

**PENNELLA INSTRUCTA WILSON (COPEPODA), PARASITIC ON THE
SAILFISH, ISTIOPHORUS PLATYPTERUS (SHAW AND NODDER)**

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Pennella instructa Wilson, a parasitic copepod, has been obtained from the sail fish, *Istiophorus platypterus*, collected along the south-east and south-west coasts of India. This collection extends the range of distribution of *P. instructa* to the above areas. A description of the female is given.

Gnanamuthu (1957) described four new species of *Pennella* Oken, parasitic on various species of flying fishes from the Madras coast. They are *P. robusta*, *P. longicauda*, *P. elegans* and *P. platycephalus*. Other Indian Ocean species of the genus *Pennella* include *P. zeylanica* Kirtisinghe (1932) (= *P. instructa* Wilson) found on the body of *Histiophorus gladius* (Broussonet) (= *I. platypterus* Shaw and Nodder), *P. biloba* Kirtisinghe (1933) parasitic on the black marlin, *Makaira indica* (Cuvier), *P. selaris* Kirtisinghe (1964) on *Selar malam* Bleeker and *P. diodontis* Oken on *Diodon maculifer* Kaup. The following is a description of *P. instructa* Wilson based on four female specimens found on the sailfish from the Indian Region.

PENNELLA INSTRUCTA Wilson

Pennella instructa Wilson, 1917, P. 122, Pl. 18 and 1932, P. 491, fig. 295C. Yamaguti, 1939, P. 438, Pl. 33, fig. 193. Heegaard, 1962, P. 186. Silas and Ummerkutty, 1962, P. 934, Fig. 31, 1-5. Kirtisinghe, 1964, P. 110, Fig. 153. Pillai, 1965, P. 1652, Fig. 220.

Pennella zeylanica Kirtisinghe, 1932, P. 137, Figs. 1-5.

Material — Two complete female specimens and two female specimens without head and part of neck, deposited in the Reference Collection Museum of Central Marine Fisheries Research Institute.

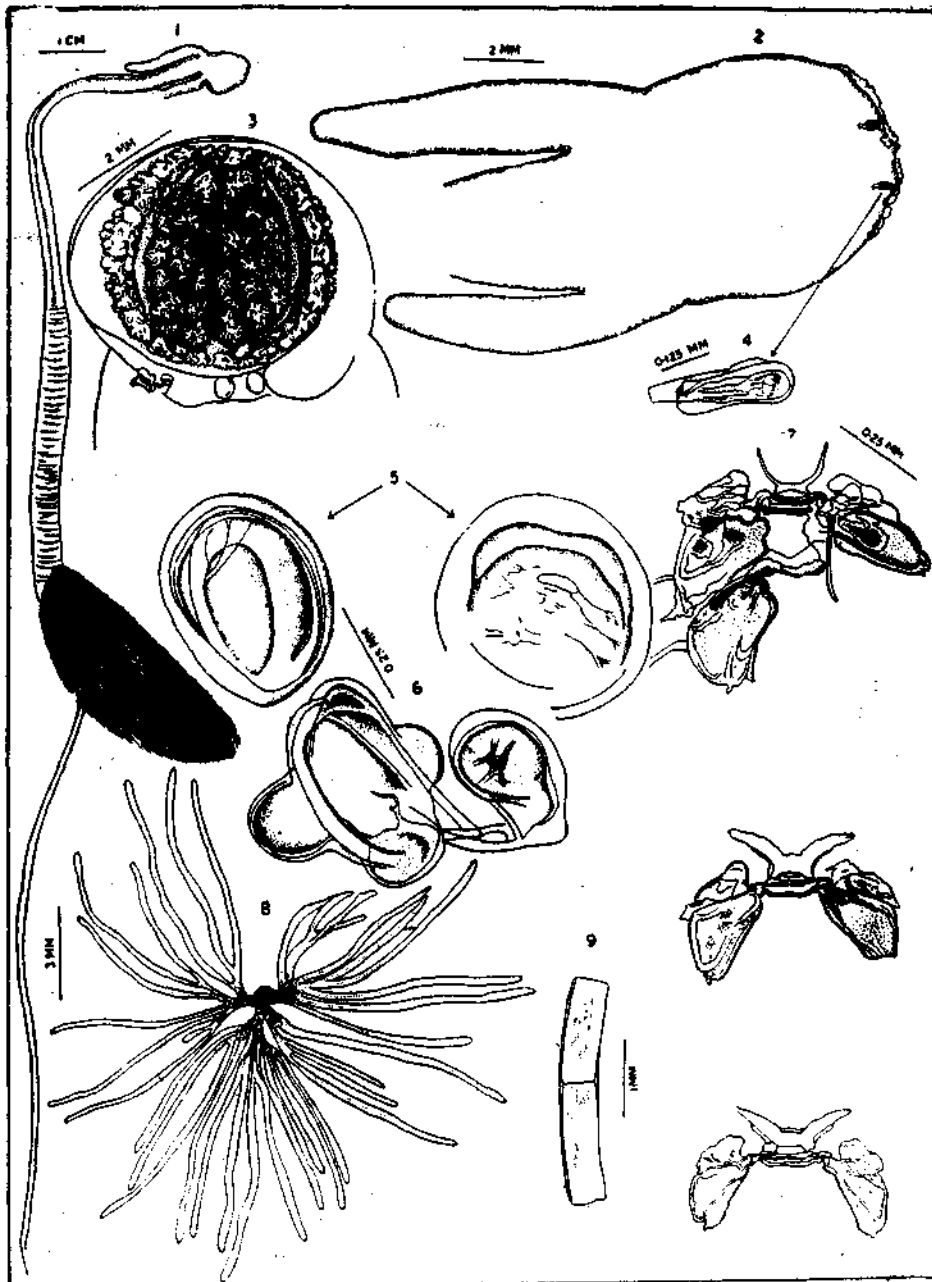
Occurrence — Two female specimens; head and neck buried deep into the viscera close to a large blood vessel of a 200 cm long sailfish, *Istiophorus*

