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On Two New Species of Decapoda Macrura

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Only one species of each of two families, Rhynchocinetidae and Stylodactylidae, viz., *Rhynchocinetes rugulosus* Stimpson and *Stylodactylus bimaxillaris* Bate has been known from Japanese waters. But a careful re-examination of the specimens which had been referred to *R. rugulosus* by myself revealed several particularities including the branchial arrangement which decidedly differ from those of *R. rugulosus*. Moreover, a scrutiny of material obtained from Kumanonada off Mie Prefecture enabled me to add a new species to the genus *Stylodactylus*.

Before proceeding any further, I take this opportunity of expressing my hearty thanks to Professor Arata Terao for his kind supervision under which the present work was carried out. Acknowledgement is also made to Mr. Sadayosi Miyake of Kyûsyû Imperial University and Mr. G. Abe for the collection of the material.

Rhynchocinetes uritai sp. nov.

Japanese name: Sarasa-ebi.

Rhynchocinetes rugulosus, Kubo, 1935, pp. 51–56, figs. 1-2.

Rhynchocinetes sp., Urita, 1921, p. 217.

Shell finely sculptured with a number of closely set lines, running almost across carapace but in such a peculiar manner on abdomen as to form contour lines culminating at protruded third dorsum. Rostrum large, a little longer than carapace (ca. 1.1 times), laterally compressed, without lateral ridge, movably articulated at base; upper border slightly concave, with a tooth at base and accessory one or two (near middle), tipped with compactly set 5–7 small teeth (mostly 5); lower border with

12–14 (mostly 12) much stronger teeth (fig. 1). Carapace provided with 2 teeth on median line, of which anterior one placed on frontal margin of carapace and the other one at about one-fourth of carapace; supraorbital and antennal spines present; pterygostomian angle spiniform. Abdomen dorsally rounded. Pleonic somites from first to third rounded on lower margin; fourth and fifth ones rather acutely pointed at postero-inferior angle of pleuron and with a minute notch at base of posterior margin; sixth one about half as long as carapace and about 1.6 times as long as wide at middle. Telson a little shorter than uropods, dorsally

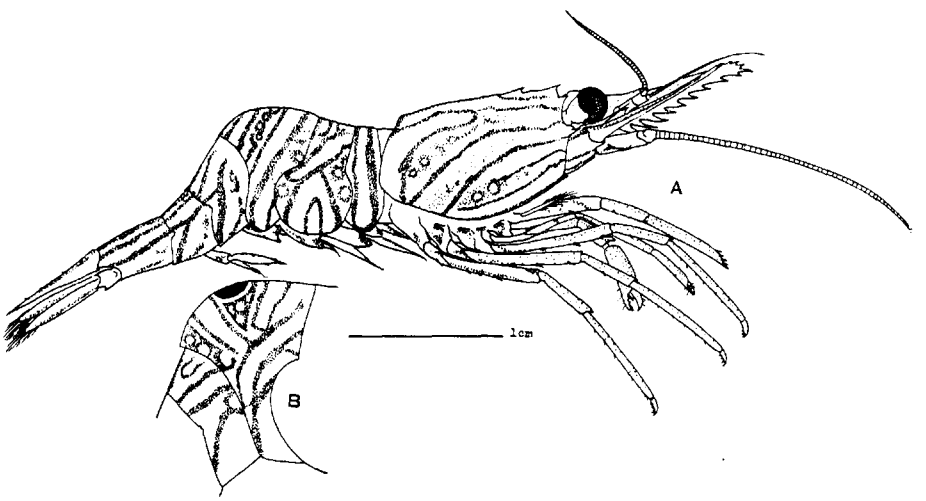

Fig. 1. *Rhynchocinetes uritai* sp. nov. *A*, male; *B*, third and fourth pleonic somites of female, 37.5 mm long.

