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INVERTEBRATE
ZOOLOGY
Crustacea

Reprinted from the Journal of the Tokyo University of Fisheries,
Vol. 38, No. 2. December, 1951.

**SOME MACRUROUS DECAPOD CRUSTACEA FOUND
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OF FOUR NEW SPECIES**

Itsuo KUBO

(Received Oct. 30, 1951)

Included in the present report are descriptions and discussions of the following eight species basing on specimens collected from various localities by many people, viz., *Parapenaeus longipes* ALCOCK, *Solenocera utinomii*, sp. nov., *Athanas setoensis*, sp. nov., *Periclimenes (Ancylocaris) tosaensis*, sp. nov., *Ogyrides striaticauda* KEMP, *Spirontocaris crassirostris* sp. nov., *Lysmata (Hippolysmata) kükenthali* (DE MAN) *Lysmata (Hippolysmata) vittata* (STIMPSON). Of these four species, ones are new to science, three ones, except *Lysmata (Hippolysmata) vittata*, are known species as new Japanese records.

Moreover, a noticeable matter found in this paper is that the genus *Hippolysmata* (STIMPSON, 1860) has been combined to the genus, *Lysmata* (Risso, 1826) for the reason given later on.

It should be given herewith that the body-length used in this paper is represented by the distance measured from the post-orbital margin of carapace to the tip of telson. The type specimens of the two new species, *Solenocera utinomii* and *Athanas setoensis* have been deposited in the collections of the Museum of Seto Marine Biological Station of Kyoto University, and the other two ones of *Periclimenes (Ancylocaris) tosaensis* and *Spirontocaris crassirostris* have been deposited in the collections of the Fisherybiology laboratory of the Tokyo University of Fisheries.

This opportunity is taken to the people by whom the specimens dealt with were collected and placed at my disposal. I must also to express my thanks to the Ministry of Education by which the present investigation has undergone the financial aid.

***Parapenaeus longipes* ALCOCK**

(Figs. 1-3, Tab. 1)

Parapenaeus longipes, ALCOCK, 1905, p. 525; 1905, p. 33-34, pl. 6, figs. 18, 18a-b.

The specimens at the disposal of the present author are discrepant with the figure (Pl. 6, fig. 18) given by Alcock for his *Parapenaeus longipes* in only a point being as follows. As to the antennular peduncle, the second segment is about twice as long as the third one in the present specimens. Whilst it is shown to be about one and half times the length of the third segment in the

illustration (description of this matter is devoid) given by ALCOCK. The present specimens are, however, well in agreement with the description and figures made by ALCOCK in all other important characteristics. Therefore the specimens examined are tentatively referred to the present species.

The description and figures worked out by ALCOCK are excellent and sure, but those of some characteristics are less sufficient. Moreover some traits important for the taxonomy of this species are overlooked by him. So that in the following lines some additions for the description may be done on the color pattern of pleon, number of rostral spines, length of antennular flagella, mouth-parts, sexual organs of both sexes, appendix masculina, and stomodaeal ossicles.

The first 4 abdominal segments are furnished with narrow cross bands of rather light reddish brown color near posterior border of lateral surface of each segment in alcoholic specimens (Fig. 1).

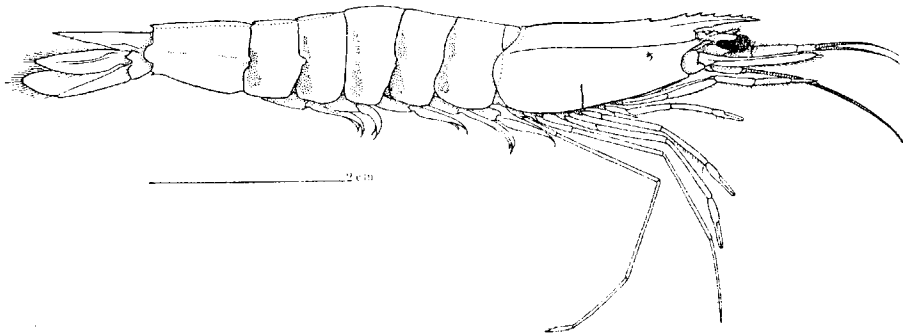


Fig. 1. *Parapenaeus longipis* ALCOCK, male.

Pleonal segments from fourth to sixth are sharply carinated along dorso-median line, and the carina of each segment ends posteriorly into minute acute spine.

Table 1. Measurements in mm and counts of bodily parts of *Parapenaeus longipis* ALCOCK. F, female; M, male; *, inserted on carapace.

No.	Sex	Body-length	Carapace length	No. of rostral spines	Length of antennular flagella	
					Upper	Lower
1	F	72.0	20.0	6+1*	9.3	12.2
2	"	---	18.5	7+1	9.5	13.5
3	"	66.0	18.0	6+1	10.0	12.4
4	"	65.5	17.5	6+1	9.0	12.0
5	"	63.0	17.3	6+1	8.5	12.4
6	"	---	16.4	6+1	8.2	11.2
7	"	60.0	16.0	6+1	7.3	10.0
8	"	---	14.0	6+1	6.5	8.0
9	M	56.8	15.0	6+1	14.5	17.4
10	"	---	14.8	6+1	12.0	14.0
11	"	44.0	10.8	6+1	4.5	---

Rostral spines including one inserted on carapace vary from 7 to 8 in number, but usually 7, in 1 out of 11 specimens dealt with has 8 ones (Table 1).

Upper antennular flagella 20-25% shorter than lower ones in both sexes. The flagella show remarkable sexual dimorphism in length as set forth already by ALCOCK, much longer in male as shown in Fig. 2. The difference seems to appear already at the time when the carapacial length measures about 11 mm (about 44 mm in body-length).

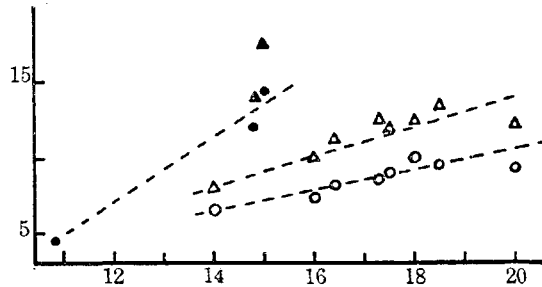


Fig. 2. Lengths of antennular flagella (ordinate) of *Parapenaeus longipis* in relation to the carapacial length. Circles, upper flagella; triangles, lower ones; solid marks, male; soft ones, female.

Antennular flagella 1.4-1.5 times as long as body-length in specimens measuring 60-70 mm in body-length.

Mandible well developed, composed of well calcified molar and incisor processes and an endopodite. Incisor process provided with two illdefined teeth bearing bluntly pointed apex on cutting edge, and armed with a similar tooth on each anterior and posterior angle. Distal segment of endopodite about 1.6 times as long as wide (Fig. 3, A-C). Maxillary palp (Fig. 3, D) rounded on distal end like that of *Parapenaeus fissurus* (KUBO, 1949, fig. 143, A), but the tubercle found on the basal outer border is less developed. Maxillae have anterior and posterior proximal endites, anterior one distally divided into two lobules, but the other one not divided (Fig. 3, E); endopodite not jointed, has a finger-like process on disto-median edge. Second maxilliped J-shaped, 7-jointed; merus about half the length of this maxilliped, ca. 2.6 times as long as wide. Third maxilliped pediform, reaches to distal rim of antennal scale in a female measuring 72 mm long, 7-segmented; ischium 0.8, merus 0.6, carpus 0.3, propodus 0.28, dactylus 0.51 in proportion to basis in length, ischium about 4.8 times as long as wide in the same specimen given above.

Petasma about 3.8 times as long as wide, furnished with petaloid apical lobules. Of those apical lobules, the lateral ones are twisted forming a horn-like process directed forwards with a lumen, have a pointed short process directed distomedially on distal dorsal edge. Median lobes have a pair of thumb-like protuberance directed backwards on dorsal lateral border near

proximal end. Lateral lobes with a pair of prominent pointed spines directed strongly inwards on dorso-lateral surface just behind the base of the horn-like apical process (Fig. 3, *F, G*).

