351. AN INTERESTING CRUSTACEAN REMAIN. **Ctenocheles sujaku** n. sp. FROM THE PALEOGENE OF KYUSHU, JAPAN*

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The crustacean remains here described, were collected from the Kishima formation in the boring cores of the Well, No. 11 of the Kogayama Coal Mines, Nagao, Minami-Taku-mura, Ogi-gun, Saga Prefecture by Mr. Tomosuke SUJAKU of the Mitsubishi Mining Company and were submitted to the writer with other remains of a new genus of the Goneplacids. They proved to be a very rare genus of the Family Callianassidae, of which descendant is a relict in the Japan Sea, *Ctenocheles batissi* KISHINOUYE, 1926.

Although the *Ctenocheles* remains are fragmentary, they have some importance from the stratigraphic view point by their well-defined characters.

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**Description**

Tribe Thalassinidea

Family Callianassidae

Genus *Ctenocheles* KISHINOUYE, 1926


In his description of *Ctenocheles victor* from the Eocene Rivernook House, on the coast about one and a quarter miles southeast of the mouth of the Gellibrand River, Victoria, M. F. Glaessner has already stated that *Ctenocheles* was established for a living Thalassinid corresponding in essential features with *Callianassa*, but distinguished by the excessive development of the right cheliped, which resembles that of the lobster-like deep-sea Decapod *Thaumastocheles*. Specimens of *Thaumastocheles japonicus* Calman are collected from depth of about 100m of the Sagami Bay, Shizuoka Prefecture and Kuninomada, by dragnets.

Only a right cheliped of this species was collected by Dolefin from Japanese waters and was described by Balss as *?Pentachles* nov. sp. Therefore, the specific name of the genotype was denominated as *balssi* by Kishinouye.

The genotype, *Ctenocheles balssi* Kishinouye was collected at Osu, near Kashiwasaki, Niigata Prefecture. This specimen, measuring 10cm in length, is female, and is more or less mutilated. This deep water dweller is blind. Any other specimen of Recent species has never been known to be collected thereafter.

M. F. Glaessner included *Ischnodactylus* (*Ischnodactylus cookei* Rathbun, 1935; *Ischnodactylus cullellus* Rathbun, 1935; *Ischnodactylus? dentatus* Rathbun, 1935) from the Paleocene and Eocene of Alabama and Mississippi and *Thaumastocheles reptelensis* Beurlen, 1939 from the Middle Oligocene of Hungary, in the genus *Ctenocheles*. The incomplete chelipeds of *Thaumastocheles reptelensis* Beurlen, 1939 possess distinctive features of *Ctenocheles*. K. Beurlen drew attention to their striking resemblance to the cheliped described by Balss as *Pentachles* sp.?

The fragmentary hands and fingers of *Ischnodactylus* also correspond with *Ctenocheles* in their shape and weak ornamentation, though the denticulation of most of these fingers is incompletely preserved. It should be noted that their identification with *Ctenocheles* does not affect other species of *Ischnodactylus*, *Ischnodactylus macrodactylus* (Schütter) and *Ischnodactylus esocinus* (Friisch), in which long spiny claws are associated with lobsterlike remains of the carapace or abdomen. Long fingers with long pointed teeth are observed in more than one family of Decapod Crustacea, but the shapes of ornamentation of the hand and fingers make it possible to distinguish them.

*Ctenocheles* has an asymmetrical and unequal first pair of the pereiopod and very specialized large cheliped. The only specimen of the genotype, *Ctenocheles balssi* has first pereiopod, of which the right one is larger than the left and is specialized in the shape of the finger like a comb.

Syntype No. 1, the manus with the fixed finger of the present species of the *Ctenocheles* is determined as the right one, by the swelling of both surfaces of the manus and the vertical furrow behind the articulation with the dactylus of one surface. The surface with a vertical furrow behind the articulation with the dactylus, is inner one and therefore the manus is determined as the right one by the orientation of the inner surface of the manus. This right manus of the present species of the *Ctenocheles* (syntype No. 1), belongs to the smaller cheliped of the first pair of the pereiopoda. The other four syntypes
of the present species of the *Ctenocheles*, (syntypes, No. II-V), are isolated, long, thin and denticulated fingers. They are no doubt belong to the larger one of the first pair of the pereiopoda. The left manus (syntype No. VIII) of the present species is larger type.

It is not always the case that in the same taxonomic unit of Crustacean Decapoda, the one cheliped, whether it is right or left, is longer than the other. Though it has never been assured in the living or fossil species as the *Ctenocheles*, have commonly asymmetrical chelipeds especially in the male. The present species of the *Ctenocheles* has the left larger cheliped, while the known specimens of *Ctenocheles victor* and *Ctenocheles balssi*, have the right larger chelipeds.

