

On the New Copepod, *Caligus calotomi* n. sp.,
Parasitic on the Fish, *Calotomus*
japonicus (C. & V.)

(With 2 text-figures)

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Description of the new Caligid Copepod given below is based on the female found on the body surface of *Calotomus japonicus* (C. & V.) taken at Nagasima, Mie Prefecture. Another female, showing the same characters as those of the type, has been captured in a net while swimming freely in an aquarium at Seto Marine Biological Laboratory, Sirahama, Wakayama Prefecture.

Caligus calotomi n. sp.

Pale brownish in alcohol, without pigment spots. Entire length including egg strings 6.30 mm, body excluding caudal rami 4.05 mm × 2.52 mm, egg strings 2.83 mm long (Figs. 1 & 2).

Carapace occupying 2/3 the entire length, as long as wide. Frontal plates slightly arched, with lunules apart. Two sides gracefully round and diverging backwards. Lateral areas narrow. Postero-median lobe half as wide as carapace, with more or less trapezoidal margin, and extending beyond lateral lobes. Sinuses obovate, widely open. Transverse dorsal suture curved anteriorly at the centre, separating cephalic from thoracic areas in the proportion of 2 to 3. Eye in the middle of former area. Fourth thoracic segment 1/4 as wide as carapace, but very short, transversely linear, and partly overlapped by carapace. Genital segment slightly less than twice the width of preceding segment, wider than long. Anterior border somewhat depressed on the median, continuing gracefully to well-

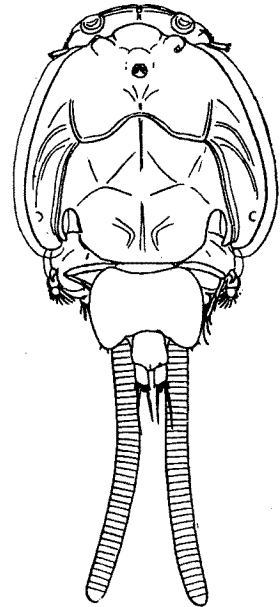


Fig. 1 *Caligus calotomi* n. sp., female. × 12.6

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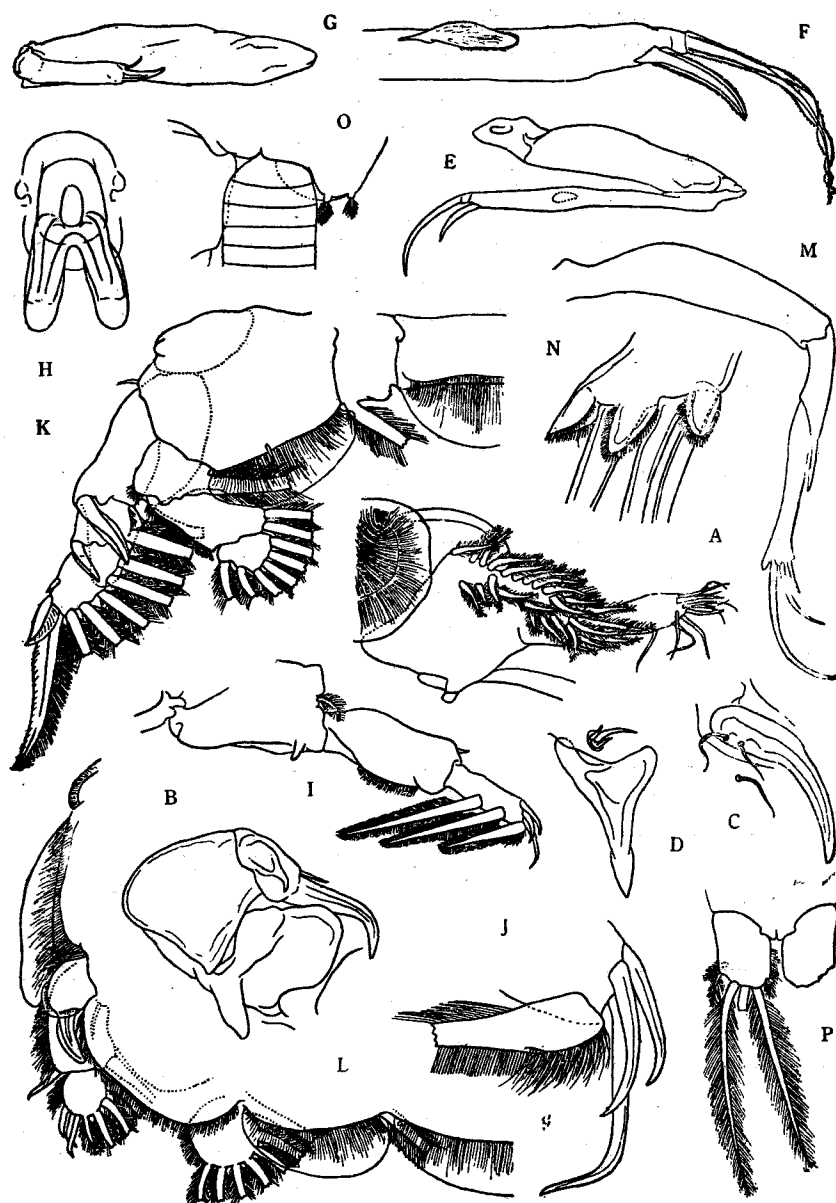