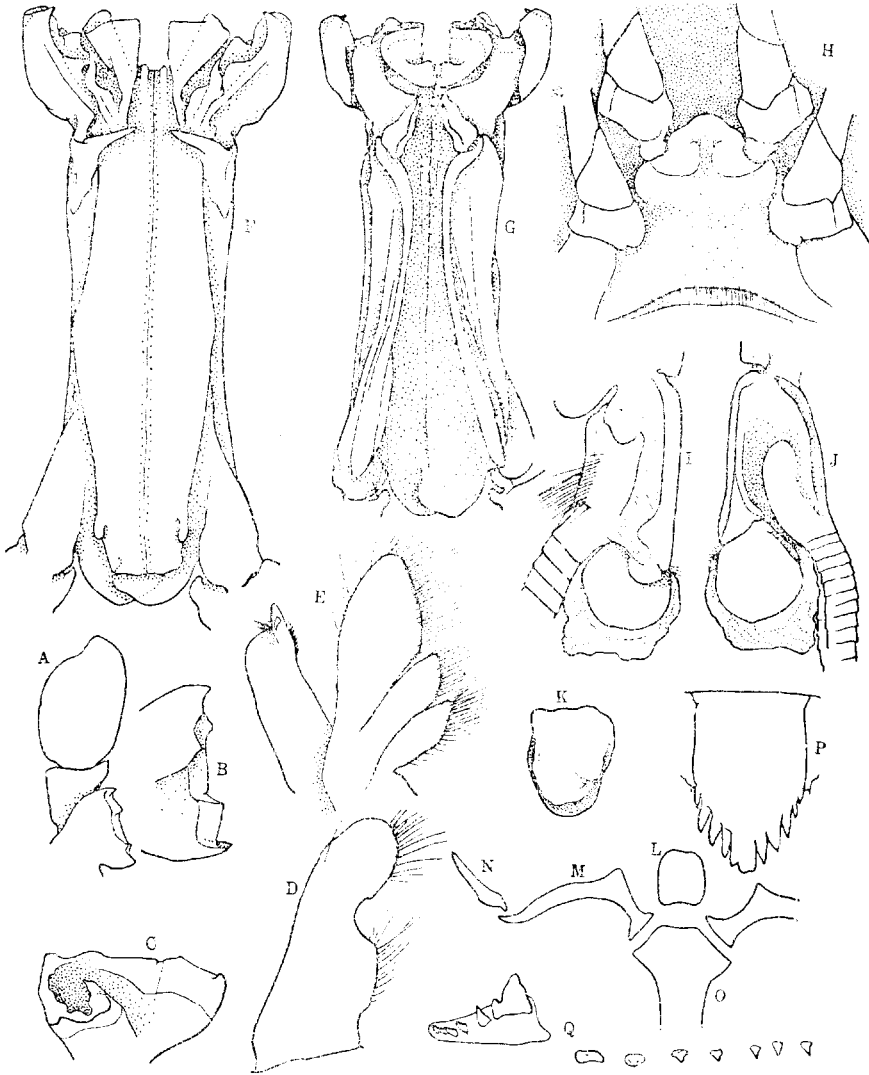


Fig. 3. Bodily parts of *Parapeanus longipes*. *A*, ventral aspect of mandible, $\times 6$; *B*, dorsal view of mandible without palp, $\times 10$; *C*, inner view of mandible without palp, $\times 10$; *D*, endopodite of maxillula, $\times 17.5$; *E*, endopodite and inner laciniae of maxilla, $\times 17.5$; *F*, dorsal aspect of petasma of a male, 57.0 mm in body-length, $\times 14$; *G*, ventral aspect of petasma of the same male, $\times 11.5$; *H*, thelycum of a female, 66 mm long, $\times 6$; *I*, anterior view of appendix masculina of a male, 57 mm long, $\times 14$; *J*, posterior view of the same appendage of fig. *I*; *K*, apical surface of distal piece of appendix masculina, $\times 14$; *L*—*O*, cardiac, pterocardiac, prezygo-cardiac, and anterior part of urocardiac ossicles respectively, $\times 17.5$; *P*, Urocardiac-prepyloric ossicle, $\times 25$; *Q*, some teeth found on posterior part of cardiac plate and zygo-cardiac ossicle, $\times 25$.

Thelycum nearly resembles that of *Parapenaeus investigatoris* in general feature having anterior and posterior parts. Anterior part shows a trilobate condition on anterior border, somewhat medially concave. Posterior part flattish on ventral surface (Fig. 3, *H*).

Appendix masculina similar to that of other species of the genus *Parapenaeus*: distal piece bears a transparent membranous flap along lateral and distal margins, apical surface flattish and rather strongly lifted (Fig. 3, *I-K*).

Stomodaeal ossicles show little deviation in their configuration comparing with those of other species which belong to the genus *Parapenaeus*. Lateral plate of cardiac chamber of stomach armed with 22-23 pointed teeth arranged in a straight longitudinal line. Zygocardiac ossicle with 6-7 sharply pointed teeth decreasing in size posteriorly (Fig. 3, *L-O*). Urocardiac-prepyloric ossicle provided with 11-13 teeth along distal margin (Fig. 3, *P*).

The description given above is based on 8 females and 3 males taken by Mr. J. Yasuda during the period from Oct. 25 to Dec. 26, 1950. Females range from ca. 55 to 72 mm in body-length (14-20 mm in carapacial-length), males measure 44-56.8 mm in body-length (10.8-15.0 mm in carapace-length).

Locality; Kii Channel, at a depth of 60 m; bottom, mud.

Distribution; Indian Ocean [Off Ganjan coast, 7-35 fathoms; Malabar coast, 26-31 fathoms; Sandhead (Hooghly River)] (ALCOCK).

Remarks: The following matters are worthy of mentioning in this place. Firstly the posterior proximal endite of the maxilla of the present species is simple instead of bearing two apical lobules. It that the endite in question has two apical ones is found to be common to all the examined species of the genus *Parapenaeus*, viz., *P. fissurus* (BATE), *P. lanceolatus* KUBO, *P. sextuberculatus* KUBO, *P. investigatrix* ALCOCK and ANDERSON (KUBO, 1949, p. 35). Secondly the spine (Spine-e in the paper of KUBO, 1949, pp. 69-70) attached to the dorsal lateral border of the median lobe of the petasma is directed backwards. This matter also appears to be peculiar to this species so far as my investigation goes. At least in *P. fissurus*, *P. sextuberculatus*, *P. lanceolatus* and *P. investigatrix*, the spine is directed laterally or somewhat postero-laterally.

Finally it may be said that the present species stands much far from common forms of the genus, to which the present species is embraced, in having such peculiarities mentioned above in addition to having no spine on the antero-lateral angle of the carapace.

***Solenocera utinomii* sp. nov.**

(Fig. 4)

Body glabrous. Carapace rounded on antero-lateral angle, armed with epigastric, supraorbital, post-orbital, antennal, and hepatic spines. Supra-

orbital spine minute, developed on post-orbital margin. Antennal one rather minute. Epigastric spine stands at one-fourth of carapace. Cervical groove well developed. Hepatic carina defined in short distance, its anterior portion runs obliquely downwards reaching to antero-lateral angle of carapace. Rostrum straight, a fourth the length of carapace, about three times as long as wide, pointed at tip; upper border straight, but lower one recurves upwards. Rostral spines 5 in number, posterior 2 of which are inserted on carapace (Fig. 4, A).

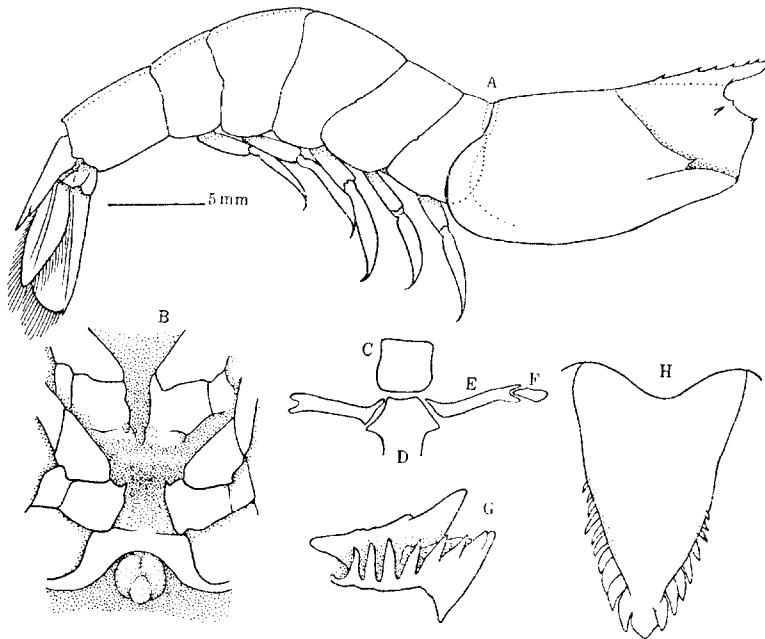


Fig. 4. *Solenocera utinomii*, sp. nov. A, lateral aspect of body of the type specimen, female; B, thelycum, $\times 7.5$; C—F, cardiac, anterior part of uro-cardiac, ptero-cardiac, and prezygo-cardiac ossicles respectively, $\times 15$; G, zygo-cardiac ossicle, $\times 40$; H, prepyloric ossicle, $\times 40$.

Abdomen ca. 2.3 times as long as carapace, has a well defined dorso-median carina on each segment from fourth to sixth, the carina of sixth segment ends in a minute pointed spine; sixth segment a little shorter than half of carapace, about 1.4 times as long as wide. Telson somewhat shorter than half the length of carapace.

Mouth-parts show no characteristics compared with those of other species dealt with in the paper worked out by the present writer (1949).

First pereopod 13.5 mm in length, extending a little beyond tip of rostrum. Fourth one measures 25 mm in length. Fifth one has a small pointed spine on inner edge of coxa (Fig. 4, B).

Thelycum not developed on thoracic sternite between fourth and fifth pereopods, but a circular elevation is found to exist on first pleonic sternite, upper surface of the elevation found to be divided into three regions as seen in Fig. 4, *B*.

Stomodaeal ossicles resemble those of other species of the genus to which the present species belongs (Figs. 4, *C-H*). Zygocardiac ossicle with eight large teeth on inner row. Urocardiac-prepyloric one armed with 8-10 teeth on each lateral margin.

Type specimen: badly mutilated female, without eyes, antennae, antennules, third maxilliped, legs except first and fourth ones; secured in March, 1944, by Dr. H. Utinomi, to whom the scientific name of this species is dedicated, 39 mm in body-length, 12 mm in carapacial length.

Type locality: off Kii Peninsula, at a depth of ca. 150 m.

The present form is very similar to *Solenocera brevipes* KUBO (1949), especially in the form of rostrum, hepatic carina, and antero-lateral angle of carapace. But it greatly differs from *S. brevipes* in the shape of thelycum and third pleonic somite. The pleonic somite in question is not provided with dorso-median carina in the present species, but furnished with that in *S. brevipes*.

***Athanas setoensis* sp. nov.**

(Figs. 5, 6)

Rostrum straight, with sharply pointed tip, extending as far as about middle of third segment of antennular peduncle, about a third of the length of carapace. Carapace without dorso-median carina, rounded on antero-lateral angle. Supra-corneal spine absent. Extra-corneal spine well developed. Infra-corneal one absent (Fig. 6, *A*).

Abdomen a little more than twice the length of carapace, has no dorso-median carina. Sixth pleonal somite a little less than a third of the length of carapace. Telson sub-rectangular in upper aspect, more or less diminishing width posteriorly, ca. 0.4 times as long as carapace, does not reach to tip of uropods, three times as long as wide at posterior end, armed with two anterior and posterior pairs of spinules near lateral margin of dorsal surface at middle and at three-fourths respectively, furnished with a short and a long spinules on distal border close each lateral angle in addition to very long hairs developed on the same border (Fig. 6, *B*).

