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Redefinition of the genus *Batella* (Crustacea, Decapoda,  
Alpheidae), with description of a new species  
from Kyushu, Japan\*

Yasuhiko MIYA and Sadayoshi MIYAKE

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The genus *Batella* Holthuis, 1955 (= *Cheirothrix* Bate, 1888, nom. preoccu.) was established on the basis of a single specimen of *Batella parvimanus* (Bate, 1888) collected from off Cape York, Queensland, Australia, and since that time no other species have been referred to the genus.

Very recently, through the courtesy of Mr. Iwao Uchimura, we have been able to study the second species of *Batella*, described herein, collected from a depth of 156 m near the Danjo Group, Nagasaki Prefecture, Japan. This is easily distinguished from the type species by having the bifurcated outer antennular flagellum after which this is named *bifurcata*, a protuberance on the carapace and the dactyli of last three pairs of pereopods biunguiculate. The slight alteration of the definition of *Batella*, consequently, is necessary to include *B. bifurcata* as well as the type species.

The more indispensable problem of generic designation also became apparent during our study of this new species, i.e. *B. bifurcata* has no mandibular palp, the incisor process of mandible terminating in a tuft of bristles in place of the usual serrations, and the large oval palp (endopod) of the first maxilliped. This problem, however, required

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a re-examination of the type species to have a clear knowledge of the points raised. Through the kindness of Dr. R. W. Ingle of the British Museum (Natural History) we have now had the good fortune to know the type species also having the above-mentioned characters and to be fully convinced that these points are basic generic characters. Thus we were impressed with the need for a redefinition of the genus *Batella*.

We take this opportunity to express our sincere thanks to Dr. R. W. Ingle for his assistance and permission to quote his figures of the type specimen of *Batella parvimanus* (Bate, 1888). We also thank Mr. I. Uchimura for placing the material at our disposal.

### Genus *Batella* Holthuis, 1955

*Cheirothrix* Bate, 1888, p. 532; Coutière, 1899, p. 322, nom. preoccu.

*Batella* Holthuis, 1955, pp. 84 (key), 92.

**Redefinition.** Carapace extending forward as sharp rostrum and as sharp orbital hoods, which completely enclose corneas except on ventral side and apically pointed. Carapace with or without a protuberance on median dorsal line of gastric region. Pterygostomial margin produced to a point.

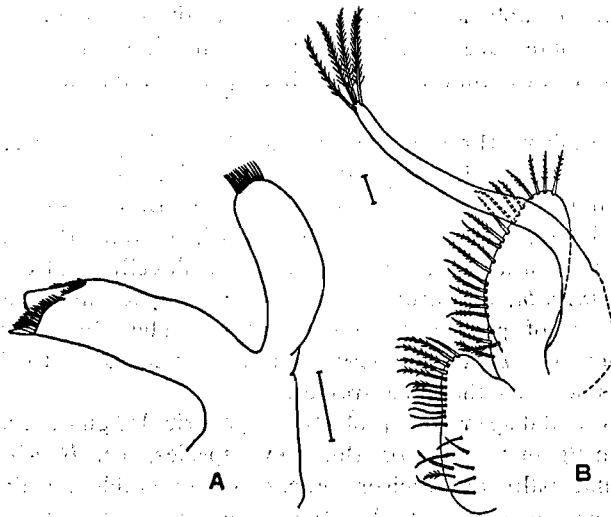


Fig. 1. *Batella parvimanus* (Bate, 1888), holotype.

A, Right mandible in inner view; B, right first maxilliped in inner view. Scales represent 0.1 mm. After camera lucida figures by Dr. R. W. Ingle.

Antennular peduncle robust with well-developed stylocerite, outer antennular flagellum simple or bifurcated. Basicerite of antenna acutely pointed on ventral margin; carpocerite slender; scaphocerite broad and foliaceous with short lateral spine.

Mandible much reduced and deeply bifurcated, having no palp; molar process cylindrical, terminating in a pyramidal projection; incisor process narrow, spatular, densely furnished with bristles on top. Maxillule possessing well-developed and bilobed palp. Maxilla having slightly bifid distal endite, thumb-like palp and well-developed scaphognathite. First maxilliped possessing large oval palp (endopod) fringed with plumose setae and narrow caridean lobe. Second maxilliped normal with rudimentary epipod. Third maxilliped slender, having rudimentary arthrobranch and no epipod.

First pereopod carried extended; fingers compressed and serrated with minute teeth joining exactly; palm cylindrical and entire; merus keeled on ventral surface.

Second pereopod slender and shorter than third pereopod; chela tapering and ending in extremely minute fingers, which are furnished with tufts of scaly hairs; carpus subdivided into five joints.

