REDESCRIPTIONS OF *CALIGUS PELAMYDIS* KROYER AND *CALIGUS KANAGURTA* PILLAI WITH REMARKS ON THEIR AFFINITY.

ABSTRACT

This paper describes *Caligus pelamydis* Kroyer and shows that though *C. kanagurta* Pillai is closely related to *C. pelamydis* it is a valid species.

WHILE describing *C. pelamydis* Kroyer, Lewis (1967) observed that this species closely resembles *C. kanagurta* Pillai but can be distinguished by the presence of only one plumose spine on the fourth leg against three in *C. kanagurta.* In the light of this observation, I re-examined the specimens of *C. kanagurta* with me and compared them with two females of *C. pelamydis* kindly gifted by Dr. K. G. McKenzie, Crustacea Section, British Museum (N. H.), London. The present study has shown that *C. pelamydis* and *C. kanagurta* though closely related show sufficient difference to merit separate specific status.

I thank Dr. McKenzie for giving me the two specimens of *K. pelamydis.*

Caligus pelamydis Kroyer (Fig. 1*a*-l and Fig. 2 a-c)

Caligus pelamydis Kroyer, 1863, p. 124, pl 4, figs. 4a-g ; Wilson, 1905, p. 594, pl. 13, figs. 154-161, pl. 14, fig. 161a ; Hewitt, 1963, p. 78, fig. 6.

Material Examined :

Two females from the inner side of the operculum of mackerel from the Irish Sea. 1913. Brit. Mus. Cat. No. 1913. 9. 18. 87-96.

Description of Female :

Carapace as long as broad. Frontal plates rather low and the lunules hardly visible in the dorsal view. Carapace with two pairs of antero-lateral constrictions. Postero-median lobe of carapace medially produced over the fourth segment.

Fourth segment fused with genital segment. Genital segment somewhat pyriform, clearly longer than broad, its postero-lateral parts rounded, not produced into lobes. Abdomen two-segmented, first segment about three times as long as second, lateral borders subparallel. Anal laminae about one and a half times as long as broad, with two outer, four distal and one dorsal setae.

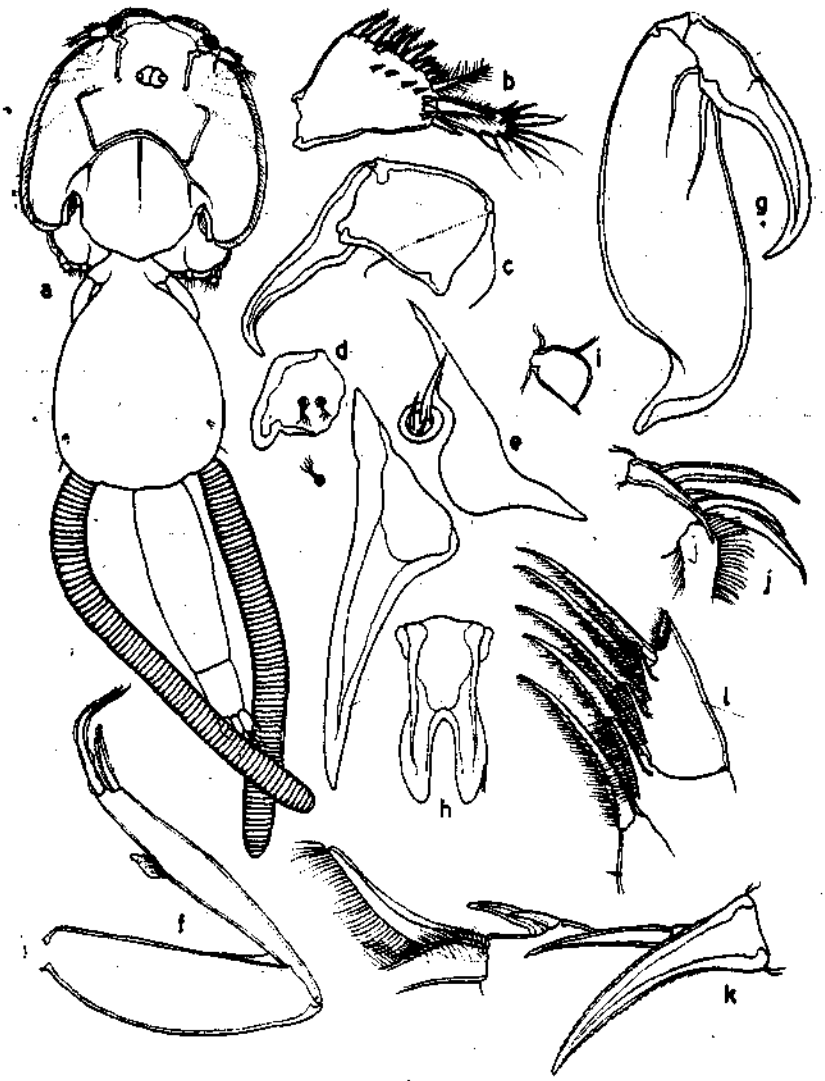

Fig. 1. *Caligus pelamydis* Kroyer. *a.* female ; *b.* first antenna ; *c.* second antenna ; *d.* first maxilla ; *e.* second maxilla ; *f.* first maxilliped ; *g.* second maxilliped ; *h.* sternal fork ; *i.* vestigial endopod of leg 1 ; *j.* tip of exopod of leg 1 ; *k.* exopod of leg 2 ; *l.* tip of leg 4.