Antennular peduncle consists of three segments, first segment with a

large acute lateral process reaching to about middle of third joint of this peduncle, second segment about half the length of first one, third one as long as second one. Inner antennular flagellum somewhat shorter than carapace, divided into two inner longer and outer shorter rami at fourth segment; shorter ramus made up of five segments, provided with long hairs on ventral surface (Fig. 6, C). Outer antennular flagellum more or less longer than inner one. Antennal scale extending well beyond distal end of antennular peduncle, has an acute disto-lateral spine which is well exceeded by distal edge of the scale.

Mandible closely resembles that of *Athanas parvus* De MAN in general feature having two-jointed endopodite and incisor process armed with 7 rather large and 8 minute teeth on cutting edge (Fig. 6, D). Maxillula cross-shaped, endopodite has an apical lobe (Fig. 6, E). Maxilla shows close resemblance to that of *Athanas parvus* De MAN and *A. lamerifer* KUBO, endopodite small, unsegmented (Fig. 6, F). Third maxilliped pediform, with exopodite; antepenultimate joint about six times as long as wide, a little more than thrice the length of penultimate joint; ultimate one twice the length of penultimate one (Fig. 6, H).

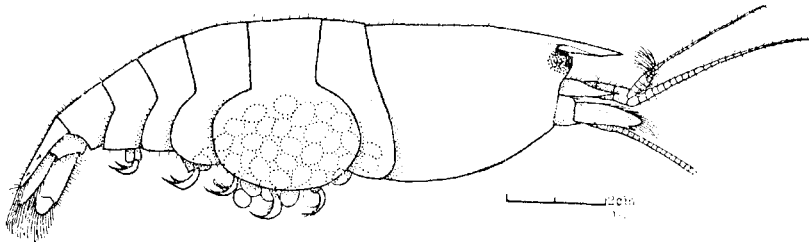


Fig. 5. *Athanas stansis* sp. nov. Ovigerous female, 8.6 mm in body-length

First pereopods subequal in length, about two times as long as third maxilliped; merus ca. 1.6 times as long as ischium, about five times as long as wide at middle; carpus distally somewhat widens, about four times as long as wide at distal extremity, nearly equals to merus in length; chela about 0.8 times the length of carpus, palm twice as long as wide at middle, movable finger ca. 0.66 times as long as palm, cutting edges of both fingers simple (Fig. 6, I, J). Second leg as long as first one, somewhat slenderer than first one; merus ca. five times as long as wide; carpus five-segmented, one and half times the length of merus; chela small, a third the length of carpus, palm about 1.4 times as long as wide, as long as movable finger (Fig. 6, K). Fourth

leg more or less shorter than second leg; ischium 1, merus 1.8, propodus 1.9, dactylus 0.6 in proportion to carpus in length; merus about four times as long as wide; propodus ca. 8.5 times as long as wide, armed with equidistantly set short bristles along posterior margin; dactylus simple, sharply pointed at tip (Fig. 6, *L*). Fifth one closely resembles fourth one in general configuration (Fig. 6, *M*).

Eggs ovoidal, measure 0.40–0.45 mm in longer diameter, 0.28–0.30 mm in shorter one.

Type specimen: ovigerous female, 8.6 mm in body-length, collected, by Dr. T. Tokioka of Seto Marine Biological Station of Kyoto University, in the vicinity of the Station in Sept. 1949.

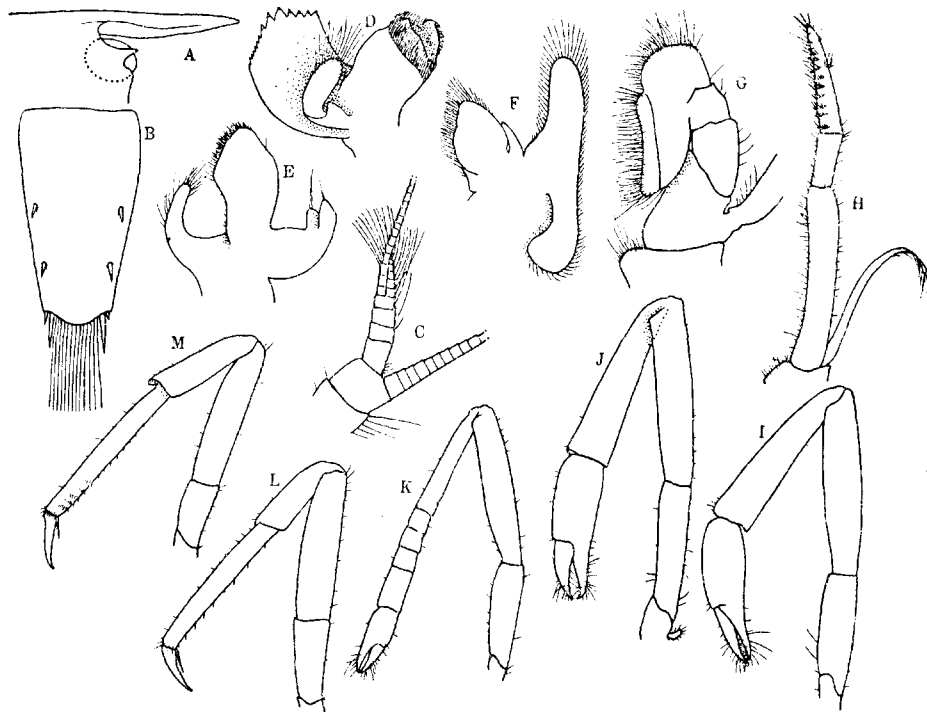


Fig. 6. Bodily parts of *Athanas setoensis* sp. nov. *A*, rostrum, eye, and extra-corneal spine, $\times 18$; *B*, telson, $\times 26$; *C*, antennule, $\times 18$; *D*, mandible, $\times 40$; *E*, maxillula, $\times 40$; *F*, maxilla, $\times 26$; *G*, second maxilliped, $\times 40$; *H*, third maxilliped, $\times 18.5$; *I*, right first cheliped, $\times 18.5$; *J*, left first cheliped, $\times 18.5$; *K*–*M*, second, fourth, and fifth legs respectively, $\times 18.5$.

The species newly established herewith shows much affinity to such many species as *Athanas orientalis* PEARSON, *A. esakii* KUEO, *A. haswelli* COUT., *A. amazone* HOLTHUIS, *A. minikoensis* COUT., *A. sibogae* DE MAN, *A. jedanensis*

De MAN, *A. granti* COUT., *A. dimorphus* ORT., *A. dimorphus monoceros* HELLER, *A. lamellifer* KUBO, *A. parvus* De MAN, *A. kominatoensis* KUBO, *A. japonicus* KUBO, and *A. oshimai* YOKOYA in having no supracorneal spine, and to the following species, viz., *A. csakii*, *A. lamellifer*, *A. japonicus*, *A. oshimai*, *A. crosslandi* TATTERSAL, *A. orientalis*, *A. haswelli*, *A. minikoensis*, *A. dimorphus*, *A. dimorphus monoceros*, *A. areteformis*, COUT., *A. naifarocensis* COUT., *A. tenuipes*, *A. amazone*, *A. nitescens* (LEACH) [= *A. veloculus* BATE] in possession of posterior three pairs of pereopods with simple dactylus. Also it has relation to *A. jedanensis* and *A. areteformis* in the character of carapace without infra-corneal spine.

But the present new form is easily assortable from all the forms given above and others in the peculiarity of the first chelipeds in which the carpus is elongated, as long as merus, and considerably longer than the chela.

Periclimenes (Ancylocaris) tosaensis sp. nov.

(Figs. 7, 8, Tab. 2)

Shell smooth. Rostrum considerably ascendent, somewhat shorter than carapace, reaching a little beyond distal end of second segment of antennular peduncle, sharply pointed at tip, moderately deep, about six times as long as deep at deepest portion, dorsally convex with 7 teeth, ventrally also convex with 2 denticles near tip (Fig. 7). Carapace dorsally rounded, about a quarter of body-length, armed with epigastric, antennal, and hepatic spines, without supra-orbital spine; infra-orbital angle produced into an acuminate process; antero-lateral angle rounded.

Abdomen dorsally rounded in anterior two and last three (including telson) segments, but rather markedly carinated dorsally in posterior half of third segment and somewhat so in about anterior half of fourth one; fifth segment slightly less than half of carapace; sixth segment a little more than twice the length of fifth one; pleura of pleonic segments from first to sixth nearly straight on lower margin. Telson dorsally rounded, falls short of uropods, ca. four-fifths as long as carapace; dorsally provided with two anterior and posterior pairs of spinules, anterior pair stands a little backwards to middle of the length of telson, posterior one at midway between the first pair and the tip of telson (Fig. 8, A); posterior margin somewhat drawn out backwards, minutely pointed at middle, armed with three pairs of spinules (Fig. 8, B).

Eye extending beyond middle of rostrum.

Antennular peduncle made up of three segments; basal segment twice

as long as wide, furnished with a large basal lateral and a minute disto-lateral spines, distal border remarkably produced into a terminal lobe which is rounded on apex, extending beyond middle of second antennular segment; second segment one and half times as long as wide. somewhat narrower than half the width of basal segment; third segment as long as and as wide as second segment (Fig. 8, *C*). Outer antennular flagellum about 1.8 times the length of carapace, divided into outer longer and inner shorter branches at 14th joint, outer branch consists of 31 joints and the other one 10 joints. Inner antennular flagellum simple, about 1.3 times as long as carapace, composed of 37 joints (Fig. 8, *D*). Antennal scale four times as long as wide at base of disto-lateral spine; broadly rounded on anterior margin which reaches well beyond tip of disto-lateral spine (Fig. 8, *E*). Carapocerite extending to a third of antennal scale.