*Ctenocheles sujakui* n. sp.

Plate 44, figures 2-5.

Based on the right manus with the fixed finger (syntype No. I), four fragmental fingers (Syntypes No. II-V) of the larger chela (perhaps, left one), the right immovable finger of the second pereiopod (syntype No. VI), the fragmental posterior part of the chela (syntype No. VII), and the anterior part of the left manus with the stump of the fixed finger (syntype No. VIII).

Palm of the right manus elongate about one and a fifth times as long as high; swollen, thickness half of the width; superior border blunt, almost straight but gently swelled in the middle part; inferior border also blunt, but thinner than the superior; raised and swollen in the middle and the posterior part, with 7-8 pits along the inferior margin.

A vertical furrow behind the articulation with the dactylus on the inner surface is broad and shallow. Numerous irregularly polygonal pavements apparently belonging to the lower layer cover the whole surface except the distal portion. Manus of the left chela, decorticated, outer surface covered with polygonal pavements; palm much swollen; proximal end lacking; articulating condyle with the movable finger is large; the immovable finger is strongly deflexed.

Fixed finger imperfectly preserved, perhaps shorter than the palm, and oval in cross section at the base, with blunt and imperfectly preserved teeth along the prehensile edge. Fingers of the large chela very thin, platy and long attenuate abruptly in the distal part, with regularly alternating longer and shorter pointed teeth; longer teeth of the finger are regularly spaced and gradually shorten their length to the anterior part of the finger. the posterior part and the base of the finger unknown: between the longer teeth about three or four shorter teeth arranged, in these shorter teeth there are differences in length, and the one near the longer teeth shorter than the others; the curvature of the teeth slightly directed backwards in most cases; the distal ends of the teeth curved. The base of the right immovable fingers, (syntype No. VI) showing the inner superior surface with the ill-preserved small teeth along the prehensile edge, perhaps smaller chela of the second pereiopod. The fragment of the posterior part of the manus (syntype No. VII), perhaps belongs to the left larger chela of the first pereiopod, covered with irregular pavements.

**Dimensions:**—Manus (syntype No. I): length of palm: 16.5 mm; width of palm at distal part: 11 mm, maximum width in the middle part of palm: 14 mm; width of proximal part of palm: 12.5 mm; thickness of palm: 6.8 mm; length of fixed finger: 10 mm; basal section of
fixed finger: 2.5 mm × 1.8 mm.

Fingers (syntype No. II): length, 29 mm+, width, 2.5 mm+; (syntype No. III): length, 26 mm+, width, 2.5 mm±; syntype No. IV, length, 20 mm+, width, 3 mm±; syntype No. V, length, 11 mm+. Distances between the longer teeth, 5 mm and 5.8 mm in syntype No. II at the anterior part; 4.2 mm and 5 mm in syntype No. III at the anterior part; the distances between the longer teeth become longer forward. (syntype No. VII): fragment of the posterior part of the manus of the left larger chela. width, 8.5 mm+, length, 14 mm+. (syntype No. VIII): the left manus, the width of the anterior part, 12-13 mm; section of the stump of the immovable finger, height, 2.7 mm, width, 0.7 mm.

Geological Horizon, Locality and Repository:—Kishima formation, Ashiya group; from the boring core of the well, No. 11 of the Kogayama Coal mines, Mitsubishi Mining Company, at the western extremity of Nagao, Minami-Taku-mura, Ogi-gun, Saga Prefecture*: IGPS loc. no. Sa-002; lat. 33°17'18" N, long. 130°7' E., T. Sujaku coll. 1953, syntype No. I, sample number of the boring core No. 59, 249.6 m in depth, dark siltstone, IGPS coll. cat. no. 79567: syntypes No. II-VII, sample number of the boring core no. 68, 309 m in depth, dark siltstone, IGPS coll. cat. no. 79568. Syntype No. VIII, without sample number of the boring core, but seems to be near to No. 68, syntypes No. II-VIII, 309 m in depth, dark siltstone, IGPS coll. cat. no. 79568, with a molluscan fragment (Crassalellites? sp.).

Remarks:—Ctenocheles victor is larger in size comparing with Ctenocheles sujakui, the length of the finger of Ctenocheles victor is more than 14 mm and the length of its long teeth are over 2 mm and the length of its short teeth are less than 1/2 mm, while the length of the anterior part of the finger of Ctenocheles sujakui is more than 29 mm and the length of its long teeth are over 2 mm and the length of its short teeth are less than 1 mm. Morphologically they resemble very much, but the specimen of the finger figured by M. F. GLAESSNER in his figure 9, Plate I, (M. W. G. K. No. 1925) shows the long teeth bending slightly forward and the long teeth of the fingers of the large chelipeds of Ctenocheles sujakui leaning slightly backward, except the anterior long teeth of the syntype No. II.