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platypterus, caught from the Arabian Sea and landed at Vizhingam on 24 July, 1962. One female specimen on the sailfish from the same locality, date not known. Another female specimen on a sailfish, 180 cm long, caught from Gulf of Mannar and landed at Theckuvadi in Rameswaram Island on 24 October, 1970.

Distribution — On *Xiphias gladius* off the east coast of the United States (Wilson, 1917, 1932) and off Japan (Yamaguti, 1939), on *Istiompax australis* and *Makaira zelandica* off the coast of New South Wales, Australia (Heegaard, 1962) and on *Histiophorus gladius* off the south coast of Ceylon (Kirtisinghe, 1932, 1964). The present records extend the distribution to the south-east and south-west coasts of India.

Description of female — Body elongated. Head longer than wide, with two lateral horns directed backwards, close to the neck and bluntly pointed; left horn a little shorter than its fellow in one specimen (Fig. 2); but in the other posterior tip of the left horn is broken (Fig. 1). Mouth in the centre of the truncated surface surrounded by simple, tumid papillae arranged in two concentric rows — the inner encircling the mouth lengthwise and the outer bordering the periphery (Fig. 3). Neck elongate, slender, smooth and half as wide as the width and a little more, to more than double the length of the trunk. Neck merges imperceptibly with the trunk. Genital segment or trunk elongate and wrinkled and bears a pair of long and slender filiform egg strings near its junction with the abdomen on the ventral aspect. Length of terminal segment or abdomen 0.6 to 0.72 times in trunk, wider near its junction with the trunk and wrinkled. Abdominal appendages 21 to 24 pairs, originate on the lateral aspect of the abdomen, profusely branched and directed ventrally backwards (Figs. 1, 8). They cover the whole lateral and ventral aspects of the abdomen leaving only the dorsal side. From middle to end of each finger-shaped branch of the abdominal appendages of two specimens from Vizhingam covered by hydroids presenting a brushy appearance towards the terminus. Thoracic appendages, four pairs — first two pairs close together; distance between the appendages in the proportion of 1:4.66:4; all appendages devoid of rami; a well-developed claw in each appendage. A wing-like thin expansion from the base of each appendage, not shown in any species of *Pennella* including previous descriptions of *P. instructa* is present. From the sternal plates of the first, third and fourth pair of appendages a pair of very prominent horns project anteriorly which appear to be chitinised plates (inter coxal plates) to afford attachment to the muscles of the protopod of the legs. First pair of maxilliped just posterior and ventral to the truncated surface, dirty white in colour and modified in the form of a sucker like disc (Fig. 5). Second maxilliped developed in the right side only and possesses five plate-like discs (Fig. 6). Second antenna just at the middle anterodorsal margin of the truncated surface in between the papillae, very small and insignificant, two-segmented and club-