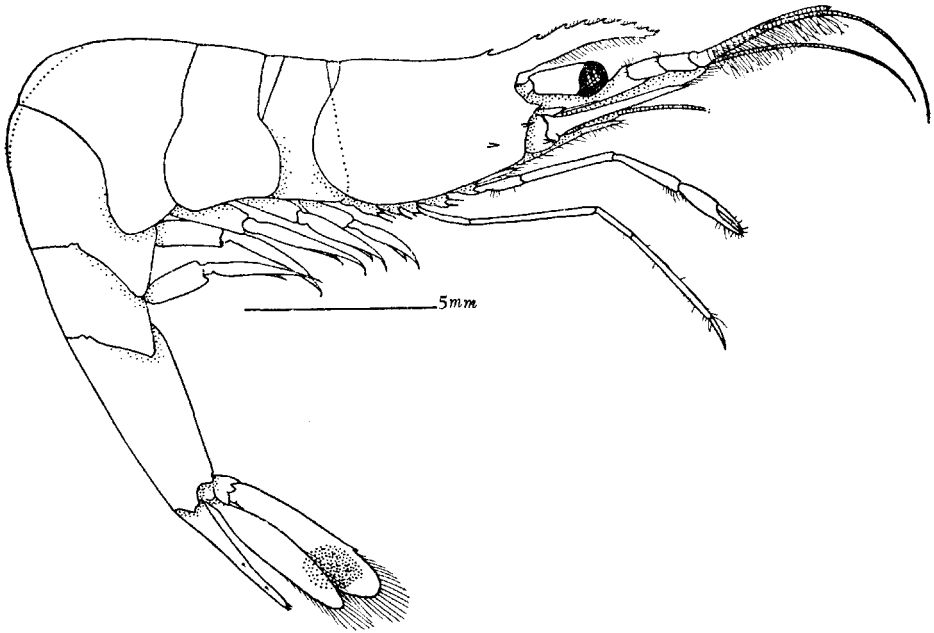


Fig. 7. *Periclimenes (Aneplocaris) tosaensis* sp. nov., male, 24.0 mm in body-length.

Mandible Y-shaped, without palp; molar process with five teeth irregular in size; incisor one armed with three teeth on cutting edge (Fig. 8, *F*). Maxillula cross-shaped; inner lacinia moderate in size, outer lacinia little longer than inner one, furnished with a number of setae on distal edge; endopodite unsegmented, with small palp (Fig. 8, *G*). Maxilla with an inner endite which has two narrow apical lobes; endopodite not jointed (Fig. 8, *H*). All maxillipeds carry an exopodite. First maxilliped with unsegmented pointed

small endopodite, and epipodite (Fig. 8, *I*). Second maxilliped J-shaped (Fig. 8, *J*). Third one pediform, extending as far as carpocerite; penultimate segment about six times as long as wide at middle, a little shorter than antepenultimate segment; last segment three-fourths the length of penultimate one (Fig. 8, *K*).

First cheliped reaching beyond tip of antennular peduncle by entire finger; merus ca. 8.5 times as long as wide, about 1.35 times as long as carpus; carpus distally more or less increases in size, five times as long as wide at distal end; palm ca. 2.2 times as long as wide at middle; finger simple on cutting edge, a little shorter than palm (Fig. 7). Third leg slender, extending beyond tip of antennular peduncle by dactylus and a quarter of propodus, ischium 1.1, merus 2.6, propodus 2.4, dactylus 0.8 in proportion to carpus in length; dactylus simple (Fig. 8, *L*).

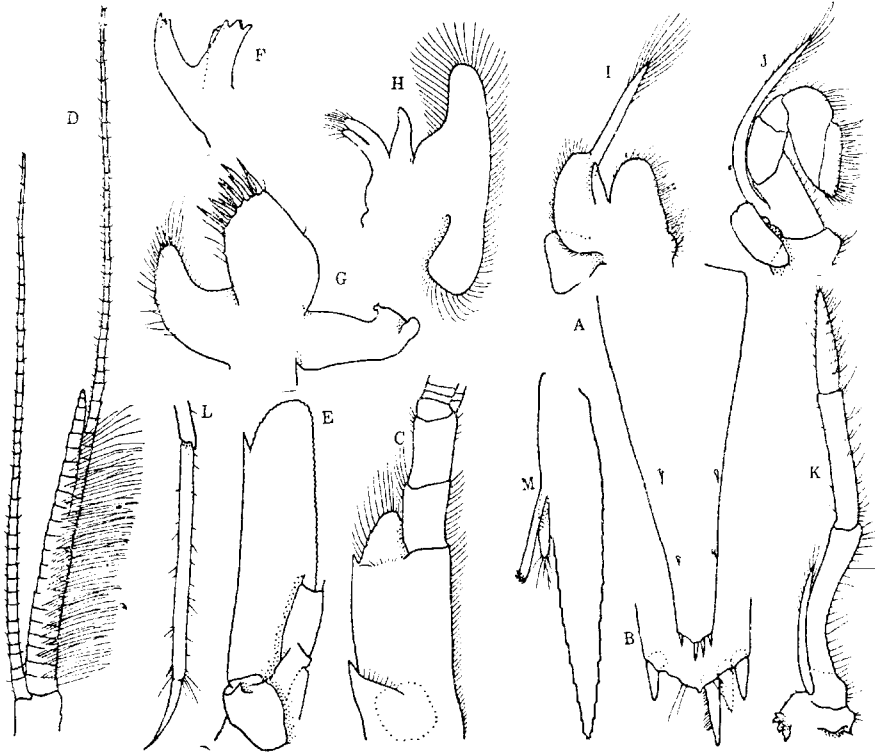


Fig. 8. Bodily parts of *Perichimenes (Ancylocaris) tosaensis*, sp. nov. *A*, upper aspect of telson, $\times 13$; *B*, tip of telson, $\times 40$; *C*, antennular peduncle, $\times 10$; *D*, antennular flagella, $\times 10$; *E*, antennal scale and carpocerite, $\times 9$; *F*, mandible, $\times 18.5$; *G*, maxillula, $\times 40$; *H*, maxilla, $\times 18.5$; *I*, first maxilliped, $\times 15$; *J*, second maxilliped, $\times 18.5$; *K*, third maxilliped, $\times 13.5$; *L*, last two segments of third pereopod; *M*, endopodite of second pleopod, $\times 18.5$.

Second pleopod carries an endopodite which has an appendix interna and an appendix masculina at a third of inner edge (Fig. 8, *M*).

Outer uropods marked with a large reddish brown (in formalin) colour near tip.

Type-specimen: male, 24 mm in body-length, 5 mm in carapacial length, missing the antennular flagella, second, fourth, and fifth pereopods, taken by a trawl net and collected by Mr. T. Kawazawa in March, 1951.

Type-locality: off Usa, Takaoka-gun, Kōchi Prefecture.

The present species newly erected in this place appears to be most closely related to the Californian species, *Periclimenes (Ancylocaris) lucasi* CHACE (1937) in general feature, but it is separable from the latter as shown in the Table 2.

Table 2. Showing differences between the present new species and *P. (Ancylocaris) lucasi*.

Items	<i>P. tosaensis</i>	<i>P. lucasi</i>
(1) Rostrum	armed with 7 teeth on dorsal edge and two ones on ventral rim; ventral edge more or less concave.	armed with 8-11 teeth on upper rim and 1-3 ones on lower rim; ventral edge straight or even slightly concave.
(2) Third pleonic somite	dorsally with rather developed hamp.	dorsally with strikingly developed hamp.
(3) Sixth pleonic segment	somewhat more than twice as long as fifth pleonic somite.	twice as long as fifth abdominal somite.
(4) Telson	much shorter (0.7 times as long as sixth pleonic somite.	a little longer than sixth abdominal segment.
(5) Outer antennular flagella	bifid at the 14th joint; inner ramus with 10 joints.	bifid at the 10th joint; inner ramus with four joints.
(6) Antennal scale	four times as long as wide at base of disto-lateral spine.	three times as long as wide at base of disto-lateral spine.
(7) Maxilla	inner endite distally forks into two lobes.	inner endite simple.

Ogyrides striaticauda KEMP

(Japanese name: Moyō-tsunome)

(Figs. 9, 10; Tab. 3)

Ogyrides striaticauda KEMP, 1915, pp. 284-289, figs. 28, a, b; 29, a-f; 30, a-g.

Apart from some minute points, the specimens dealt with tally well with the description and figures given by KEMP in all important traits. The

discrepancies between them are slight as shown in the Table 3, and seem to be only fluctuations within a species. Therefore they are identified to the present species.

Table 3. Differences between the present specimens and the Kemp's description of *Ogyrides striaticauda*.

Items	Present specimens	KEMP's description
(1) Rostral spines	8-10, mostly 8-9 in number.	7-9 in number.
(2) Sixth pleonic somite	a little longer than fifth one.	about equal to fifth one in length.
(3) Telson	nearly equal to, or slightly shorter than sixth pleonic somite, minutely bifurcate or abruptly truncate at tip.	a little longer than sixth pleonic somite, rather sharply angled at tip.
(4) Antennular flagella	different in length, about one and half times as long as antennular peduncle in inner ramus, and ca. 1.8 times as long as the peduncle in outer one.	are of the same length, about as long as antennular peduncle.
(5) Antennular scale	nearly reaches to distal end of the second segment of antennular peduncle; three times as long as wide at middle.	reaches only to the middle of the second segment of antennular peduncle; three and a quarter times* as long as wide.
(6) Fourth pereopod	a little shorter than fifth pereopod.	longest of the last three pairs of legs.

*, three times according to his figure.

Some supplements of the telson, rostral spines, antennule, second abdominal appendages, and eggs for the description worked out by KEMP, and additional illustrations may be given herein on basis of five males and four females.

Rostral spines run 8 to 10 in number. Of 9 specimens available, four have 9, three have 8, and two have 10 spines.

Telson as long as or slightly shorter than sixth abdominal somite, minutely bifurcate (Fig. 10, *D*) or abruptly truncate (Fig. 10, *E*) at distal extremity, furnished with peculiar striations on ventral surface as pointed out by KEMP (Fig. 10, *C*).

Inner antennular flagellum thin, about 0.8 times as long as carapace, composed of 26 joints. Outer one much thicker than the other one in proximal about half, but as thin as the inner one in distal half, made up of 17 joints in proximal thicker portion and 16 joints in distal thinner part (Fig. 10, *F*).