Three succeeding pairs of pereopods resemble each other, slender, terminating in dactyli, each of which is simple or biunguiculate. Propodi of third and fourth pereopods spinouse, that of fifth pereopod spinouse with rows of brush on outer surface.

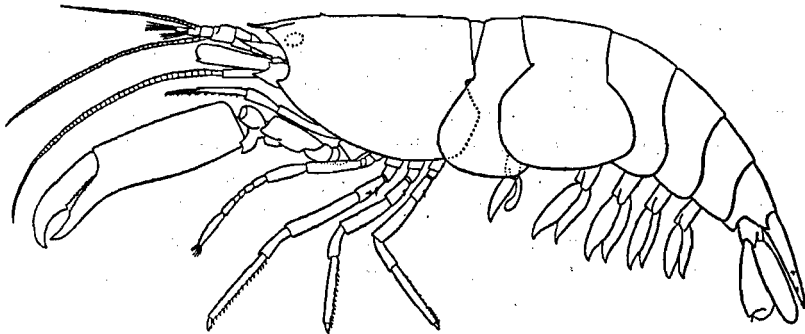


Fig. 2. *Batella bifurcata* sp. nov., holotype, male,  $\times 4.6$ .

Abdomen of usual form. Pleura of six abdominal segment without articulated plates. Exopod and endopod of uropod slender and rectangular; exopod bearing movable spine and diaeresis. Telson tapering, posterior margin slightly convex with three pairs of movable spines.

Branchial formula: 5 pleurobranchs + 1 arthrobranch + 2 epipods + 3 exopods.

Type species: *Cheirothrix parvimanus* Bate, 1888.

*Remarks.* This genus is distinguished from all other genera of Alpheidae by a series of characters: 1) very slender chelae of second pair of pereopods; 2) merus at least in one of first pair of pereopods with ventral keel;\* 3) no mandibular palp (Fig. 1, A), which requires the alteration of a part of the definition "mandible carrying a two-segmented palp" of the family Alpheidae originally defined by Coutière (1899, p. 322); 4) incisor process of mandible closely allied to that of *Synalpheus falcatus* (= *S. comatularum*) observed by Bate (1888, p. 575, pl. 103, fig. 1d), but ending in a tuft of bristles; 5) palp (endopod) of maxilliped well developed, oval and fringed with setae (Fig. 1, B).

*Batella bifurcata* sp. nov.

(Tsuno teppo ebimodoki: new Japanese name)†

(Figs. 2-4)

*Holotype.* Male, ZLKU No. 10920, measuring 6.2 mm in carapace length and 19.6 mm in total length. Dredged, 156 m in depth, near Dajo Group, Nagasaki Prefecture, Japan, 32° 14.0' N, 127° 50.4' E, August 7, 1967, I. Uchimura leg.

*Description of holotype.* The animal is slender and shell smooth; the carapace is approximately half the length of the abdomen (Fig. 2). The carapace bears a small protuberance on the median dorsal line of the gastric region (Fig. 4, A). The rostrum is slender, apically pointed with a low dorsal carina; the apex barely reaches to the middle of the second antennular segment. The supraorbital tooth is sharply pointed and extends beyond the middle of the visible portion of the first antennular segment. The pterygostomial margin is exerted triangularly.

The antennular peduncle is robust and tapers gradually (Fig. 4, B); the stylöcerite extends as far as the tip of the second antennular segment by the sharp apex; the outer antennular flagellum is bifurcated at the second joint, and has the stouter branch of only two joints, each of which is fringed with a row of long hairs on the distal margin.

The basicerite of the antenna has the acute ventral tooth, which reaches to the tip of the first antennular segment. The carpcerite is slender, extending to the middle of the third antennular segment. The scaphocerite greatly exceeds the tip of the antennular peduncle by the anterior margin of the broad lamella.

\* Unfortunately the type specimens of *B. parvimanus* and *B. bifurcata* have the right first pereopod missing, so it is not certain whether or not the first pair of pereopods of the species of *Batella* is symmetrical.

† The Japanese name of this species refers to the appearance which represents a deceptive resemblance to the shrimps of *Synalpheus* named "Tsuno teppo ebi" in Japan.

