

TWO DIGENETIC TREMATODES (FAMILY HEMIURIDAE) OF MARINE
FISHES OF INDIA

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ABSTRACT

The paper deals with the descriptions of two new species *Parahemiurus dussumieriai* from the host fish *Dussumieria acuta* Cuv. and Val., and *Aphanurus tuberculatus* from the fish hosts *Hilsa sinensis* (L.) and *Sardinella fimbriata* (Val.). They belong to the digenean family Hemiuridae.

The material for the present study was collected from Madras and Tuticorin (Bay of Bengal) and Bombay (Arabian Sea) in 1964 and 1965. They belong to the genera *Parahemiurus* Vaz and Pereira, 1930 and *Aphanurus* Looss, 1907. After they were recovered from the host fishes in living condition, they were processed according to the standard method using pressure of a small fragment of cover glass in order to avoid overstretching. AFA was used as fixative.

Gupta and Sehgal (1971) reported *Parahemiurus merus* (Linton, 1910) Woolcock, 1935 from a marine fish, *Dussumieria hasselti* (Bleeker), from Dhanushkodi, Palk Bay. They illustrated one of their two specimens and provided some measurements also. The author has not been able to consult Linton (1910) which contains the original description of *Parahemiurus merus* as *Hemiurus merus*. Manter (1940), however, gave specific diagnosis of *P. merus* and discussed some synonymies also. According to him, in *P. merus* the dorsal plications do not extend across the body posterior to the acetabulum, the acetabulum is 2 to 2.5 times oral sucker, the undivided seminal vesicle is spherical to ovoid with thick muscular wall, the pars prostatica is winding and extending some distance poste-

rior to acetabulum, and the ovary and the two vitellarian masses are situated in the middle third of the body proper. This diagnosis of *P. merus* has not been disputed so far by any worker on the group. It is in these characters that Gupta and Sehgal's specimens materially differ from *P. merus* (Linton, 1910). The illustration provided by them shows that unlike *P. merus* their two specimens have almost parallel sides of body, the oral sucker is only slightly smaller than the acetabulum, the seminal vesicle is pyriform without thick muscular wall and lies removed from acetabulum posteriorly due to longer pars prostatica, and the ovarian complex along with masses of vitellaria are situated in the posterior third of the body proper. These characters suggest otherwise to their identification. The author has also collected identical specimens from a closely related fish host from adjoining areas. The comparative study of these specimens and report of Gupta and Sehgal reveal that they had specimens of a new species which they described as a known form. Therefore their specimens as well as mine are named as *Parahemiurus dussumieriai* n. sp. A fuller description and differential diagnosis of this new species are provided in this paper on the basis of the specimens of the author.

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All measurements are in microns unless otherwise stated. The diagrams have been made with the aid of a camera lucida.

Host :

Site :

Number of specimens :

Localities :

Specimens deposited :

Parahemiurus dussumieriae n. sp.

(Figs. 1, 2)

Dussumieria acuta Cuv. and Val. ; dwarf round herring ; Dussumieridae

Stomach

8, on eight slides

Tuticorin (Gulf of Mannar, Bay of Bengal); Madras (Coromandel coast, Bay of Bengal) ; collected by the author in 1964-65