Second pleopod well developed; basipodite a little more than twice, and about three and half times as long as wide at middle in male and female respectively; exopodite three times in male, 3.6 times in female as long as wide

at middle, provided on inner border with stylamblys at a position somewhat nearer to proximal end than to tip in male, conversely a littel nearer to distal end than to proximal one in female; stylamblys a third the length of endopodite in male, a quarter as long as endopodite in female (Fig. 10, *G*, *H*).

Egg small, globular, about 0.3 mm in diameter.

The description and illustrations given above are based on five males and four females, two of which are ovigerous, ranging 10.2-11.6 mm in body-length. The specimens secured from the Inland Sea (Kasaoka, Okayama Prefecture) by Mr. J. YASUDA in July, 1951.

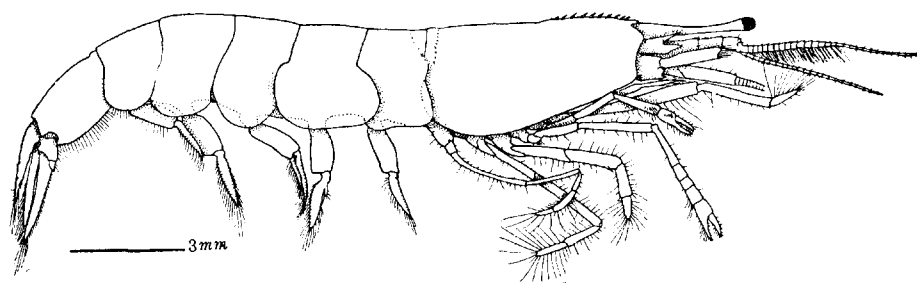


Fig. 9. Lateral aspect of a male of *Ogyrides striaticauda* KEMP.

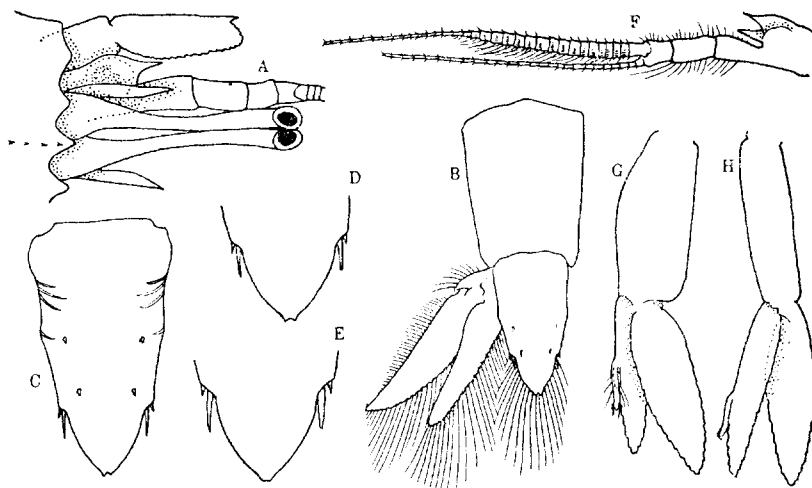


Fig. 10. Bodily parts of *Ogyrides striaticauda*. *A*, eyes, antennular peduncle, antennal scale, and others, $\times 18.5$; *B*, sixth pleonic somite, telson, and uropods, $\times 15$; *C*, telson showing the peculiar striations, $\times 26$; *D*, distal part of telson of a male showing bifurcate tip, $\times 40$; *E*, distal part of telson of a male showing abruptly truncate tip, $\times 40$; *F*, antennule, $\times 15$; *G*, second pleopod of a male, 10.5 mm in body-length, $\times 26$; *H*, second pleopod of a female, 11.6 mm long, $\times 26$.

Distribution: Chilka lake, Ennur, and Cochin near Ernakulan, India (KEMP).

Remarks: According to YASUDA's information, this small shrimps begin to appear in shallow water in the neighbourhood of Kasaoka from early summer, and the specimens examined were taken by young-fish net.

Both sexes closely resemble each other in general appearance. Remarkable sexual dimorphism is, however, found to exist in the second abdominal appendages. These appendages are markedly slenderer in female than in male as described already in addition to that presence or absence of the appendix masculina on the endopodite of the second pleopod.

***Spirontocaris crassirostris* sp. nov.**

(Figs. 11, 12)

Rostrum roughly subcircular in profile, a little less than one and half times as long as wide at the widest region, extending as far as tip of antennular peduncle, furnished with well defined but low lateral ridge, armed with three pointed teeth on upper border and on apical border with seven similar teeth which are irregular in size; first tooth of the upper border inserted near base of rostrum, second tooth at about middle between base and tip of rostrum, and third one at three-quarters (Fig. 11). Carapace provided with dorso-median carina, three supraorbital, an antennal, and a pterygostomian spines. Dorso-median carina armed on anterior half with two acuminate spines, gradually diminishes in height behind the last tooth. Of the three supra-orbital spines, two situated on orbital edge and one a little behind the two ones. Infraorbital angle spiniform.

Abdomen without dorso-median carina, about 3.3 times as long as carapace, each pleuron of anterior five pleonic segments furnished with six, eight, five, and four sharply pointed spines respectively on lower margin; the spines of the first pleonic somite minute. Sixth pleonic somite about half the length of carapace, carries postero-lateral angle which is spiniform, directing backwards, and an acute spine on pleuron near postero-lateral angle. Telson 2.25 times as long as wide at the proximal broadest portion or a little less than seven times as long as wide at distal end, about three times the length of sixth abdominal somite, armed with four pairs of spinules on dorsal surface; disto-lateral angle minutely spiniform; distal margin abruptly pointed at middle, furnished with two pairs of short and long spinules (Fig. 12, A. B).

Eye with well pigmented large cornea which is associated with an ocellus on postero-lateral edge; stalk short, as long as wide at proximal end,

about 0.6 times as long as cornea, armed with two inner and outer apines on distal dorso-median edge, outer one of the spines slender, sharply pointed at tip, directed forwards, the other one very swollen, with abruptly pointed tip which is directed medially (Fig. 12, C).

Antennular peduncle stout, nearly reaches to tip of rostrum; basal joint a little more than twice as long as wide at anterior end, has on basal outer edge a large acuninate process which is nearly reaching to distal end of second segment; intermediate joint as long as wide at proximal extremity, 0.4 times as long as basal joint, provided on outer rim with a large acute spine directing antero-laterally; last joint as long as intermediate one, carries a slender spine on dorsal surface near distal rim. Antennular flagella rather short; inner flagellum thin, consists of 14 joints, 0.7 times as long as peduncle on which it lies; outer flagellum strikingly swollen in proximal three quarters, made up of 20 joints, as long as peduncle (Fig. 12, D). Antennal scale large,

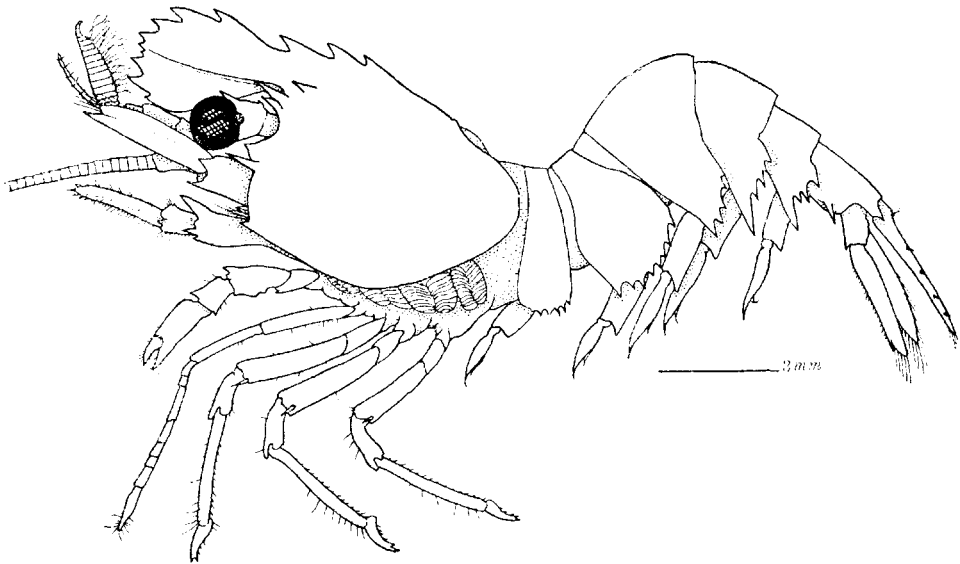


Fig. 11. *Spirontocaris crassirostris* sp. nov., male.

roughly triangular in shape, twice as long as wide at the widest portion, straight on outer margin, extends well beyond tip of antennular peduncle, bearing a large acut disto-lateral spine which stretches well beyond apical margin of lamella (Fig. 12, E). Carpocerite three times as long as wide, reaches to middle of second antennular peduncle.

Mandible made up of molar and incisor processes and palp; molar process has a large tooth on inner edge; incisor one carries four denticles on

cutting edge; palp made up of two segments, distal segment somewhat longer than basal one (Fig. 12, *F*).