The mandible is reduced in size and deeply bifurcated, having no palp (Fig. 3, A); the molar process is cylindrical, ending in a pyramidal projection surrounded by a ring of bristles; the incisor process is narrow, spatular without any serrations on the apex, as observed in *Synalpheus falcatus* (= *S. comatularum*) by Bate (1888, p. 575, pl. 103, fig. 1d), but terminating in a tuft of bristles. The maxillule has a well-developed bilobed palp, of which the proximal lobe bears a plumose seta (Fig. 3, B). The distal endite of the maxilla is slightly bifid and setose, the proximal endite is much reduced with three plumose setae (Fig. 3, C); the palp (endopod) is blunt and has a plumose apical seta; the scaphog-

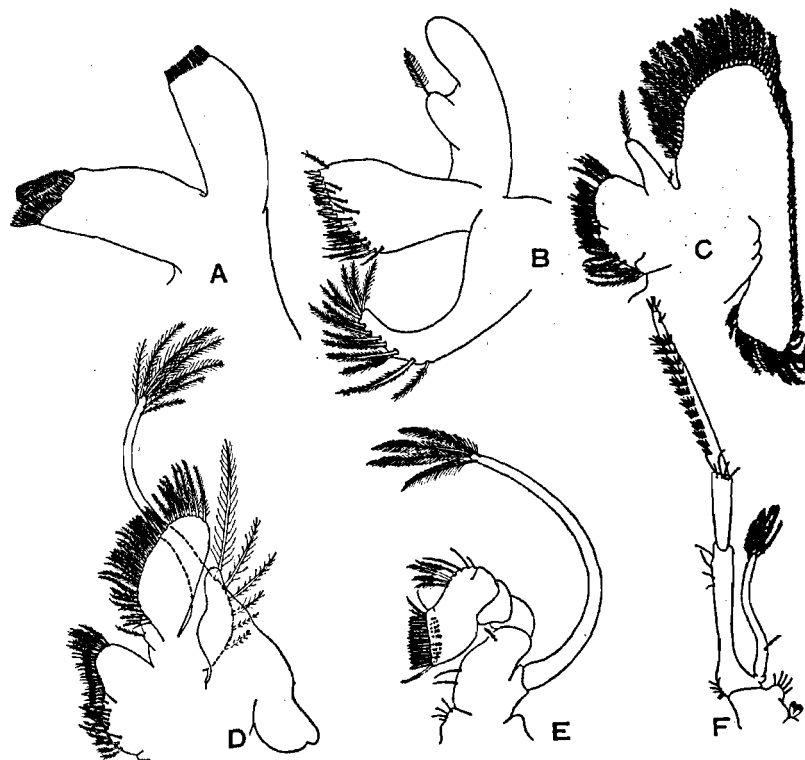


Fig. 3. *Batella bifurcata* sp. nov., holotype, male.

A, Right mandible in inner view,  $\times 112$ ; B, right maxillule in inner view,  $\times 42$ ; C, right maxilla in inner view,  $\times 21$ ; D, right first maxilliped in inner view,  $\times 21$ ; E, right second maxilliped in inner view,  $\times 21$ ; F, right third maxilliped in inner view,  $\times 11$ .

nathite is well developed. The distal endite of the first maxilliped is well developed and setose, the proximal endite is small and naked (Fig. 3, D); the palp (endopod) is also well developed, oval and fringed with

plumose setae on the inner margin; the exopod bears a narrow caridean lobe. The second maxilliped is normal and possesses a rudimentary epipod (Fig. 3, E). The third maxilliped is slender, extending beyond the tip of the antennular peduncle by the length of the distal half of the ultimate segment (Fig. 3, F); the penultimate segment is two-fifths of the length of the ultimate segment, and is half as long as the antepenultimate segment; there is a rudimentary arthrobranch and no hook-like epipod.

