

Hayashi, K. 1969
& Miyake, S.

With my best thanks
K. Hayashi

**A new species of the genus *Leptochela* from
northern Kyushu, Japan
(Decapoda, Caridea, Pasiphaeidae)**

Ken-Ichi HAYASHI and Sadayoshi MIYAKE

INVERTEBRATE
ZOOLOGY
Crustacea

LIBRARY
DIVISION OF CRUSTACEA

CARDED

Reprinted from
Publications from the Amakusa Marine Biological Laboratory,
Kyushu University
Vol. 2, No. 1

1969



**A new species of the genus *Leptochela* from
northern Kyushu, Japan
(Decapoda, Caridea, Pasiphaeidae)^{1,2}**

Ken-Ichi HAYASHI and Sadayoshi MIYAKE

Zoological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka

During a search for caridean shrimps in northern Kyushu, five specimens of the genus *Leptochela* were found. These specimens differ from the known species reported from the Indo-West-Pacific in having the carinated fifth abdominal somite armed with four triangular teeth, in which character they bear a close resemblance to the Atlantic species, *L. carinata* Ortmann. Indeed, there seemed to be scarcely any differences between the Japanese specimens and the descriptions of the Atlantic species (Ortmann, 1893, Rathbun, 1902). However, compared with seven specimens of *L. carinata* collected off West Florida and from Rum Cay, Bahamas, the Japanese specimens proved to be a distinct new species described below as *L. japonica* sp. nov.

The differences between the two species are slight, and moreover detailed figures of *L. carinata* have not been published; hence the taxonomically important features of that species are illustrated herein for comparison.

The authors are indebted to Dr. Taiji Kikuchi of the Amakusa Marine Biological Laboratory, who collected the Chijiwa Bay specimens upon which this report is largely based, and to Dr. Fenner A. Chace, Jr. of the U. S. National Museum for the loan of the specimens of *Leptochela carinata* and for his critical reading of the original and final manuscript.

Leptochela japonica new species

(Figs. 1 and 2)

Types. Chijiwa Bay, northwestern Kyushu. St. 34, 65-66 m, dredge, June 2, 1961,

¹⁾ Contributions from the Zoological Laboratory, Faculty of Agriculture, Kyushu University, No. 399.

²⁾ Contributions from the Amakusa Marine Biological Laboratory, Kyushu University, No. 209.

leg. T. Kikuchi—1 ovig. ♀ (holotype, ZLKU No. 11182), 1 ovig. ♀ (paratype, ZLKU No. 11183); St. 25, 45 m, dredge, June 24, 1961, leg. T. Kikuchi—2 ovig. ♀♀ (paratypes, ZLKU No. 11184). Genkainada, off Fukuoka Prefecture, 34°08' N, 130°28.8' E, surface, plankton net, Feb. 4, 1964, time 23:45, Kuroshio Maru—1 ♀ (paratype, ZLKU No. 11677).

Description of holotype. The specimen is rather damaged, especially the antennular and antennal flagella are missing and also the first three pereiopods are detached and some of them are missing. The description of these pereiopods is based on the detached ones which belong to either the holotype or the paratype (ZLKU No. 11183) collected together with the holotype. The order of these pereiopods is determined by their shape and armature.