Ctenocheles sujakui resembles closely to the living Ctenocheles balsii, but differs from the latter by the robust shape of its finger, and by the shorter palm of the smaller cheliped of the first pereiopod.

Ischnodactyulus celtellus RATHBUN, 1935 is described by the two specimens as follows, the one is the dactylus of the left cheliped, holotype (this specimen is mistaken for the right one by M. J. Rathbun, in the description, p. 14, but stated as the left one in his explanation of the figure, p. 139), preserved in the Alabama Museum of Natural History, from the Eocene Succaneochee formation at Estelle, Wilcox County, Alabama and the other is the right propodal finger, paratype, preserved in the John Hopkins University from the lower Eocene at Dry Creek, Jackson, Hinds County, Mississippi. These two specimens are also smaller type. Among these two specimens, paratype, the right propodal finger is 8.6 mm in length (end lacking), 1.4 mm in height at articulation, 0.5 mm in width of the teeth. The propodal finger of the left smaller chela, (syntype.
No. I). of *Ctenocheles sujakui* is more robust than the propodal finger of the right smaller chela of *Ischnodactylus culfellus*. *Ischnodactylus cookei* Rathbun, 1935 is collected from the Eocene Sucarnoochee formation, Midway in Prairie Creek region, Wilcox County, Alabama (holotype and paratype) and from the Sucarnoochee formation, Estelle, Wilcox County, Alabama (other specimens), the type locality of *Ischnodactylus culfellus*. The specimens of *Ischnodactylus cookei* are the right manus only, which belongs probably to larger cheliped. It is more smooth in its surface and smaller than *Ctenocheles sujakui*. The larger cheliped of *Ctenocheles sujakui* is easily distinguished from *Ctenocheles culfellus* by its larger articulating condyle with the movable finger.

*Ischnodactylus (?) dentatus* Rathbun, 1935 are composed only of the right propodal fingers and collected from the same locality as the other specimens of *Ischnodactylus culfellus* Rathbun, Dry Creek, Hills County. These three species of *Ischnodactylus*, *Ischnodactylus culfellus*, *Ischnodactylus cookei*, *Ischnodactylus (?) dentatus* may actually represent the different part of the same species, respectively, the dactylus and the propodal fingers of its left smaller cheliped, the manus of its right larger cheliped and the right propodal finger of its larger cheliped.

The incomplete chelipeds from the Middle Oligocene (Kiesseller Tegel) of Obunda near Budapest, Hungary which K. Beurlen (1939) described as *Thaumastocheles rupeliiensis* possess the distinctive features of *Ctenocheles*, but *Ctenocheles sujakui* is easily distinguished from the preceding species by the large number of the short teeth of the finger. The living Australian *Ctenocheles collini* M. Ward seems to be very robust.

**References cited**


Explanation of Plate 44

Fig. 1. *Ctenochetes balssi* KISHINOUYE, collected at Osu, near, Kashiwasaki, Niigata Prefecture, reproduced from Fig. 1 of KISHINOUYE's paper, nat. size.

Figs. 2-4. *Ctenochetes sujakuni* n. sp., Kishima formation and Ashiya group, from the boring core of the Well, No. 11 of the Kogayama Coal mines, Mitsubishi Mining Company, at the western extremity of Nagao, Minami-Takurama, Ogi-gun, Saga Prefecture, T. SUJAKU, coll., 1953, syntype No. I, sample number of the boring core No. 59, 249.6m in depth; syntypes No. II-VII, sample number of the boring core No. 68, 309m in depth; syntype No. VIII, without sample number of the boring core, but seems to be near to No. 68, with a molluscan fragment (*Crassatellites* sp.).

Fig. 2. Syntype No. I, right manus with the fixed finger, external view, ×8/3.

Fig. 2a. Manus of the same specimen as fig. 2, external view, ×7/3.

Fig. 2b. Manus of the same specimen as fig. 2, internal view, ×7/3.

Fig. 2c. Manus of the same specimen as fig. 2, internal view, ×5/2.

Fig. 2d. Manus of the same specimen as fig. 2, internal view, ×12/5.

Fig. 2e. Fixed finger of the same specimen as fig. 2, upper view, ×12/5.

Fig. 2f. Fixed finger of the same specimen as fig. 2, lower view, ×2.

Fig. 2g. Fixed finger of the same specimen as fig. 2, anterior view, ×3.

Fig. 3. Syntypes No. II-V, four fingers of the larger chela (perhaps, left one) and the right immovable finger of the second pereiopod, syntype No. VI, ×2.

Fig. 4. Syntype No. VIII, anterior part of the left manus with the stump of the fixed finger, ×23/12.

Fig. 4a. Same specimen as fig. 4. ×13/6.