau-Jacquotte. The crinoid-commensal shrimp, *Pontoniopsis*, represented by a single species, *P. comanthi* Borradaile, has an edentate rostrum with the midrib, and the dorsal ridge remains only a low carina. In addition, the fact of *Pontoniopsis* having the unequal second pereopods, and lacking the supra-ocular spine is considered as its definite, distinct factor from *Araiopontonia*. The distinctness of the new genus from the second genus, *Stegopontonia* living commensally with echinoderms, is in the rostrum whose dorsal lamina is distinct instead of the latter's being wanting entirely. And also the endite of the maxilla in the new genus is well developed, whereas it is reduced in *Stegopontonia*. In the third genus, *Tulcariocaris*, known to be associated with echinoderms, the rostrum like the new genus is dagger-shaped and dentated both dorsally and ventrally. However, the unequal second pereopods and the ambulatory legs of characteristic form in *Tulcariocaris* are different from those in the new genus.

The excessively broadened incisor process of the mandible in the present species appears rather unique within pontoniids, though the developed incisor process of fairly broad type is also seen in such species as *Periclimenes ceratophthalmus* Borradaile, *Fennera chacei* Holthuis and *Hamodactylus boschmai* Holthuis. In contradiction to that in the new species, *Parapontonia nudirostris* has the incisor process slender and normal.

The present specimen is entirely devoid of the spines on the posterior margin of the telson where three pairs of spines are usually present in pontoniids. Hence, this might presumably be on account of the damage or malformation of these spines.

The genera closely related to and made a comparison with *Araiopontonia* above have a habit of living commensally with crinoids or echinoderms, and from this fact an inference may be drawn that the new shrimp is also to be associated with the similar host animals, though the present specimen has been preserved in a bottle together with an alpheid shrimp, *Alpheus lottini* Guérin which is obligatorily associated with madreporic corals.

References

- Bruce, A. J., 1968. A report on some pontoniid shrimps from New Caledonia (Crustacea Decapoda Natantia). Bull. Mus. Hist. nat., Paris, (2) 39: 1148-1171, figs. 1-10.
- Holthuis, L. B., 1952. The Decapoda of the Siboga Expedition. Part XI. The Palaemonidae collected by the Siboga and Snellius Expeditions with remarks on other species. II. Subfamily Pontoniinae. Siboga Exped., Monogr. 39 (a 10): 1-253, figs. 1-110, 1 tab.