

DESCRIPTION OF A NEW SPECIES OF *PARAPETALUS* (CALIGIDAE :  
COPEPODA) FROM KERALA

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ABSTRACT

A new species of *Parapetalus* collected from the fish *Rachycentron canadus* (Linnaeus) is described in detail. Affinity of this species is discussed with other related members of the genus.

INTRODUCTION

WHILE making a detailed survey of the copepods parasitizing the marine fishes of the Kerala Coast one of us (N. K. S. P.) collected 18 females from *Rachycentron canadus* (Linnaeus), belonging to the genus *Parapetalus*. A number of *P. occidentalis* Wilson were also collected from the same host, along with the new species.

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*Parapetalus dewani* sp. nov. (Fig. 1 a - s)

*Material* : Eighteen females were collected

from the opercular cavity of *Rachycentron canadus* (Linnaeus) caught at Cochin. The holotype female will be deposited in the Indian Museum, Calcutta, India.

*Female* : Cephalothorax (Fig. 1 a) broader than long, sub-circular, lateral margin fringed with membranes having a distinct notch anteriorly, frontal plates comparatively narrow, lunules small and ovoid in shape. Posterior sinuses oblique and open, cephalic ridges far behind the median line. Lateral lobes inwardly curved with a round posterior border. Postero-median lobe is about twice the width of lateral lobes. Fourth thoracic segment broader than long, fused with the genital segment, genital segment swollen, laterally winged, the wings are extending beyond the middle of abdomen. Abdomen apple-shaped, joined with the genital segment with a neck, broader than long with almost straight truncated anterior margin, tapering posteriorly with two postero-lateral lobes. Caudal lamina short and not extending beyond the abdominal lobes. Posterior end with six setae.

*First antenna* (Fig. 1 b) two segmented basal segment stout, slightly inwardly curved, outer margin with a row of plumose setae. Distal segment slender, narrow with a tuft of distal setae, a single naked seta present on the inner margin.

*Postantennal process* (Fig. 1 d) positioned antero-lateral to the mouth cone, roughly triangular with a broad base tapering with a prominent subterminal outgrowth.

*Postoral process* (Fig. 1 e) placed postero-lateral to the mouth cone with a broad base