Maxillula consists of inner and outer laciniae and endopodite; inner lacinia rather small, strongly recurved forwards; endopodite as large as inner lacinia, with a small apical lobe (Fig. 12, *G*). maxilla has two proximal and distal endites; proximal endite small, produced into a minute pointed lobule on disto-median angle; distal one large, distally divided into two lobes;

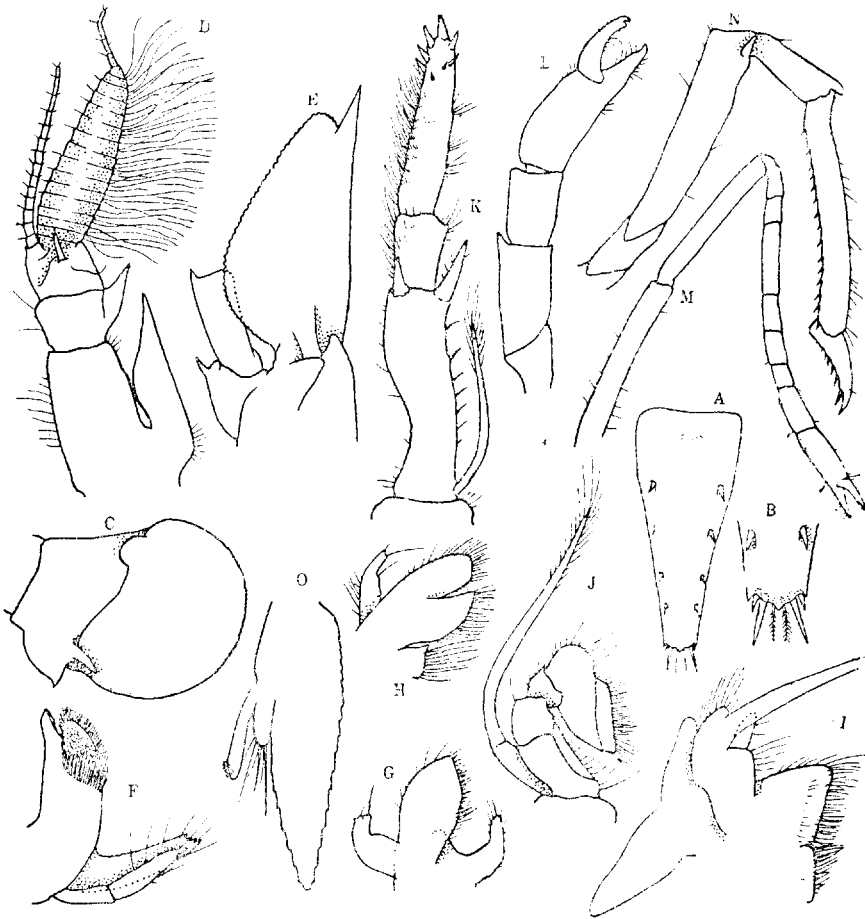


Fig. 12. Bodily parts of *Spirontocaris crassirostris* sp. nov. *A*, upper aspect of telson, $\times 10.5$; *B*, distal part of telson; *C*, upper aspect of eye, $\times 18.5$; *D*, dorsal view of antennule, $\times 13.5$; *E*, antennal scale and carapocrite, $\times 13.5$; *F*, mandible, $\times 26$; *G*, maxillula, $\times 18.5$; *H*, maxilla without exopodite, $\times 18.5$; *I*, first maxilliped; $\times 26$; *J*, second maxilliped, $\times 18.5$; *K*, third maxilliped, $\times 13.5$; *L*, first cheliped, $\times 13.5$; *M*, second cheliped, 13.5; *N*, fourth pereopod, $\times 13.5$; *O*, endopodite of second pleopod, $\times 26$.

endopodite not segmented (Fig. 12, *H*). All maxillipeds have well developed exopodite. First maxilliped with two segmented endopodite and bilobed epipodite; basal outer lobe of exopodite vestigial (Fig. 12, *I*). Second maxilliped ordinary in shape (Fig. 12, *J*). Third maxilliped stout, reaches to tip of antennal scale; antepenultimate segment three and half times as long as wide at distal end, armed with two spines on distal rim; penultimate segment a third the length of antepenultimate segment; ultimate segment about 2.3 times as long as penultimate segment (Fig. 12, *K*).

First cheliped stoutest of all legs, extending as far as tip of antennular peduncle; merus and palm subequal in length and width, about one and half times as long as carpus; movable finger equal to carpus in length, bifurcate at tip, simple on cutting edge as is the case with fixed one (Fig. 12, *L*). Second cheliped slender, reaching beyond tip of antennal scale by about half of chela; merus more or less shorter and thinner than ischipopdite; carpopodite 1.9 times as long as merus, seven-segmented; palm two and half times as long as wide, about 0.4 times the length of merus; fingers simple on cutting edges, ca. 0.7 times as long as palm (Fig. 12, *M*). Third pereopod nearly stretching to tip of antennal scale; merus 2.5 times as long as ischium, five times as long as wide at middle, armed with a spine on distal outer edge; carpus subequal to ischium in length; propodus a little longer than merus, one-ninth as wide as long, with many equidistantly set spinules on posterior (or ventral) edge; dactylus as long as carpus, sharply pointed at tip, armed with several equidistantly set spinules on ventral margin. Fourth pereopod reaches to the same level of tip of antennular peduncle, closely resembles third leg in general configuration, subequal to the third one in length (Fig. 12, *N*). Fifth leg similar to anterior two walking legs in general feature, somewhat shorter than fourth.

Endopodite of first pleopod bearing a stylamblys and an appendix masculina at a third of inner edge; the latter about half the length of the other one, provided with a number of long apical setae (Fig. 12, *O*).

Type-specimen: male, 26.5 mm in body-length (4.4 mm in carapecial length). The type specimen only is taken by a trawl net on November 11, 1949 at a depth of ca. 300 m off Heta, Izu peninsula.

The present new species is nearly related to *Spironocaris pectinifera* (STIMPSON) in general feature, especially in possession of many spines arranged on the lower margin of abdominal pleura, but it is at once separtable from the latter by the shape of rostrum. Also the present new species bears resemblance to *Spironocaris prionota* (STIMPSON). However, it greatly differs from *S. prionota* in the following respects, viz. the rostrum is more circular

and having less number of spines developed on the apical border, and the abdominal pleura are armed with many spines on the lower border. The pleura are at all devoid of spines in *S. prionota*.

It may be mentioned herewith that the present species has much links to the genus *Thor* in the characteristics of the antennules. As described already, the outer antennular flagellum of the present species is strikingly swollen. This peculiarity is common to the genus *Thor*. Moreover the third joint of the antennular peduncle is provided with a well developed but slender spine on the dorsal surface near base of the outer antennular flagellum. In that place in *Thor* a movable plate is found to exist according to KEMP (1916, p. 387).

Genus *Lysmata*, RISSO 1826.

Lysmata, KEMP, 1914, p. 110; HOLTHUIS, 1947, pp. 18-19.

Hippolysmata, KEMP, 1914, pp. 112-113; HOLTHUIS, 1947, pp. 19-25.

The genera *Lysmata* and *Hippolysmata* have been distinguished by the only point that the upper antennular flagellum of the former is biramous and that of the latter uniramous. While these characters, according to the present investigation, are revealed to be no longer worthless for demarkation of those genera. Because it is found that the flagellum in question of *Lysmata* (*Hippolysmata*) *vittata* (STIMPSON) and *L.* (*Hippolysmata*) *kükenthali* which are formerly included within the genus *Hippolysmata*, is biramous although the short ramus is so minute as being hardly recognizable by naked eyes (Fig. 13, D). So that it may be said that the difference by which those two closely related genera have been assorted is not difference between two independent characters, and it is merely difference of degree within a trait. Basing on the reason mentioned above, the genus *Hippolysmata* should be included within the genus *Lysmata* in broad sense and it may be maintained as subgeneric gradation.

Lysmata (*Hippolysmata*) *kükenthali* (DE MAN)

(New Japanese name: Akamo-ebi)

(Figs. 13, A-M; 14, A-D; 15, Tabs. 4, 5)

Merhippolyte orientalis, DE MAN, 1892, pp. 407-410.

Merhippolyte orientalis? DE MAN 1902, p. 849, Pl. 26, fig. 56.

Hippolyte kikenthali, De MAN, 1902, p. 850.

Nauticaris unirecedens, PEARSON, 1905, p. 81.

Hippolyasmata kikenthali, De MAN, 1907, p. 426; KEMP, 1914, p. 115-117,

Pl. 6, fig. 11; BORRADALE, 1917, p. 403; HOLTHUIS, 1947, p. 69-70.

Hippolyasmata marleyi, STEBBING, 1919, p. 120, Pl. 18; 1921, p. 22.

Body smooth, without dorso-median carina.

Rostrum rather short, reaching to distal end of first segment of antennular peduncle or a little beyond distal end of the segment, armed with 4 or 5 teeth, mostly 5 teeth on upper border. Of these teeth, usually hindmost one is always found just above post orbital margin. Lower border of rostrum distally provided with 1-3 teeth (1 tooth in most cases) (Tab. 4). Epigastric spine placed at about a quarter of carapace. Supra-orbital spine absent. Antennal spine present. Pterygostomial spine, if present, minute (Fig. 14, A-C).

Sixth abdominal segment about twice as long as fifth abdominal one, about a third the length of carapace. Telson about two and half times as long as wide at proximal widest portion, ca. twice as long as sixth pleonic somite, furnished on upper surface with two anterior and posterior pairs of spinules; those of anterior pair situated somewhat anterior to middle of telson, and the other pair at half way of distance between the first pair and tip of telson; distal margin pointed at middle, armed with inner and outer shorter spinules (Fig. 13, A, B).

Antennular peduncle three-jointed; first joint somewhat less than twice as long as wide at distal end, provided on outer basal margin with a large lanceolate process extending as far as distal end of the segment on which it lies; second joint as long as wide, half times as long as first joint; third joint subequal to second joint in length (Fig. 13, C). Antennular flagella long, about 1.3 times the length of body; upper flagellum more or less longer than the other, bifid into two dorsal and ventral branches at 24th joints (or at about one-fifth of the length), ventral branch minute, composed of only two joints. (Fig. 13, D).

Antennal scale extending beyond tip of antennular peduncle by about a quarter of its length, about thrice as long as wide at the widest region, with disto-lateral spine which reaches to distal margin of lamella (Fig. 13, E). Carapocrite reaches to middle of antennal scale.