Basal segment of first antenna armed with two rows of setae, a marginal row of long setae and a sub-marginal ventral row of short setae. Two stout setae at the distal end with long stiff hairs. Distal segment twice as long as basal, with compara-

tively long slender setae. Second antenna three-segmented, distal segment rather strong and distally strongly curved, the setae usually present could not be located.

First maxilla an irregular plate fused with the carapace, with a small apically blunt process. Second maxilla comparatively very well developed, apically rather pointed, its basal inner part considerably drawn out. Palp composed of a stout seta and two short slender setae. Adjacent to the palp is an irregular chitinised plate.

Distal segment of first maxilliped slightly longer than basal, with a prominent outer membranous flange and two distal claws or spines. Second maxilliped strong, with stout basal segment and strongly falcate distal segment.

Sternal fork with a rectangular base, as long as the tines, latter rather flattened and apically very slightly curved inwards.

First leg with comparatively stout propodal segment carrying a flat remotely squarish vestigial endopod carrying a single apical spine. First segment of exopod only slightly longer than the protopod and carries a sharp dorsal distal spine. Distal exopod segment carries three rather long irregularly curved spines, the first two spines are barbed and the first overlaps the segment. The spine-seta usually present at the outer distal corner is spine-like and its distal part is suddenly narrowed to appear like the trigger of a rifle.

Basal segment of the endopod of the second leg is unarmed, second and third segments externally armed with small sharp spines forming a conspicuous patch on each segment. First segment of exopod with a stout spine curved inwards, second with a moderately large spine directed straight outwards, third segment carries a small spine, a fully modified seta and a partially modified seta.

Basal spine of the exopod of the third leg stout and curved inwards, basal segment stout and thickly hairy along the outer border. Distal segment of the endopod very characteristically curved, its outer border thickly hairy. Apron large and the rami consequently set wide apart.

Fourth leg four-segmented and rather flattened, first segment with a lower distal seta and as long as the rest of the limb. Second segment with one hirsute seta and a short spinule slightly below the seta, third segment with one and fourth with three hirsute setae, second to fourth setae with a digitiform hairy process originating near the base. Tip of fourth segment produced into a conical process with hirsute inner border.

Fifth leg formed of a bunch of three setae situated sub-marginally on the ventral side of the genital segment. Sixth leg formed of a marginal nodule carrying a single seta.

Length 4.5 mm.

Caligus kanagurta Pillai (Fig. 2d-k)

Caligus kanagurta Pillai, 1961, p. 100, fig. 8.

Caligus pelamydis Lewis, 1967, p. 138, figs. 52-52.

Parapetalus sp. Silas and Ummerkutty, 1967, p. 908, fig. 18.

Remarks :

C. kanagurta Pillai as remarked by Lewis (1967) closely resembles *C. pelamydis* Kroyer. According to Lewis in the latter species the fourth leg has only a single setiferous process while in *C. kanagurta* there are three such processes. The present study of two specimens of *C. pelamydis* collected from *Scomber scombrus* in the Irish sea and identified by Scott and Scott, 1913, shows that in *C. pelamydis* also there are