rounded, subrectangular in outline, about 0.6 times as long as carapace, a little more than three times as long as wide and 8 times as long as wide respectively when measured between antero-lateral and postero-lateral angles; each dorso-lateral margin armed with 3 bristles, first one at one-third, second one at two-thirds and third one at one-sixth; distal margin pointed, with 3 pairs of bristles, intermediate one of which, the largest (fig. 3, A). Antennal peduncle reaches to about middle of rostrum; basal segment depressed, subrectangular (about 2.5 times as long as broad), bears on basal outer margin a large lateral process extending slightly beyond its distal margin, an acute spine stretching to about middle of intermediate segment; last two segments subequal in length, about 1.2 times as long as wide; last segment with inner thinner and outer thicker flagella. Antennal scale remarkably narrowed distally, outer margin almost straight, ending in a stout spine which projects far beyond distal tip of

lamella; about 4 times as long as wide, but does not surpass tip of rostrum (fig. 3, B). Mandible Y-shaped, provided with well defined molar and incisor processes, the latter one armed with 5 or 6 irregular teeth along distal margin; palp well developed, 3-segmented (fig. 2, A and A'). Maxillula cross-shaped; inner lacinia broad; endopodite slender with vestigial apical lobe (fig. 2, B). Maxilla with ear-shaped exopodite, provided with rather elongated and pointed posterior margin, fringed with long hairs; endopodite slender, unsegmented; distal endite well developed, made up of 2 broad lobes, distal one of the two broader than the other; proximal endite rather vestigial, comprising 2 lobes (fig. 2, *C*). All maxillipeds bear exopodite. First maxilliped with 2-lobed mastigobranchia; basal outer lobe of exopodite rather broad; endopodite slender, 2-segmented; inner margin with distal and proximal broad lobes, the former one of which about twice as wide as the latter one (fig. 2, *D*).

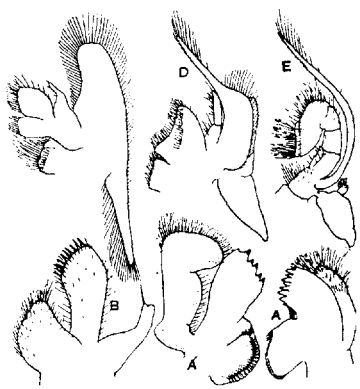

Fig. 2. Mouth-parts of *Rhynchocinetes uritai* sp. nov. *A*, mandible (outer view), ×11; *A'*, inner view of the same, ×11; *B*, maxillula, ×13; *C*, Maxilla, ×7; *D*, first mxilliped, ×7; *E*, second maxilliped, ×7.

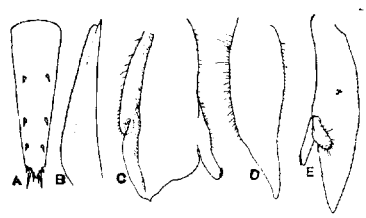

Fig. 3. *Rhynchocinetes uritai* sp. nov. *A*, telson, ×4; *B*, antennal scale, 4; *C*, endopodite of first pleopod of male, ×10; *D*, endopodite of first pleopod of female, ×10; *E*, endopodite of second pleopod of male, ×13.

Second maxilliped seven-jointed, provided with mastigobranchia and minute podobranchia (fig. 2, *E*). Third maxilliped pediform; last segment about twice as long as penult one, armed with several stout bristles near extremity. First cheliped short but robust, attaining distal margin of antennular peduncle; proportions against movable finger: palm 1.9, carpus 1.5, merus 2.0; fingers with inturned pointed tips, leaving a small gap between them, provided with no tooth on both prehensile edges; palm

about two and half times as long as wide. Second cheliped slender, extends somewhat beyond tip of antennular peduncle; palm and merus 3, carpus 5 in proportion to movable finger; fingers closely resemble those of first cheliped; palm ca. 5 times as long as wide. Third leg stouter than second one, projects more or less beyond tip of rostrum, dactylus biunguiculate, armed with 3 or 4 bristles along posterior margin; propodus a little less than twice as long as carpus, about 11 times as long as wide, fringed with numerous setate along posterior margin; merus about twice as long as carapace. Fourth and fifth pereiopoda resemble third one in general aspect. Endopodite of first pleonic appendage of male broad, inner margin provided with thumb-like appendix interna near postero-lateral angle; outer margin with one middle blunt lobule (fig. 3, *C*). Endopodite of second abdominal appendage of male carries a bar-shaped appendix masculina and stylamblys which is somewhat shorter than the former and provided with hairs (fig. 3, *E*).