Mandible without incisor process and endopodite, armed with three large teeth on masticatory edge (Fig. 13, F). Maxillula ordinary in shape; inner endite rather small; outer one rather large; endopodite with less developed apical lobe (Fig. 13, G). Maxilla furnished with proximal and distal laciniae

on inner base; proximal lacinia small and simple; distal one large in comparison to proximal lacinia, distally bifid; endopodite not segmented (Fig. 13, *H*). All maxillipeds with well developed exopodite. First maxilliped made up of two inner broad laciniae, vestigial endopodite and exopodite; basal lateral lobe of exopodite rather broad, semi-circular in outline (Fig. 13, *I*). Second maxilliped normal in shape (Fig. 13, *J*). Third maxilliped pediform, extending beyond tip of antennal scale by about half of ultimate segment; antepenultimate and ultimate segments about 2.5 and 1.6 times as long as penultimate

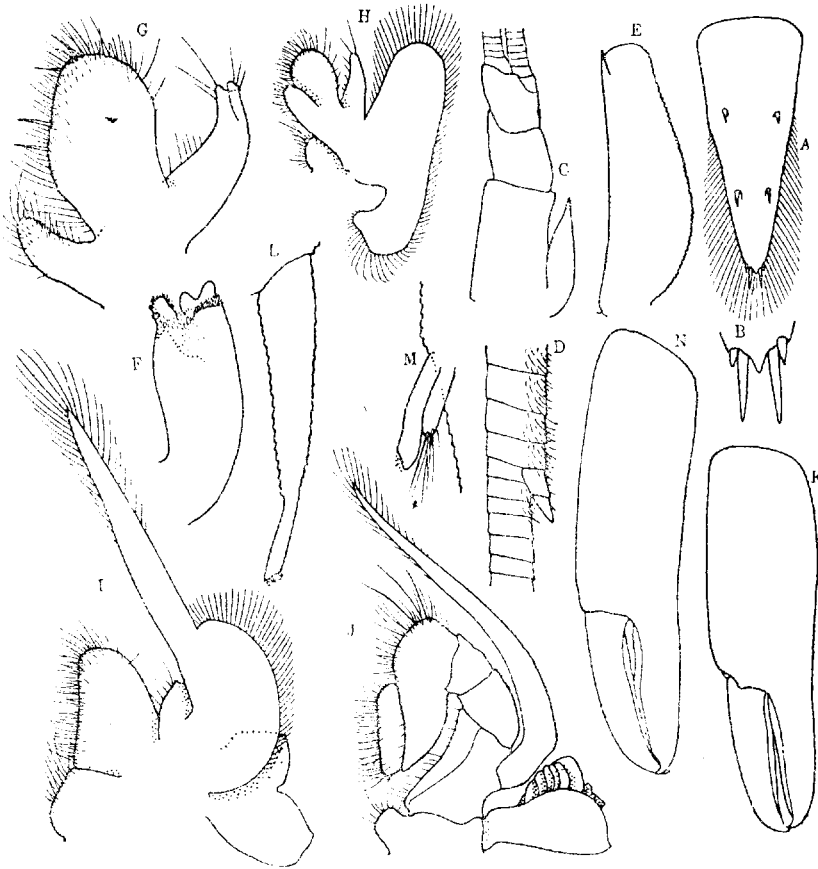


Fig. 13. Bodily parts of a male, *Lyismata* (*Hippolyismata*) *kükenthali* (A—M) and a female, *Lyismata* (*Hippolyismata*) *vittata* (N). A, upper aspect of telson, $\times 6.5$; B, tip of telson, $\times 19$; C, antennular peduncle, $\times 6.5$; D, branched portion of upper antennular flagellum, $\times 19$; E, antennal scale, $\times 6.5$; F, mandible, $\times 19$; G, maxillula, $\times 19$; H, maxilla, $\times 9.5$; I, first maxilliped, $\times 19$; J, second maxilliped, $\times 19$; K, dorsal aspect of chela of first leg of female, $\times 13.5$; L, endopodite of first pleopod, $\times 19$; M, stylamblys and appendix masculina of endopodite of second pleopod, $\times 19$; N, dorsal aspect of chela of second leg, $\times 13.5$.

one respectively, exopodite of the appendage reaches to about middle of the segment on which it lies.

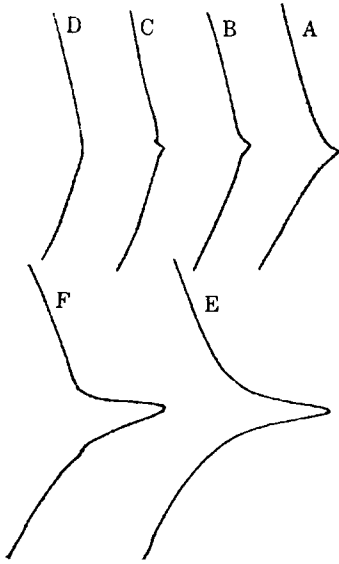


Fig. 14. Pterygostomian region of female of *Lyasmata* (*Hippolyasmata*) *kikenthali* (A-D) and *Lyasmata* (*Hippolyasmata*) *vittata* (E, F). Each figure, $\times 40$. A-B, 31.0, 30.5, 44.0, 32.5, 37.0, and 40.3 mm in body-length respectively.

First cheliped reaches to tip of antennular peduncle, palm twice as long as wide, fingers about 0.7 times as long as palm, cutting edges when closed meeting throughout their length as mentioned by KEMP (1914, p. 116) (Fig. 13, K). Second chelipeds slender, subequal in length, surpassing tip of antennular peduncle by carpus and chela; carpus consists of 17-20 joints, usually 19 or 20 joints. Third leg extending beyond tip of antennular peduncle by last three segments; merus armed with one or two spinules on outer surface in distal a third; carpus about half as long as merus; propodus one and half times the length of carpus; dactylus about a quarter of propodus in length, provided on ventral border with four or five spinules which increase in size as they approach toward the tip. Last two legs subequal to third leg in feature and length.

Endopodite of first pleopod roughly elongated triangular in shape, has a large stylamblys on apex (Fig. 13, M).

Branchiae are arranged as shown in Table 5. A pleurobranchia present on last six thoracic segments. Arthrobranchiae entirely absent. A podobranchia exists on second maxilliped (Fig. 13, J). A mastigobranchia found on each thoracic appendage except last one; the mastigobranchiae developed on legs from first to fifth pairs are simply bar-shaped arising from anterior border of coxa of each pereopod, and that attached on first maxilliped bilobed.

Ova small, about 0.4 mm in shorter diameter, 0.6 mm in longer diameter.

Colouration: Body furnished with broad bands of bright red colour. In carapace, those bands are five in number, and run obliquely. Of these five bands, the first one arises from branchiostegal region and runs along inferior and posterior margins of carapace. This band anteriorly extends to the bases of antennular and antennal peduncles and continues to ends of antennular peduncle and antennal scale. Second band runs from post-orbital margin to the region above the bases of third and fourth pereopods. Third band stretches between the hindmost upper rostral spine and postero-lateral angle of

Table 4. Measurement and counts of some items of *Lysmata* (*Hippolyasmata*) *kükenthali* (De MAN) taken from Kominato, Chiba Prefecture. Unit of length, mm. *, spines found on carapace.

No.	Sex	Body-length	Carapace-length	No. of rostral spine		Length of upper antennular flagellum
				Upper	Lower	
1	♀	44.0	10.5	3+2*=5	1	—
2	„	35.5	10.0	4+1=5	1	44.0
3	„	32.5	9.5	4+1=5	1	46.5
4	„	31.3	9.0	4+1=5	1	41.5
5	„	31.0	8.7	3+1=4	1	38.0
6	„	31.0	8.4	3+1=4	1	39.0
7	„	31.0	8.9	4+1=5	1	39.0
8	„	30.5	8.9	4+1=5	1	39.0
9	„	29.0	8.4	3+1=4	1	—
10	„	28.4	8.1	4+1=5	1	—
11	„	27.4	8.3	4+1=5	2	38.0
12	„	26.5	7.6	4+1=5	1	31.0
13	„	25.2	7.0	4+1=5	1	—
14	„	25.0	7.5	3+1=4	1	—
15	♂	29.0	8.2	4+1=5	3	45.5
16	„	28.0	7.9	3+1=4	2	47.5
17	„	26.5	7.0	4+1=5	3	—
18	„	23.5	6.1	4+1=5	1	30.0

Table 5. Arrangement of the branchiae and exopodite of thoracic appendages of *Lysmata* (*Hippolyasmata*) *kükenthali* (De MAN).

Branchiae	Thoracic segments								Total
	I	II	III	IV	V	VI	VII	VIII	
Pleurob.	—	—	1	1	1	1	1	1	6
Arthro.	—	—	—	—	—	—	—	—	0
Podob.	—	1	—	—	—	—	—	—	1
Mastigob.	1	1	1	1	1	1	1	—	7
Exopodite	1	1	1	—	—	—	—	—	3

carapace. Fourth one is nearly parallel to third band, arising from the base of epi-gastric spine. Fifth one lies starting from about middle between the epi-gastric spine and posterior margin of carapace. In abdomen, seven cross bands are found to exist. First band lies on first abdominal somite. Second, third, fourth, and fifth bands cover posterior half of each somite from the

second to fifth respectively. Sixth band is placed on posterior part of sixth pleonic somite and anterior parts of telson and uropods. Last one lies on posterior half of telson and uropods. Third maxilliped, all pereopods and pleopods are also stained with the same colour as shown in Fig. 15.

Sexual dimorphism: Sexual differences are found to exist in the respects given in the following lines. The body of male is somewhat slenderer than that of female. Upper antennular flagella of males are a little longer than those of females (Table 4). In addition to these, the endopodite of second pleopod demonstrates distinct difference between both sexes as that of male carries an appendix masculina which is absent in that of female.

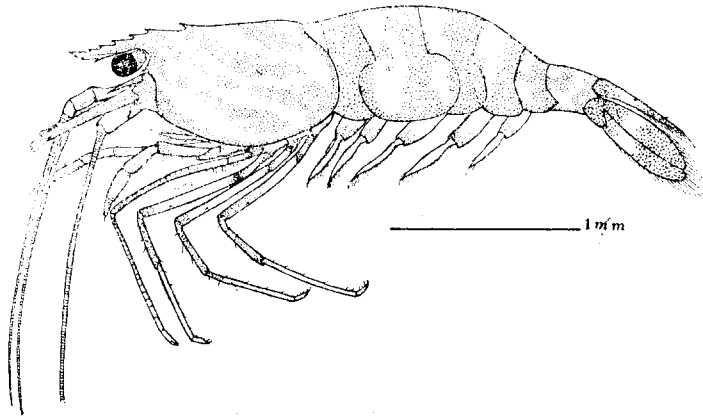


Fig. 15. *Laqmata* (*Hippolyasmata*) *kikenthali* (De MAN), male. 29 mm long, showing colour pattern with dotting.