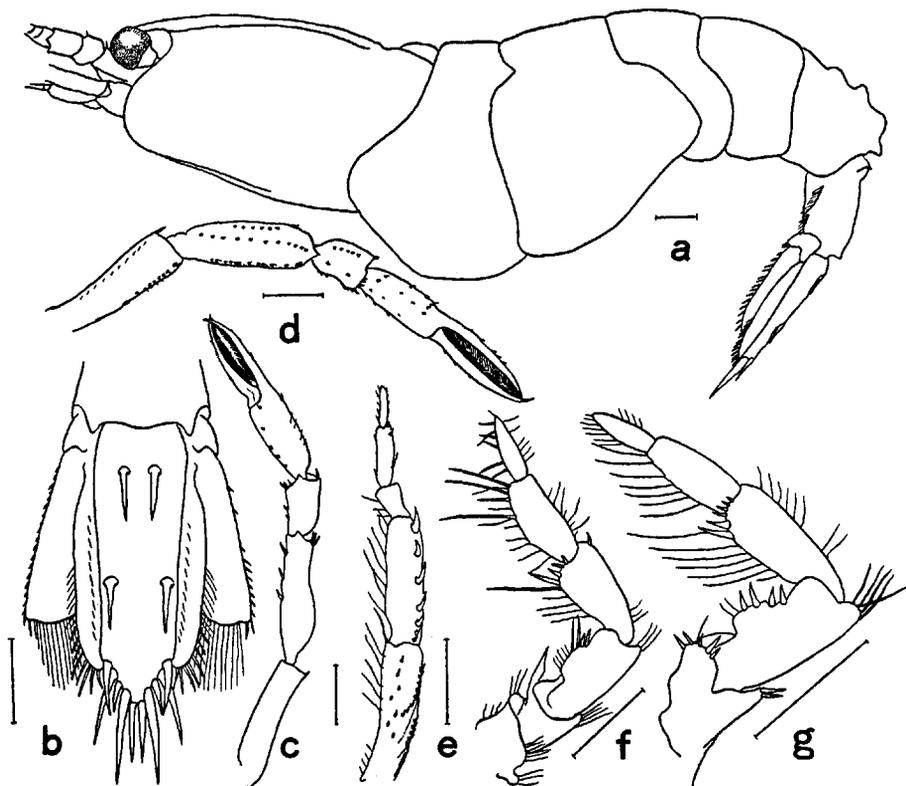


Fig. 1. *Leptochela japonica* sp. nov., holotype. a, body in lateral view; b, telson and uropods in dorsal view; c, first pereiopod; d, second pereiopod; e, third pereiopod; f, fourth pereiopod; g, fifth pereiopod. Scales represent 1.0 mm.

Carapace tricarinate dorsally; rostral carina acute, extending backward along whole length of carapace; lateral carina also acute, straight and parallel with

middorsal carina. Orbital margin smooth with many fine setae. Lower orbital and anterolateral angles largely rounded. An obscure carina running from just behind anterolateral angle to middle of carapace near lower margin. Part below this carina turned inward (Fig. 1, a).

First to third abdominal somites smooth. Pleura of first and second somites enormously enlarged. Fourth somite bluntly and obscurely carinated in distal third. Fifth somite strongly carinated with four triangular teeth, last tooth produced posteriorly as a small process. Sixth somite 0.7 times length of fifth somite; a median tubercle present at proximal end and a slender spine at outer posterior angle. Telson more than 1.5 times length of sixth somite, with one pair of dorsal and one pair of lateral spines. Posterior margin of telson produced to median process with five pairs of unequal spines (Fig. 1, b).

Eye moderate and globular, cornea longer than stalk, without a distinct ocellus. First segment of antennular peduncle short and broad, bearing two stout setae on inner distal corner. Stylocerite short, extending only to distal articulation of first segment. Second segment very short with some long marginal setae.

Antennal scale broken off. Basicerite with a process extending forward below base of scale. Both antennal and antennular flagella missing.

Mandible composed of a molar process and one-segmented palp; molar process with several irregular teeth on cutting edge; palp leaf shaped (Fig. 2, a). Maxillule with proximal endite slender and very narrow with short stout setae on top; distal endite broad with rather long setae; palp ending in two points, outer long and stout, inner short with a long plumose hair (Fig. 2, b). Maxilla with a truncated proximal endite; distal endite deeply cleft into a larger upper and a smaller lower lobe, bearing short stout setae; palp and scaphognathite well developed (Fig. 2, c). First maxilliped bearing two-segmented endopod; exopod short and broad surrounded by long plumose hairs; a small caridean lobe and a large epipod present (Fig. 2, d). Second maxilliped not pediform, with a large oval epipod; distal two segments bearing some large setae (Fig. 2, e). Third maxilliped pediform, exceeding tip of antennular peduncle by ultimate segment, with a long exopod.