Eggs subspherical, range from 0.40–0.42 mm and 0.47–0.53 mm in shorter and longer diameters respectively.

Branchial arrangement: A pair of pleurobranchiae present on those thoracic somites from fourth to eight. An arthrobranchia exists on each side of third to fifth somites. Podobranchiae found on second and third somites only. All thoracic somites excepting the last one provided with a mastigobranchia on each side as shown in the following table:—

	I	II	III	IV	V	VI	VII	VIII
Pleurobranchiae	—	—	—	1	1	1	1	1
Arthrobranchiae	—	—	1	1	1	—	—	—
Podobranchiae	—	1	1	—	—	—	—	—
Mastigobranchiae	1*	1*	r	1	1	1	1	—

*—two-lobed; r—rudimentary.

Colour in life: Body transparent, striated with red colour. Some intermediate areas between striae furnished with red circlets and irregular spots (fig. 1). Tip of rostrum and uropods stained with yellow.

Sexual dimorphism: Third maxilliped of male is relatively larger than that of female. Endopodite of first pleonic appendage of male is broader than that of female and provided with an appendix on inner margin and a blunt lobule on outer margin, but the endopodite of female is rather narrow, pointed at tip and with no appendix, and the endopodite of second pleopod of male carries each of appendix masculina and interna, but that of female has the latter appendix only. It is worth mentioning that a large black spot is found on the middle of the third pleonic tergum,

so far as my observations go, in females larger than 37.5 mm long without rostrum (fig. 1, *B*), but it is not found, at least in such males 28 mm and 30 mm long and in females smaller than those specimens mentioned above.

The present description is based on 2 males, 28 and 30 mm in body-length excluding rostrum, and 10 ovigerous females ranging 33–46 mm in body-length. The specimens were obtained from Kominato, Tiba Prefecture; Misaki, Kanagawa Pref.; Mitaziri, Hirosima Pref., and Okinosima, Hukuoka Pref.

The present species is closely allied to *Rhynchocinetes rugulosus* Stimpson in general appearance, but the former is easily distinguished from the latter by having (1) no arthrobranchia on twelfth thoracic somite and (2) both appendix masculina and stylamblys which are situated at middle of inner border of endopodite of second pleopod of male (those appendages are placed nearer to base of the endopodite than to its distal tip in *R. rugulosus*, Gordon, 1936, pp. 84–85). From all other species hitherto known, the present species is discriminated by a blunt lobule present on outer margin of endopodite of first abdominal appendage of male.

Stylodactylus multidentatus sp. nov.

Shell smooth. Rostrum shallow, horizontally straight, long, somewhat shorter than carapace, one and half times as long as antennal scale; dorsal carina extends backwards almost to the middle of carapace, armed with 39–47 spines, posterior 10–13 of them placed on carapace, ventral border with 17–21 spines (fig. 4). Carapace with supraorbital and

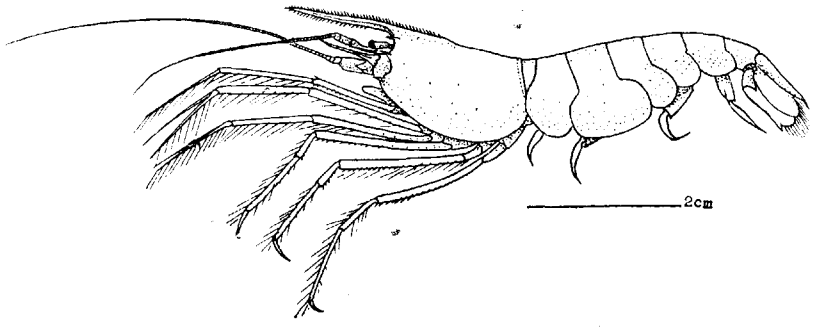

Fig. 4. *Stylodactylus multidentatus* sp. nov., female.