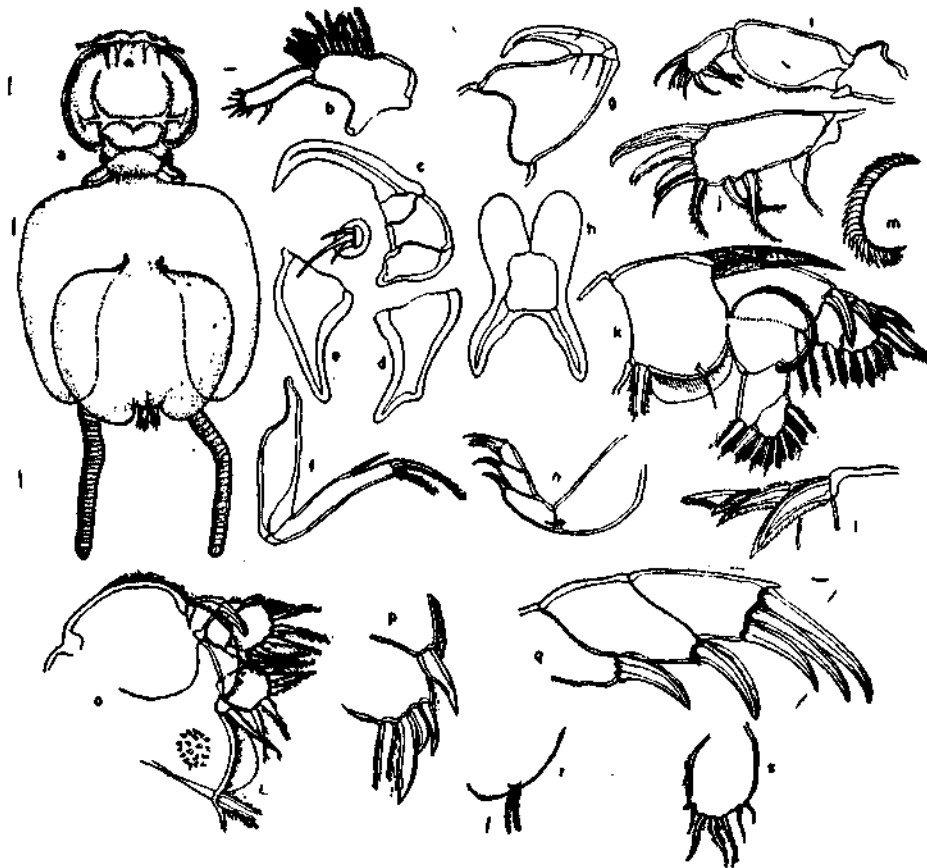


Fig. 1. *Parapetalus dewani* sp. nov. female : a. Dorsal view, b. First antenna, c. Second antenna, d. Postantennal process, e. Postoral process, f. Maxilla, g. Maxilliped, h. Sternal fork, i. First leg, j. First leg tip enlarged, k. Second leg, l. Exopod of the second leg, m. Endopod of the second leg, n. Fourth leg, o. Third leg, p. Exopod spines enlarged, q. Fourth leg tip enlarged, r. Fifth and sixth legs and s. Caudal lamina.

*Second antenna* (Fig. 1 c) three segmented, basal segment short with an inwardly directing process, second segment stout, broader than long, third segment long, distally curved, with a pointed claw.

tapering into a blunt claw. The basal palp with two small and one long setae.

*Maxilla* (Fig. 1 f) two segmented basal segment stout with a narrowing base. Distal

segment elongated, equal in length with basal segment, having two setiferous process of sub-equal length, subterminally there is a flap like extension from the inner margin of the distal segment.

*Maxilliped* (Fig. 1 g) three segmented, basal segment short and fused with the cephalothorax. Second segment stout, broader than long, roughly conical in shape. Distal segment ends in a sharp curved claw.

*Sternal fork* (Fig. 1 h) well developed, base with two backwardly directed wings. Tines are elongated, unflanged and diverging.

*First leg* (Fig. 1 i) uniramous, basipod with a rudimentary endopod on its inner margin. Exopod three segmented, basal segment short, stout and inner margin with a papilla like out growth. Second segment longer than broad, comparatively stout, inner margin fringed with a row of hair like setae. Distal segment short, less than half the length of the second segment. Distally it bears (Fig. 1 j) three claw like spines of sub-equal length. second and third claws with accessory spine. Inner margin of the segment with three plumose setae and the distolateral corner having a naked seta. Inner margins of the second and third claws armoured with small teathy serrations.

*Second leg* (Fig. 1 k) biramous, basal segment stout, broader than long, inner margin with marginal membrane, posteriorly the inner margin bears large plumose seta and near the middle with a short naked setae. Exopod (Fig. 1 l) three segmented, first segment elongate, outer margin covered with a membranous flange. The segment bears a stout and comparatively long inwardly curved claw on the disto-lateral end, the claw flanged with serrated membranes. Second segment short, broader than long, distally with a strong claw having serrated membrane. Third segment small with a short claw. Endoped (Fig. 1 m)

three segmented, basal segment stout and the outer margin fringed with a row of denticles upto the middle and the rest lined with fine setules. Second segment broader than long, with an inner plumose seta. Distal segment roughly triangular and bearing seven plumose setae.

*Third leg* (Fig. 1 o) Apron broad with a circular patch of denticles at the lower half. Rami well developed exopod (Fig. 1 p) three segmented. Basal claw of the first segment strong curved and not winged; Disto-lateral corner of the second segment bears a sharp stout claw like spine. Distal segment with three unusually stout claw-like spines of which the third spine is very stout and strong. Inner margin with five plumose setae. Endopod two segmented, basal segment very short with a plumose seta. Terminal Segment large and armed with six plumose setae.