Figs. 1-9. *Pennella instructa*. 1. Whole specimen. 2. Head and lateral horns. 3. Truncated surface showing tumid papillae (maxillipeds shown). 4. Second antenna. 5. I. Maxillipeds. 6. II. Maxilliped. 7. Thoracic appendages (four pairs — drawn in proportion). 8. 14th abdominal appendage. 9. A portion of egg string.

shaped (Fig. 4). Colour of two specimens from Vizhingam (A, B) — head light brown, horns light brown speckled with white, trunk and abdomen deep brown, abdominal appendages yellowish brown; one specimen from Vizhingam and one from Theckuvadi (C, D) — anterior portion of neck brown, posterior portion of neck, abdomen and abdominal appendages slate or steel coloured matching the skin colour of the host and egg strings orange yellow. Total length from tip of head to tip of abdomen, 124.5 to 159.5 mm and egg strings up to 225 mm. Body measurements of all specimens are given in Table 1.

TABLE 1. *Body measurements of Pennella instructa (in mm)*

Body part	Specimen — A (Complete)	Specimen — B (Complete)	Specimen — C (Without head & part of neck)	Specimen — D
Head				
Width	6.00	5.40	—	—
Length	6.25	7.00	—	—
Neck				
Width	2.50	2.15	3.00	2.75
Length	48.00	85.00	20+	19+
			(only a portion)	
Trunk				
Width	3.00 to 4.75	4.50	5.00	4.25
Length	41.25	39.00	44.00	41.50
Abdomen				
Width	2.50	2.50 to 3.25	2.75 to 4.00	3.00
Length	29.00	28.50	28.00	25.00
Right horn				
Length	11.00	7.70	—	—
Left horn				
Length	7.50 (tip broken)	7.40	—	—
Egg string				
Length				
Left	11+(a portion)	13+(a portion)	38+(a portion)	170.00
Right	—	—	58+(a portion)	225.00
Total length	124.50	159.50	—	—
Pairs of abdominal appendages	24	23	21	21

Discussion — According to Leigh-Sharpe (1928) the species of *Pennella* fall into two groups — smaller forms in which the neck is shorter than the trunk and large forms in which the neck is longer than the trunk. Kirtisinghe's (1964) *P. selarti* is an intermediate group where, though the animal is less than 30 mm in length, the neck is much longer than the trunk. Wilson (1917) grouped the genus into smaller forms of length 50 mm or less where he places *P. sagitta* (Linn.), *P. exocoeti* (Holten), *P. liouvillei* Quidor and *P. varians* Steenstrup and Lutken and larger forms of length 100 mm or more.

It is seen that in smaller forms such as *P. selaris* Kirtisinghe, *P. biloba* Kirtisinghe, *P. diodontis* Oken, *P. robusta* Gnanamuthu, *P. longicauda* Gnanamuthu and *P. elegans* Gnanamuthu the abdominal appendages are very simple, unbranched or just forked. Only in *P. platycephalus* Gnanamuthu (length 37 mm), of the 16 pairs of abdominal appendages, each except the first two pairs is with 3 to 4 branches. In larger forms such as *P. instructa* Wilson, *P. filosa* (Linn.), *P. orthogorisci* Wright and *P. balaenopterae* Koran and Danielssen, the abdominal appendages are profusely branched (Fig. 8-14th gill of *P. instructa*). Evidently the nature of the abdominal appendages in these groups is in accordance with their respiratory requirement, larger forms requiring vast respiratory area and *vice versa*.

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