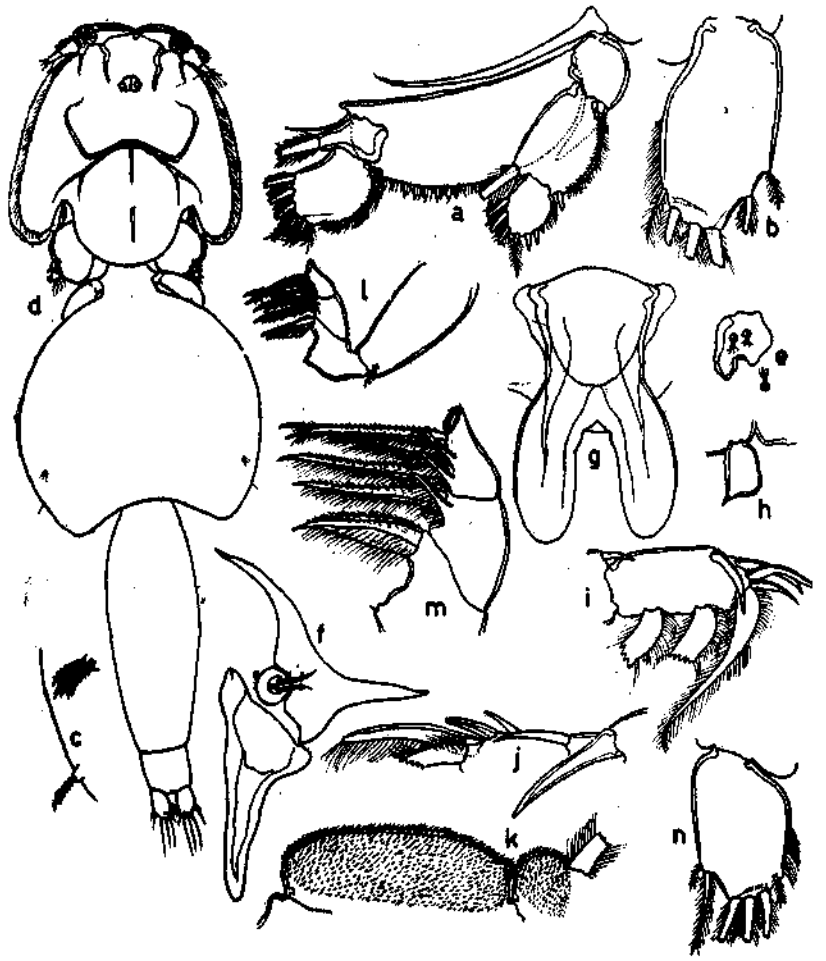

Fig. 2. *a-c Caligus pelamydis* Kroyer. *a.* rami of leg 3 ; *b.* anal lamina ; *c.* legs five and six; 2. *d-n. Caligus kanagurta* Pillai. *d.* female ; *e.* first maxilla ; *f.* second maxilla. *g.* sternal fork ; *h.* vestigial endopod of leg 1 ; *i.* tip of exopod of leg 1 ; *j.* exopod of leg 2 ; *k.* endopod of leg 2 ; *l.* leg 4 ; *m.* same, tip enlarged. *n.* anal lamina.

three processes on the fourth leg. This discovery makes these two species closer than Lewis thought. But a careful comparison of the collections hitherto described as *C. pelamydis* shows that two clearly distinct types of specimens are involved. In the specimens which Kroyer referred to *C. pelamydis* the genital segment is clearly

narrower than the carapace and its postero-lateral parts are rounded and not produced. This is so in the specimens described by Wilson (1905) and Hewitt (1963). But in the single specimen illustrated by Lewis the genital segment is as broad as or broader than the carapace and its postero-lateral parts are produced into subconical large lobes clearly reaching beyond the hind border of the genital segment. There is appreciable difference in the shape of the abdomen also. In the true *C. pelamydis* the first abdominal segment has its lateral borders only very slightly arched, the whole segment thus having subparallel sides. This segment is about three times as long as the second. In the other types of specimens the first segment of the abdomen is conspicuously more swollen and is five times as long as the distal segment. Lewis stated that in the material in the United States National Museum there are specimens with the genital segment postero-laterally produced or not and he concluded that the shape of the genital segment varies. Though it is true that the shape of the genital segment of *Caligus* species varies depending on the degree of maturity of the ova within, in the present instance this is not the case. All the specimens in my collection have the lobed genital segment as in the specimen described by Lewis. The collection in the United States National Museum examined by Lewis is obviously a mixture of the two types of specimens. Those with unlobed genital segment belong to *C. pelamydis* Kroyer and those with lobed genital segment to *C. kanagurta* Pillai. There are indeed numerous records of *C. pelamydis* but most of them contain no information on the specific characters of the specimens. Hence in the synonymy of the two species described here, I have listed only those records about which one can be definite.

A close comparison of *C. pelamydis* Kroyer and *C. kanagurta* Pillai shows that apart from the shape of the genital segment and the abdomen mentioned above, these two species show difference in some of the appendages also. The two pairs of antennae and the two pairs of maxillipeds show no difference. In the first maxilla of *C. kanagurta* there is a small ventral lobe in addition to the large lobe. In *C. kanagurta* the second maxilla is apically more rounded and its basal inner part is less produced and the palp of the maxilla has two subsimilar setae and a small seta whereas in *C. pelamydis* one of the three setae is very stout. The tines of the sternal fork in *C. kanagurta* are more flattened and apically more rounded than in *C. pelamydis* and the base of the sternal fork is comparatively shorter in *C. kanagurta*. The vestigial endopod of the first leg in *C. pelamydis* is proportionately broader than in *C. kanagurta*. In the fourth leg of *C. kanagurta* the modified claws are very flat and remain at right angles to the segments bearing them and the inner median part of the second segment is considerably bulged, with a double boss bearing a spinule. In *C. pelamydis* the claws are narrower, stronger, and remain at an angle of 45° with the segments carrying them and the second segment is not bulged at all. In *C. kanagurta* the anal laminae are conspicuously longer, being remotely rectangular but roughly squarish in *C. pelamydis*.

The shape of the genital segment, abdomen and the fourth leg easily distinguishes *C. pelamydis* from *C. kanagurta*.

Department of Aquatic Biology and Fisheries,
University of Kerala,
Trivandrum-7.

N. KRISHNA PILLAI.

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