*Fourth leg* (Fig. 1 n) four segmented, basal segment long and stout, distally it bears one spine. Second and third segment on its disto-lateral side bears a strong claw. The claws (Fig. 1 q) are winged, its base with a tuft of fine setae. Distal segment with three distal unflanged claws.

*Fifth and sixth legs* (Fig. 1 r) represented by two small plumose setae on the disto-lateral corner of the genital segment.

*Caudal lamina* (Fig. 1 s) small with three comparatively long plumose and three short naked setae. Total length : 5.2 mm.

#### REMARKS

*Parapetalus dewani* sp. nov. shows resemblance with *Parapetalus occidentalis* Wilson (1908) in general appearance, but differs in some important characters. *P. dewani* mainly differs from *P. occidentalis* in the structure and shape of the abdomen. In *P. dewani* the abdomen is apple shaped, bulging on the

anteriolateral margins and posteriorly narrowing. But in *P. occidentalis* the abdomen is longer than the genital segment, produced into lateral wings curled ventrally and the posterior margin nearly truncated. In *P. dewani* the lateral wings are not curled ventrally and the posterior border rounded. In *P. dewani* the postantennal process with a sub terminal outgrowth where as in *P. occidentalis* the postantennal process without the sub-terminal outgrowth. The corrugated patch present on the anterior border of the third leg of *P. occidentalis* is lacking in *P. dewani*. Outer marginal spines on the third segment of the exopod of the third leg in *P. dewani* are unusually stout and claw like whereas the spines on the *P. occidentalis* are slender. *P. dewani* differs from all other members of the genus by the shape and structure of the abdomen, nature of the postantennal process and the presence of claw like spines on the exopod of the third leg.

Members of the genus *Parapetalus* except *P. hirsutus* (Bassett-Smith 1898) are found to be host specific, parasitizing the fishes of the family Carangidae and Rachycentridae coming under the order Perciformes. All the species including the new species *P. dewani* show certain identical character combinations having the distal segment of the first antenna slender and elongated, second antenna with a strong falcate distal claw, first segment of the endopod of the second leg with a circular row of denticles on its outer margin, apron of the third leg with patches of denticles. This convergence of characters may be due to the host specificity of this genus. Two other species *P. formicoides* (Redkar *et al.*, 1949) and *P. caudatus* (Gnanamuthu, 1950)

formerly included in the genus was transferred by Pillai (1962) by creating a new genus *Pseudopetalus*. These two species were collected from the fishes of the order Clupeiformes. It is interesting to note that these two species having contrasting characters with the other members of the genus *Parapetalus*. So this transfer established the host specificity of the genus *Parapetalus* with fishes of the family Carangidae and Rachicentridae.

Pillai (1962) in the revision of the genus *Parapetalus* discussed in detail the validity of the genus. He observed that there is not much variation between the genus *Caligus* Muellel and *Parapetalus* Steenstrup and Lutken except the wing like genital segment and abdomen. Hameed and Pillai (1973) proposed to reexamine the validity of the genus while describing a new species *Caligus parapetalopsis* a species resembling *Parapetalus*. In the light of the present study we observe that the *C. parapetalopsis* lacks a major structural similarity with *Parapetalus*. In all the known species of the genus *Parapetalus* the abdomen joins with the genital segment through a neck like formation and the abdominal wings overlapping the genital wings. But in *C. parapetalopsis* the abdomen fused with the genital segment without a neck and not overlapping the genital wings. Detailed observation of the members of the genus *Parapetalus* revealed that the abdomen joins with the genital segment through a neck-like formation and the abdominal wings overlapping the genital wings. Based on this character the genus *Parapetalus* can easily be identified. Pillai (1962) revised the genus based on the same features so we agree with Pilla's identifying characters.

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