antennal spines; pterygostomian angle rounded but provided with a spine. Abdomen without dorsal carina along median line, pleonic somites from first to fifth rounded on inferior margin. Sixth somite about one-

third times as long as carapace. Telson slightly shorter than uropods, about half as long as carapace; ratios against width measured between postero-lateral angles: length along medin line 6.5, width in the proximal widest region 3; dorso-lateral margins rather defined, provided with four pairs of equidistant bristles, but the hindmost one placed close to postero-lateral angles; distal margin rectangular, pointed, provided with two pairs of outer longer (about one-third times as long as telson) and inner shorter setae (fig. 5, *A*). Eyes small but well pigmented. Antennal peduncle 3-segmented, first segment not broad, basal outer margin with a large spine reaching the middle of intermediate segment; second segment somewhat longer than wide; about as broad as and half time as long as basal one; third one as long as wide, more or less shorter than penult segment, provided with a pair of flagella, of which the outer one about as long as carapace, thicker and shorter than the other one (fig. 5, *B*). Antennal scale narrow, about five times as long as broad measured at middle, much surpassing tip of antennular peduncle, armed with several minute spines along outer margin which ends in a prominent spine extending far beyond distal margin of lamella (fig. 5, *C*). Mandible with a palp comprising two segments, of which basal one about twice as long as last one; both molar and incisor processes fused together, the latter provided with many irregular teeth along cutting edge (fig. 5, *D*, *E* and *F*.). Maxillula somewhat cross-shaped, inner lobe slender, remarkably curved inwards, outer one distally dilated and fringed with rather thickly set setae along distal margin; apical lobe of endopodite rudimentary (fig. 5, *G*). Maxilla with ear-shaped exopodite and three lobes along inner margin; endopodite papillar, unsegmented (fig. 5, *H*). All maxillipeds provided with exopodite. First maxilliped with two lobes on inner side, distal one of which rather narrow, about 2.5 times as long as wide measured at base; endopodite slender, two-segmented, basal segment ca. 3 times as long as terminal one; basal outer lobe of exopodite rather broad and oval in outline (fig. 5, *K*). Second maxilliped pediform, terminating in duplex joints comprising inner longer and outer shorter lobes; penult one rather slender, about five times as long as wide measured at middle and 1.7 times as long as longer lobe of last segment; antepenult one very short, about one-sixth of penult one; meropodite somewhat longer than protopodite (fig. 5, *L*). Third maxilliped slender, pediform about twice as long as carapace; distal three segments subequal in length, last segment styliform, about 0.7 times as long as carapace (fig. 5, *M*). First cheliped ca. 2.4 times of carapace, fringed with rather sparsely set long hairs along posterior margin; movable finger very slender and feeble, about as long as carpus but ca. 1.2 times as long as merus; palm remarkably short (fig.