Fig. 2 Appendages of *Caligus calotomi* n. sp.

A, 1st antenna; B, 2nd antenna; C, 1st maxilla; D, 2nd maxilla; E, 1st maxilliped; F, apical portion of same, further enlarged; G, 2nd maxilliped; H, sternal furca; I, 1st swimming leg; J, tip of same, further enlarged; K, 2nd leg; L, 3rd leg; M, 4th leg; N, same, basal portion of apical spines, further enlarged; O, postero-lateral region of genital segment, showing 5th leg rudiment, ventral view; P, caudal ramus.

A $\times 30$, B-D, G, H $\times 87$, E, I, K-M $\times 60$, F $\times 153$, J, N $\times 305$, O, P $\times 47$.

round sides; posterior border emarginate, developing short, blunt lateral lobes. Abdomen small, 1/3 as wide as genital segment, and as long as wide. It is somewhat narrowed anteriorly, and has slightly undulated sides and V-shaped posterior border.

First antenna as usual in structure. Terminal claw of 2nd antennae slender, curved only near the tip, bearing a hook-like spine and a thin hair; basal joint with a large, blunt, dactyliform posterior process. Two pairs of maxillae relatively stout. First pair long, slightly bent in a sickle-shape; 2nd pair with a broad base and a narrow tip which is brimmed with an oval, apically pointed lamina. Distal joint of 1st maxillipeds slender and carrying some distance behind its tip a narrow, fusiform accessory lamina, finely pectinate on margin; 2 apical claws with similarly pectinate, narrow rims, those on longer claw spirally twisted around its axis. Second maxillipeds feeble; palm shorter and more slender than basal joint of 1st pair, rod-shaped and less than 1/5 as wide as long; claw nearly straight, hardly reaching the centre of palm when closed, and with a short accessory spinule. Branches of sternal furca broad, diverging in a V-shape; each of them brimmed on both inner and outer borders, ending in blunt, flattened apex. Base of the furca oval, with central foramen of similar shape. Arrangements of spines, setae, and other armatures on 4 pairs of swimming legs are as indicated in the following diagram:**

Leg	Border	Sternal plate	Protopodite		Exopodite			Endopodite		
			I	II	I	II	III	I	II	III
I	outer inner		1p		1rh c	2h, 1H 3P				
II	outer inner	f	1P	f, 1s f, 1s	f, 1H c, 1P	1H c, 1P	1rh, 1H, 1Q 5P	c 1P	c c, 2P	6P
III	outer inner	f	f, 1p 1P, f, c		1H', c, 1h 1P	c, 3h 4P		1P	c 6P	
IV	outer inner				1H	3H				