Branchial formula as follows:

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

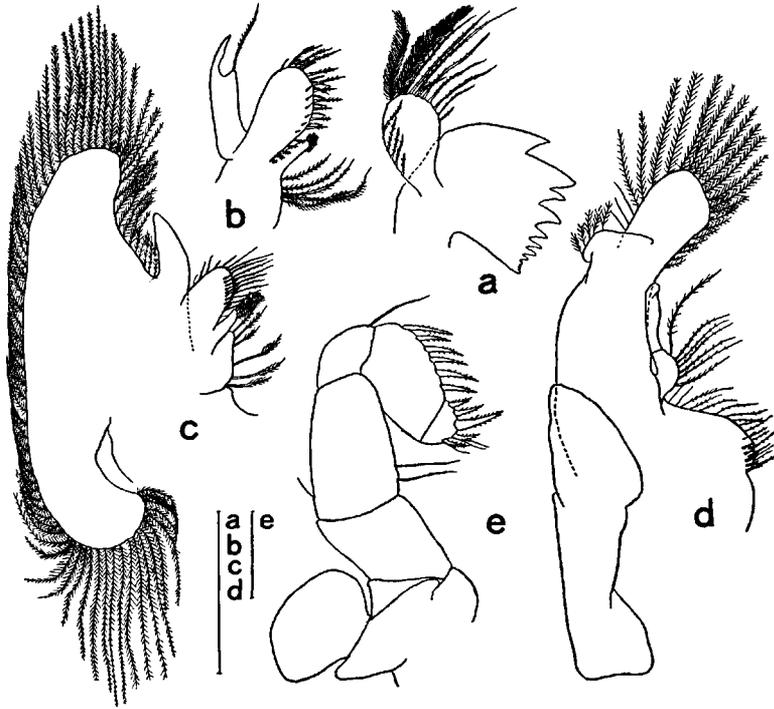


Fig. 2. Mouth-parts of *Leptochela japonica* sp. nov. a, mandible; b, maxillule; c, maxilla; d, first maxilliped; e, second maxilliped. Scales represent 1.0 mm.

First pereiopod comparatively small and compressed; ischium as long as merus, bearing a stout terminal spine on upper margin; merus with three lower marginal and three upper terminal spines; carpus shorter than palm, with one upper terminal and two lower marginal and three upper terminal spines; carpus shorter than palm, with one upper terminal and two lower marginal and three lower terminal spines; dactylus 1.0 to 1.1 times length of palm (Fig. 1, c). Second pereiopod more spinous and slightly larger than first pereiopod; ischium as long as merus, with one upper terminal spine and several spines on outer surface near lower margin; merus with one large upper marginal spine and three rows of spinules on outer surface; carpus about half length of chela, with many upper and lower marginal spines; comparative length of chela of second pereiopod longer than that of first, being 1.2 to 1.3 times as long as palm (Fig. 1, d). Third pereiopod small and compressed with long hairs on upper margin; ischium longer than merus, with three oblique rows of six to eight spinules, and several spines irregularly scattered on outer surface; merus with seven stout spines on outer surface near lower margin; carpus 1/3 times length

of merus; propodus longer than dactylus, both with smooth outer surface; dactylus slender, not forming a claw (Fig. 1, e). Fourth pereopod short and robust, bearing long stout setae on both upper and lower margins; ischium short, subcylindrical with a long, stout spine on outer surface; merus slightly compressed and expanded at middle with a short and a long spine; carpus as long as merus, with four small marginal spines; propodus compressed and shorter than carpus; dactylus similar to that of third pereopod (Fig. 1, f). Fifth pereopod similar to fourth pereopod in shape; ischium having no spine on outer surface; both merus and carpus with a few long spines as in those of fourth pereopod (Fig. 1, g).