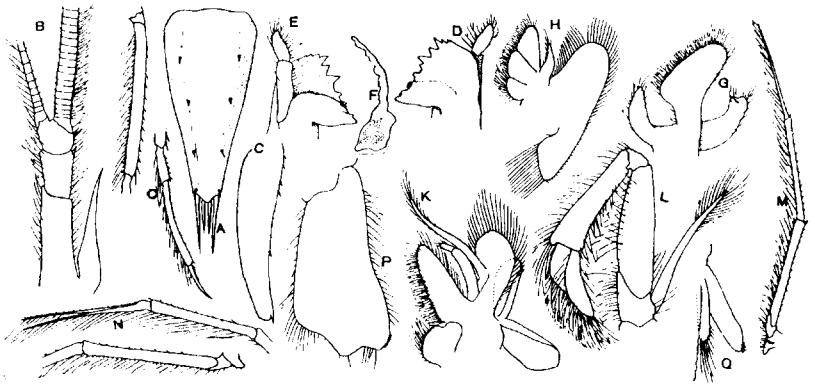

Fig. 5. *Stylodactylus multidentatus* sp. nov. *A*, telson, ×4; *B*, antennular peduncle, ×4; *C*, antennal scale, ×5; *D-F*, mandible, ×7; *G*, maxillula, ×7; *H*, maxilla, ×4; *K*, first maxilliped, ×5; *L*, second maxilliped, ×4; *M*, third maxilliped, ×1.3; *N*, first limb, ×1.3; *O*, third one, ×1.3; *P*, endopodite of first pleopod of male, ×10; *Q*, stylamblys and appendix masculina, ×10.

5, *N*). Second cheliped closely resembles the first one in general configuration. Third leg slightly shorter than first cheliped; dactylus slender, simply pointed, slightly recurved backwards; proportions against dactylus: propodus 2, carpus 1, merus 3.7 (fig. 5, *O*). Fourth and fifth legs nearly similar to third one in general aspect, though the last one a little longer than third, carpus ca. 1.5 times as long as that of third one. Endopodite of first pleopod spatulated, with a thicket of curled microscopic hairs on inner distal margin (fig. 5, *P*); and that of second one carries bar-shaped appendix masculina and stylamblys which is shorter and thinner than the former in male (fig. 5, *Q*) but stylamblys only in female.

From fourth to seventh thoracic somites provided with a pleurobranchia and an arthrobranchia respectively but eighth one pleurobranchia only as shown in the following table:—

	I	II	III	IV	V	VI	VII	VIII
Pleurobranchiae	—	—	—	1	1	1	1	1
Arthrobranchiae	—	—	2	1	1	1	1	—
Podobranchiae	—	1	—	—	—	—	—	—
Mastigobranchae	1*	*1	—	—	—	—	—	—

*—two-lobed.

Ova subglobular, about 0.8 mm and 0.6 mm in longer and shorter diameters respectively.

The description mentioned above is mostly based on an ovigerous female, 55.5 mm long without rostrum and a male, 47.0 mm long, secured from Kumanonada off Mie Prefecture at a depth of about 300 m. Two ovigerous females measuring 62.0 and 67.0 mm long and two males, 50.0 and 48.0 mm long from the same locality were also examined.

Note: The sex recognition is easily done by the endopodite of second abdominal appendage inasmuch as that of the male carries an appendix masculina.

The rostral spines of the specimens at my disposal appear to vary in number, viz., 39–47 on upper border and 17–21 on lower border.

The present species may be distinguished from the species hitherto known as shown in the following key which is modified from that of Kemp (1925) :—

A. Rostrum with teeth on its lower border.
  B. Antennal scale with a series of spines on its outer edge.
    C. Propodus of third leg less than 3 times as long as dactylus.
      D. Pleura of first five pleonic segments without marginal spines; telson with 4 pairs of dorso-lateral spines; rostrum armed with 39–47 spines on upper border and 17–21 on lower border ...*S. multidentatus* sp. nov.
      D′. Pleura of first five pleonic segments with marginal spines; telson with 5 pairs of dorso-lateral spines; rostrum with 20 spines above, 7–9 ones below ..... *S. amarynthis* de Man
    C′. Propodus of third leg more than 6 times as long as dactylus .....
      S. rectirostris A. Milne-Edwards
  B′. Antennal scale without a series of spines on its outer edge .....
    S. bimaxillaris Bate
    S. serratus A. Milne-Edwards
    S. discissipes Bate
A. Rostrum without teeth on its lower border; antennal scale with outer edge entire ..... *S. sibogae* de Man
  S. investigatoris Kemp

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