First legs with a small dactyliform rudiment of endopodite on posterior border of protopodite close to its end. Structure of plumose spines on 3rd joint rather peculiar: marginal cilia are rather stiff, of uniform length, and regularly arranged like the teeth of a comb, except for a short basal part of outer border of spines, where they are longer, curved and issued somewhat irregularly. Terminal spines consist of subequal 2 and much longer innermost 1, all curved at their apices. Spine on outer border of first 2 exopodite joints of 2nd legs with narrow rims. Of external spines on

** List of abbreviations: c, row of setae; f, membranous flange; H, longer spine; h, shorter spine; H', hook; P, longer plumose spine; p, shorter plumose spine, Q, spine ciliated on one side, rimmed on the other; rh, rudimentary spine; s, solitary hair.

3rd joint, basal one rudimentary, 2nd one well-developed, with a broad, crescent internal rim, and apical one far longer, attaining the lengths of other plumose spines, brimmed on outer border, but ciliated on inner border. Two rami of 3rd legs widely apart; exopodite 2-jointed, while endopodite 1-jointed, basal joint being fused with protopodite and represented by its crescent border interposed between the rami. Hook on exopodite with 2 separate rims, one on basal part and the other on terminal part. Fourth legs elongate, slender, 3-jointed. Spines on apical joint graded in length from within outwards, the innermost being 3 times longer than the outermost; each of them accompanied at the base with a triangular lamina, finely pectinate around its circumference. Spine on 2nd joint without basal lamina. Fifth leg rudiments a pair of small round elevations on ventral surface of posterior lobes of genital segment; each of them tipped by 2 short plumose spines. Caudal rami small, longer than wide, with 3 terminal plumose spines. They bear, further, 3 similar, but much shorter spinules, arranged 1 at outer distal angle and 2 at inner angle. Inner border of the rami ciliated. Egg tubes rather thin, about as long as carapace.

Type is retained in Mie Prefectural University.

Remarks: In the configuration of the genital segment and of the abdomen, the new species is closer to *centrodonti* BAIRD^{4,7)} than to any other of the valid species of the genus *Caligus*, which surpass a hundred in number. It differs from that species, however, in the absence of the rudiments of lateral plates on the 4th thoracic segment and in the structure of some of the appendages. Palm of the 2nd maxillipeds, which is very slender and elongate in the new species, is enlarged into a triangle in BAIRD's species. Of 3 terminal spines on the 1st legs, the longest is the inner one in the former, whereas it is the outer one in the latter, and the longest of those on the distal joint of the 4th legs is represented by the inner spine in one, but by the middle one in the other. Sternal furca ending in blunt apices in *calotomi* is acuminate in *centrodonti*. The new species resembles further, though less closely, *teres* WILSON⁷⁾, *belones* KRÖYER⁷⁾, *lacustris* STP. & LÜTK.⁶⁾, *balistae* STP. & LÜTK.⁶⁾, *patulus* WILSON⁸⁾, *remorae* BRIAN¹⁾, *labracis* T. SCOTT^{3,4)}, and *minimus* OTTO^{2,4)}, in the constitution of the posterior body segment. In all of them, however, the genital segment is relatively narrower and the appendages are also different in structure. *C. brevicaudatus* A. SCOTT⁴⁾, is similar to the new species in the 2nd maxillipeds having a slender palm and a nearly straight claw, besides in the shape of the genital segment, but the palm of the named limbs is relatively broader than in the present case. Of Japanese species, *oviceps* SHIINO⁵⁾ and *cordiventris* SHIINO⁵⁾ are somewhat resembling the new species in the genital segment, but different in its complete fusion with the 4th thoracic segment as well as in the constitution of the appendages.

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