Z. S. I. Reg. Nos. Holotype w/7390/1, Paratypes w7391/1 to w7397/1

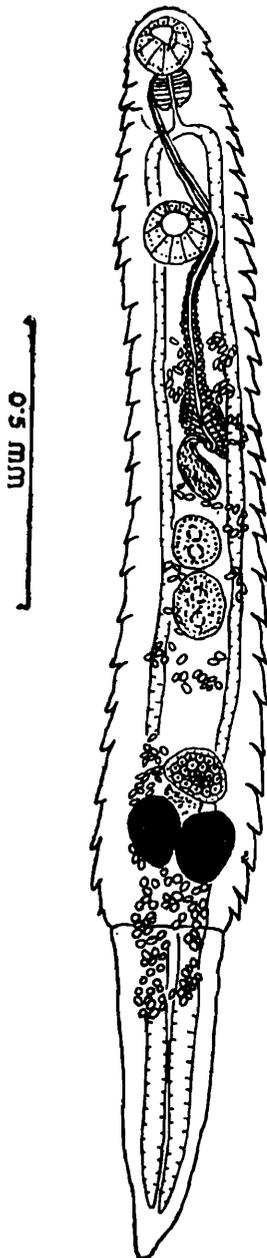


Fig. 1. *Parahemiurus dussumieriae*, entire worm, ventral view.

Description (Based on 3 good specimens) : Body proper 1.505-1.558 mm long, 0.246-0.252 mm wide, elongate with almost parallel sides ; anterior end rounded ; ecsoma 0.499-0.58 mm long, 0.18-0.195 mm wide, tapering posteriorly when fully extended. Tegument moderately thick with ventral plications all over body, proper extent of dorsal plications not constant ; tegument of ecsoma smooth. Acetabulum 101-112 by 108-115, spherical, and situated at 293-317 from anterior end. Oral sucker 84-91 by 91-94, spherical, subterminal ; preoral lobe 8-14 wide. Sucker ratio 1 : 1 to 1.2. Mouth ventroterminal ; prepharynx indistinct ; pharynx 75-84 by 63-70, oval, slightly overlapped by oral sucker ; esophagus 44-47 long followed by cecal bifurcation ; ceca simple, reaching a bit short of posterior end of ecsoma.

Testes 84-113 by 66-84, oval, entire, tandem, situated in anterior or middle part of posterior half of body proper, anterior testis and seminal vesicle separated by uterus. Seminal vesicle 112-147 by 56-70, pyriform without muscular wall, with anterior tapering portion bent backwards, disposed in front of anterior testis, far removed from acetabulum ; pars prostatica a long and winding duct, surrounded by well differentiated prostate cells up to posterior level of acetabulum only, not connected to seminal vesicle by a glandular duct, entering sinus sac near anterior margin

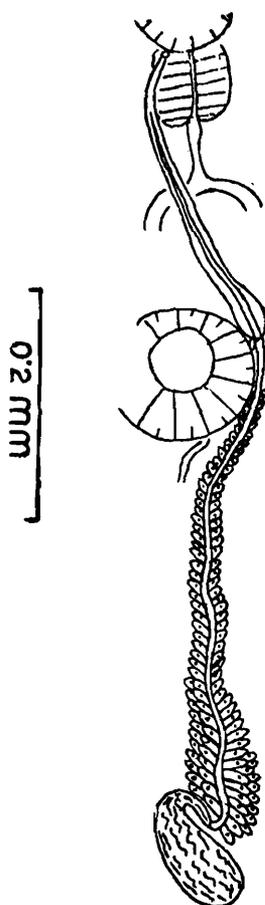


Fig. 2. *Parahemiurus dussumieriae*, genital ducts of acetabulum. Sinus sac a long tube, enclosing a narrow hermaphroditic duct, extending up to anterior margin of acetabulum. Genital pore at base of oral sucker.

Ovary 66-87 by 80-108, subglobular, entire, median, post-testicular. Shell gland complex dorsal to ovary and vitellaria. Vitellaria two

Type host :

Other host :

Site :

Number of specimens :

Locality :

Specimens deposited :

compact masses, slightly indented in some specimens, post-ovarian, situated in front of junction of tail and body proper. Uterus descending into ecsoma, then ascending and entering sinus sac at its base. Uterine seminal receptacle not formed. Eggs 21×12 . Excretory vesicle Y-shaped ; arms uniting dorsal to oral sucker.