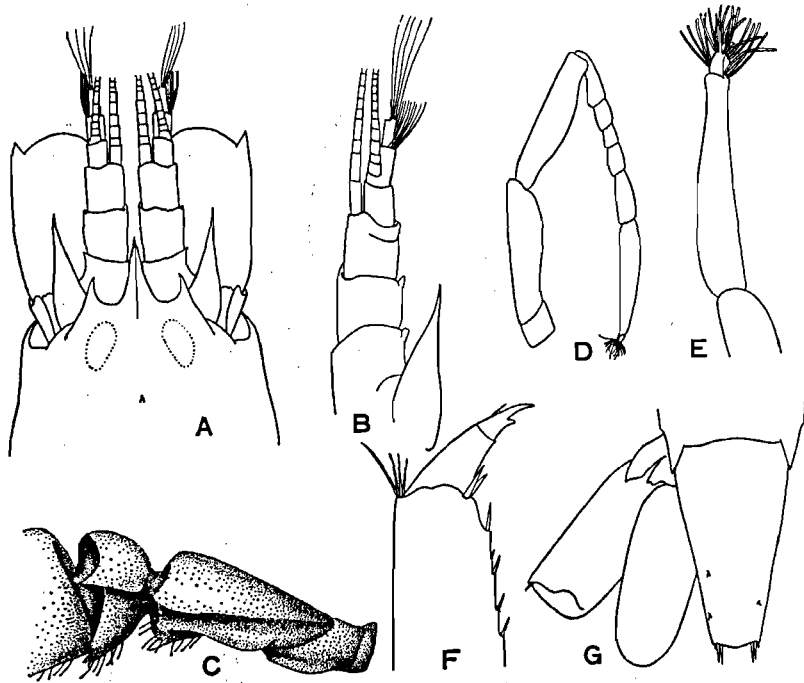


Fig. 4. *Batella bifurcata* sp. nov., holotype, male.

A, Anterior part of body in dorsal view,  $\times 5$ ; B, right antennule in obliquely dorsal view,  $\times 7$ ; C, basal part of left first pereopod in outer view,  $\times 7$ ; D, right second pereopod,  $\times 14$ ; E, chela and distal part of carpus of right second pereopod,  $\times 23$ ; F, dactylus and distal part of propodus of right third pereopod,  $\times 56$ ; G, telson and left uropod in dorsal view,  $\times 5$ .

The specimen has the right first pereopod missing. The left first pereopod greatly exceeds the antennular peduncle by the length of the chela. The movable finger (dactylus) is longer than the immovable finger; both fingers are compressed, having the irregular serrations on the proximal two-thirds of the cutting edges. The palm is cylindrical, smooth and sparsely hairy on the ventral margin. The carpus is cornical and embraces the proximal portion of the palm; the antero-

lateral margin is greatly produced externally and apically pointed, and is also ventrally exerted triangularly (Fig. 4, C). The merus is robust and two-fifths as long as the palm, the ventral surface is keeled. The ischium is short and obliquely articulated with the merus.

The second pereiopod is slender, being shorter than the third pereiopod; the chela gradually tapers to the extremity, from which tufts of scaly hairs radiate, as observed in *B. parvimanus* (Fig. 4, D, E). The carpus is long and subdivided into five joints, which are obliquely articulated, with the ratio: 10:5:4:5:10. The merus and ischium are smooth; the merus is as long as the chela, the ischium is as long as the carpus.

The last three pereiopods resemble each other. The third pereiopod exceeds the tip of the third maxilliped by the length of the dactylus; the dactylus is slender and biunguiculate, bearing an accessory tooth on the middle of the ventral margin (Fig. 4, F); the propodus has more than a dozen of small spines on the ventral margin; the carpus and merus are smooth, and the ischium has two spines.

The branchial formula of this species is identical with that of *B. parvimanus* recorded by Coutière (1899, p. 334) and tabulated as follows:

	I	II	III	IV	V	VI	VII	VIII
Pleurobranchs	—	—	—	1	1	1	1	1
Arthrobranchs	—	—	1	—	—	—	—	—
Podobranchs	—	—	—	—	—	—	—	—
Epipods	1	1	—	—	—	—	—	—
Setobranchs	—	—	—	—	—	—	—	—
Exopods	1	1	1	—	—	—	—	—

The abdominal segments are polished, and have the round posterior margins of pleura. The exopod and endopod of the uropod are slender and rectangular; the exopod bears a movable spine on the outer distal corner and a diaeresis near the distal margin. The telson tapers gradually, being 4.7 times as long as broad at the posterior margin, which is furnished with three pairs of movable spines; there are two pairs of spines on the dorsal surface, the proximal pair (right spine missing) is situated on the distal third and the distal pair on the distal fourth of the length (Fig. 4, G).

*Colour.* When we received the collections, the present specimen preserved in 5 per cent formalin for about a month was uniformly white.

*Remarks.* This species is very similar to *B. parvimanus* (Bate,

1888), but differs from the latter in the following respects:

1. The carapace of *B. bifurcata* possesses a protuberance, which is absent in *B. parvimanus*, on the median dorsal line of the gastric region.

2. The outer antennular flagellum of this species is bifurcated, hence the scientific name *bifurcata*, the stouter branch carries a tuft of long hairs on the distal extremity of each of the joints, while in *B. parvimanus* the outer antennular flagellum is simple, and carries long hairs along the axis of the flagellum.

3. Every one of the dactyli of the last three pereopods of *B. bifurcata* is biunguiculate and provided with an accessory tooth as well, while in *B. parvimanus* each of them is simple in Bate's description and figure. According to Dr. R. W. Ingle the holotype of *B. parvimanus*, however, is in poor condition and has the last three pairs of pereopods missing.

4. *B. bifurcata* possesses the longer rostrum and the longer stylocerite.

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