First pleopod biramous; endopod shorter than exopod bearing no appendix interna. Second to fifth pleopods almost equally biramous, with appendices internae on endopod. Uropod shorter than telson; exopod much shorter than endopod; outer margin of exopod armed with 19 to 20 spines; eight or nine spines present on outer margin of endopod.

Eggs small, measuring 0.46×0.62 mm, attached on first two pleopods only.

Paratypes. The paratypes from the Chijiwa Bay are more or less damaged, especially anterior parts of the body are broken and some pereopods are detached from the body as in the holotype. The intact parts of them are very similar to the holotype in every respects. Another paratype from the Genkainada is slightly smaller than the others and has the complete antennal scale, and antennular and antennal flagella which are missing in the Chijiwa Bay material. The following description is based on the Genkainada specimen.

Outer antennular flagellum long, about three times as long as carapace; some basal joints fused, bearing short olfactory hairs. Inner flagellum short, slightly longer than carapace. Antennal scale short, triangular and 3.2 times as long as broad; outer margin almost straight.

Measurements (in mm):

	Holotype	Paratypes			
	11182 (ovig. ♀)	11183 (ovig. ♀)	11184 (ovig. ♀)	11185 (ovig. ♀)	11677 (♀)
Length of body	24.0	—	24.0	24.5	17.5
carapace	5.5	6.2	5.5	5.5	4.2
rostrum	1.1	1.2	1.2	1.2	1.1
antennal scale	—	—	—	—	2.5

Remarks. The genus *Leptochela* contains only seven or eight species, of which four or five have been reported from the Indo-West-Pacific; e.g., *L. aculeocaudata* Paulson, *L. gracilis* Stimpson, *L. hainanensis* Yu, *L. pugnax* de Man and *L. robusta* Stimpson. The third species is very closely allied to *L. aculeocaudata*. Boone (1935)

gave an extensive description and figures of a new species under the name *L. pellucida*. In comparison between his description and the Japanese specimens of *L. gracilis* collected off Fukuoka Prefecture, there were no significant differences and therefore Boone's species is thought to be a synonym of *L. gracilis*. The other three species are known to occur in the Atlantic; *L. bermudensis* Gurney, *L. carinata* Ortmann and *L. serratorbita* Bate (Kemp, 1925, Kubo, 1950). The new species is readily distinguished from all the known species but one, *L. carinata*, by having the carinated fifth abdominal somite armed with four triangular teeth.

Through the courtesy of Dr. Fenner A. Chace, Jr., seven specimens (3♂♂, 4♀♀) of *L. carinata* were examined. As a result of a direct comparison, there proved to be the following distinctions between the Japanese and the Atlantic species.

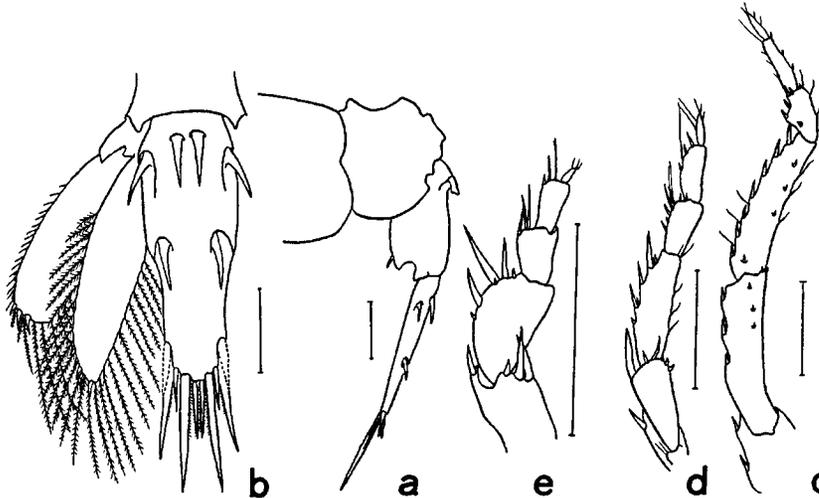


Fig. 3. *Leptocheila carinata* Ortmann. Specimens of the U. S. National Museum. a, posterior part of body in lateral view; b, telson and uropod in dorsal view; c, third pereopod; d, fourth pereopod; e, fifth pereopod. Scales represent 1.0 mm.