The description and figures given above are based on a male, 29 mm in body-length. Other three males, 23.5-27.5 mm long and 13 ovigerous females, 25.0-44.0 mm long were also examined. These specimens, except the largest female, were taken in September 10, 1947, by Dr. T. INO, Assistant Professor of our University, from Kominato, Chiba Prefecture in rocky shallow water at a depth of about 3 m. The largest female was secured in July 11, 1949, from the same locality.

Distribution: Isezela, Natal (STEBBING); Egmont Reef, Seychelles (BORRADAILE); Galle, and Jokkenpidi Paar, Ceylon (PEARSON); N. Cheval Paar, Ceylon (KEMP); Ternate, and Maoemere, Flores (De MAN); off Kawio and Kamboling Islands, Kawio group, N.E. of Celebes; off Atiatoening, west coast of New Guinea; South Lucipara Island; off Roemahloesi, northpoint of Tioor Island; Lamakera, Solor; Inhaca, Portuguese East Africa; Reunion Rocks, Isipingo near Durban (HOLTHUIS).

Remarks The pterygostomian spine is present or absent as shown in the Fig. 14, A-D. The spine is, if present, very minute, much smaller than that of *Lysmata* (*Hippolysmata*) *vittata*. It appears to be that there is a trend that the spine becomes smaller in size with the growth of this animal, and finally absent.

It should be mentioned herewith that the disagreements found between the present specimens and the description given by BORRADAILE and illustration made by KEMP are as follows. According to BORRADAILE'S description (1917, p. 403), the carpus of the second pereopod of Seychelles specimens is made up of 14 or 15 joints. While that of the present specimens consists of 17-20, mostly 19 or 20 ones. But the present specimens are in accordance with KEMP'S description (1914, p. 116) of the same item of Ceylon specimens in which the wrist is composed of 19-21 joints.

The shape of fingers of the first pereopod of the present specimens agrees well with the illustration given by KEMP (1914, Pl. 6, fig. 11), but the proportion of the finger to the palm in length is discrepant. The proportion of the present specimens is ca. 0.7 instead of being 0.5 in the KEMP'S specimen. This difference may be, however, thought to be a fluctuation within a species, since this ratio is generally subject to considerable intra-specific variation.

***Lysmata* (*Hippolysmata*) *vittata* (STIMPSON)**

(Japanese name: Akashimamo-ebi)

(Figs. 13, N; 14, E, F; 16; Tab. 6)

Hippolysmata vittata, STIMPSON, 1860, p. 26; LANCHESTER, 1901, p. 563;
De MAN, 1907, pp. 423-426, pl. 33, figs. 49, 50; BAISSE, 1914, p. 48;
KEMP, 1914, pp. 113-115, pl. 6, figs. 6-10; 1925, p. 230; BORRADAILE,
1917, p. 403; HOLTHUIS, 1947, pp. 67-68.

Hippolysmata vittata var. ?, KEMP, 1914, p. 115.

Nauticaris unirecedens, BATE, 1888, p. 608, pl. 110, fig. 1.

Rostrum hardly reaches to distal end of second segment of antennular peduncle. Carapace with epigastric, antennal, and pterygostomian spines. Fifth abdominal segment about a quarter the length of carapace. Sixth pleonic somite one and half times as long as fifth pleonic one. Telson ca. 1.6 times as long as sixth pleonic somite, armed with two pairs of spinules on dorsal surface and on distal edge respectively as is the case with *Lysmata* (*Hippolysmata*) *kükenthali*.

Antennular peduncle consists of three segments; first segment about three times as long as wide at distal end, carries a rather large acuminate

process which reaches to two-thirds of the segment on which it lies; second segment about half the length of first segment; third one a third as long as first segment. Upper antennular flagellum divided into two dorsal and ventral rami at 42nd joint or at a fifth of its length; lower ramus minute, hardly visible by naked eye, made up of only two joints. Antennal scale rather narrow, three and half times as long as wide at the widest region, reaches to tip of antennular peduncle, has a disto-lateral spine which extends as far as distal margin of lamella.

First cheliped surpassing distal end of antennular peduncle by major part of dactylus; merus four times as long as wide at middle; carpus about 0.6 times the length of merus; palm a little shorter than carpus; fingers 0.6--0.8 times as long as palm, meeting when closed in distal about two-thirds (Fig. 13, *N*). Second leg slender; ischium and merus subequal in length, merus composed of 9 joints; carpus about twice as long as merus, made up of 19-22 joints. Third leg extending beyond tip of antennular peduncle by distal half of carpus and last two segments; ischium 0.65, merus 2.1, propodus 1.1, dactylus 0.28 in proportion to carpus in length; merus somewhat shorter than carapace, about 12 times as long as wide, armed with 4 spinules on distal half of outer surface along infero-lateral edge; dactylus carries 4 or 5 spinules on ventral margin. Fourth and fifth legs similar to third one in general configuration, more or less shorter than third one, stretching beyond tip of antennular

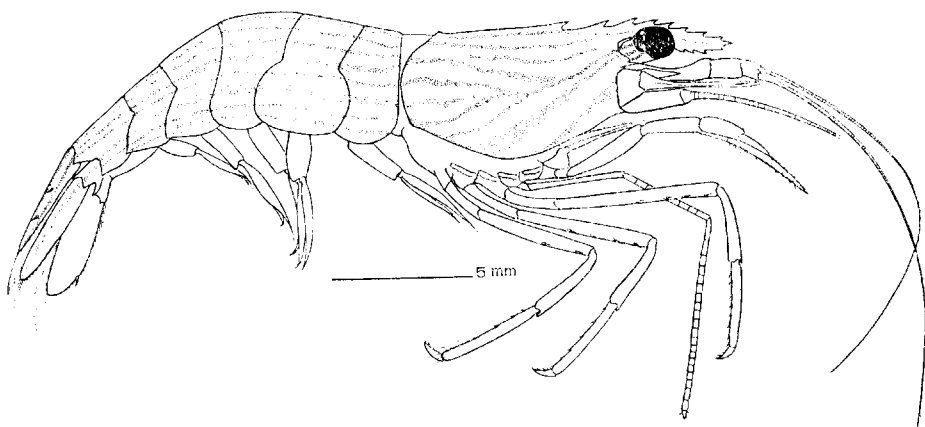


Fig. 16. *Lysmata* (*Hippolyssmata*) *vittata* (STIMPSON) showing colour pattern. female, 29 mm in body-length.

peduncle by distal half of propodus and entire dactylus. Last leg equals to fourth one in length, having two or three meropoditic spines.

Colour pattern: body furnished with many red narrow longitudinal stripes as described by KEMP (Fig. 16).

The above mentioned description is based on a female, 29.0 mm in body-length. Besides 5 males ranging 17.5-28.0 mm in body-length, and 8 females, 21.5-40.5 mm long, were examined. Of those females, 4 ones, 29-40.5 mm long, were ovigerous.

Localities: Nagasaki, Nagasaki Pref. (Dr. S. MIYAKE); Tokushima (Mr. M. WATANABE); Tanabe Bay, Wakayama Pref. (Dr. UTINOMI); Miya, Aichi Pref. and Kominato, Chiba Pref. (I. KUBO).

Distribution: Hongkong (STIMPSON, BATE); Pulau Bidan, Penang (LANCHESTER); Madras; Kilakarai, South India; Ceylon; East Island, Andaman Islands; Karachi, Persian Gulf; Madras (KEMP); Liaotung Peninsula, N. China (Yu); Inland Sea of Japan (De MAN); Red Sea; Ceylon; Amboina; Zushi, Sagami Bay, Japan (BALSS); Cargados Garajos; Seychelles (BORRADAILE); Lang Suen, Siam (Suvatti); Sebu, Philippines (THALLWITZ); Dirk Hartog Island, W. Australia (HALE); Krusadia and Shingle Islands (GRAVELY); Makassar; Koeandang Bay, N. Celebes; Woenoh Bay, northwestcoast of Waigeo; off Djedan Island, eastcoast of Aroe Islands; Kera near Timor; Amoy; Batavia (Fishmarket); Skroe, New Guinea; Balikpapan, Borneo (HOLTHUIS).

Remarks: The specimens examined well coincide with the descriptions and figures done by STIMPSON, KEMP, LANCHESTER, and others, except the matter given in annexed lines. As to the pterygostomian spine of the present species, KEMP (1914, p. 116) writes that "no spine at antero-lateral angle of carapace". In the present specimens, the pterygostomian spine is, however, present or absent (usually present) as described already, although it is minute when it is present.

The differences found between the present species and *Lysmata (Hippoly-smata) kükenhali* (De MAN) which is a very close ally of the present species are as follows. In the former, the fingers of chelae of the first periopods, when closed, are meeting only in distal two-thirds, and the body is furnished with narrow longitudinal stripes of red colour, but in the latter, the fingers of the chelae are meeting throughout their length, and the body is provided with broad oblique and transverse bands as revealed already by KEMP. Besides these three things given in the Table 6 are found as differences between them.

Table 6. Differences between *Lysmata* (*Hippolyssmata*) *vittata* and *Lysmata* (*Hippolyssmata*) *kükenthali*.

Items	<i>L. vittata</i>	<i>L. kükenthali</i>
(1) Rostrum	more or less longer, hardly reaching to distal end of second segment of antennular peduncle.	short, usually hardly reaches to distal end of first joint of antennular peduncle.
(2) Upper antennular flagellum	divided into two rami at 42nd segment or at about a fifth of the length.	bifurcates at 23rd joint or at about one ninth of the length.
(3) Walking legs	with 4-5 spines on meropodite.	with a spine on meropodite.

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