1) The median spine on the sixth abdominal somite is higher and larger in *L. carinata* (Fig. 3, a) than in *L. japonica*.

2) The telson bears only one pair of lateral spines in *L. japonica* but two pairs in *L. carinata* (Fig. 3, b).

3) In *L. japonica* the ischium of the third pereopod has the outer surface armed with three oblique rows of six to eight spinules, while in *L. carinata* it bears a row of three to six rather large spines along the lower margin (Fig. 3, c).

4) The merus of the fourth pereopod is 1.7 times as long as broad and has the small expansion at the middle of the lower margin armed with two spines in

L. japonica. It is 2.8 to 3.5 times as long as broad, and bears three or four large and four or five small spines along the lower margin in *L. carinata* (Fig. 3, d).

5) Each carpus of the fourth and fifth pereopods is slightly longer than or as long as the merus of the respective pereopod in *L. japonica*. On the other hand in *L. carinata* each carpus is shorter than the respective merus, being 0.4 to 0.7 times (Fig. 3, d, e).

6) The fifth pereopod is shorter in *L. carinata* than in *L. japonica*. In the former the fifth pereopod, measuring from the tip of the dactylus to the base of the ischium along the dorsal median line, is about 0.24 to 0.34 times as long as the carapace (Fig. 3, e), while in the latter it is about 0.65 to 0.7 times as long as the carapace.

7) The antennal scale is 4.6 to 4.8 times as long as broad in *L. carinata*. In *L. japonica* only one specimen (ZLKU No. 11677) has the complete antennal scale which is 3.2 times as long as broad. This character is thought to be specific, but the Japanese specimen is rather small (see measurement).

Among the material examined of *L. carinata* there is a young male, in which these distinguishable characters except for the second and third are not well developed. The third character of the young is similar to that of the adults. With regard to the second character, however, the young abnormally bears only one pair of lateral spines on the telson like that of *L. japonica*. Unfortunately no males of the new species are present in the collection, an examination of them, therefore, is highly desirable.

Distribution. The type material from the Chijiwa Bay were collected from depths of 45 m and 65 to 66 m by dredge during the daytime and another paratype from the Genkainada was found in surface plankton samples collected at night together with a great number of *L. aculeocaudata*. This fact is thought to indicate the pattern of the distribution of the new species; horizontally *L. japonica* belongs to a group of coastal species, such as *L. gracilis*, *L. robusta* and *L. aculeocaudata*, and vertically it shows a diurnal migration in a small way.

References

- Boone, L. 1935. Crustacea and Echinodermata. Scientific results of the world cruise of the yacht "Alva," 1931, William K. Vanderbilt, commanding. Bull. Vanderbilt mar. Mus., 6: 1-263, 13 figs., 96 pls.
- Kemp, S. 1925. Notes on Crustacea Decapoda in the Indian Museum, XVII. On various Caridea. Rec. Ind. Mus. 27: 249-343, 24 figs.

- Kubo, I.** 1955. On leptochelan shrimp in Japan. *Bull. Biogeogr. Soc. Japan* 16-19: 98-106, 7 figs. (in Japanese).
- Ortmann, A.** 1893. Decapoden und Schizopoden der Plankton-Expedition. *Ergebn. Plankton-Exped.*, 2 Gb: 1-120, 10 pls.
- Rathbun, M. J.** 1902. The Brachyura and Macrura of Porto Rico. *Bull. U. S. Fish Comm.* 20 (2): 1-127, 26 figs., 2 pls.

(Received January 21, 1969)