In sucker ratio and nature of vitellaria this species comes close to *Parahemiurus clupeae* Yamaguti, 1953 but differs from it in having almost parallel sides of body proper, and the tail is very small as compared to the length of body proper. In *P. clupeae* the junction of body proper and tail "occurs a little behind midbody in three (of four) specimens including the type, but just at the middle in the other." In *P. clupeae*, the intestinal limbs are "very wide" whereas in the present species they are of normal width. Seminal vesicle in *P. clupeae* is fusiform with very thick muscular wall whereas it is pyriform with an anterior attenuation bent backwards and without thick muscular wall. The pars prostatica is longer removing the seminal vesicle more posteriorly with respect to the acetabulum as against the length of this structure in *P. clupeae*.

Aphanurus tuberculatus n. sp.

(Fig. 3)

Hilsa sinensis (L.) ; Chinese herring ; Clupeidae.

Sardinella fimbriata (Val.) ; fringe-scaled sardine Clupeidae.

Stomach

18, on five slides

Bombay (West coast of India, Arabian Sea). Collected by Dr. A. H. Siddiqi in 1963

Z. S. I. Reg. Nos. Holotype w7398/1 Paratype w7399/1 to w7402/1

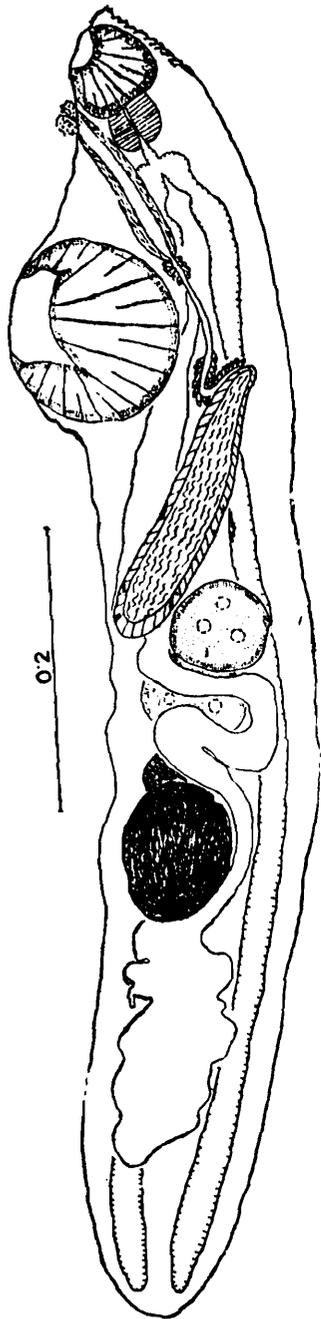


Fig. 3. *Aphanurus tuberculatus*, entire worm, lateral view.

Description (based on 5 good specimens) : Body 0.728-0.854 mm long ; 0.172-0.189 mm wide at acetabular level, subcylindrical, posterior end rounded, anterior end conical, bulging at the level of the acetabulum. No ecsoma. Tegument moderately thick with fine plications, more conspicuous in anterior region dorsally, extending to vitellarian zone on ventral side. Acetabulum 112-122 in diameter, spherical, prominent, situated at 108-140 from anterior end of body. Oral sucker 52 in diameter, spherical, subterminal. Sucker

ratio 1 : 2.25. Prepharynx absent ; pharynx 35 in diameter, spherical slightly overlapped by oral sucker ; esophagus short ; cecal bifurcation in front of anterior border of acetabulum ; ceca simple, reaching short of posterior end of body.

Testes 45-66 by 45-73, globular, entire, diagonal, sometimes slightly overlapping each other, almost equatorial. Seminal vesicle 133-196 by 38, elongated, fusiform with fairly thick muscular wall, postacetabular, extending posteriorly ventral to posterior margin of anterior testis ; pars prostatica dorsal to acetabulum, surrounded by prostate cells near proximal and distal ends and naked in the middle. Sinus sac a longitudinal tube, extending from near anterior border of acetabulum to anterior border of oral sucker ; enclosing a straight hermaphroditic duct and a swollen knob-like sinus organ beset with fine tubercles projecting out through genital pore. Genital pore ventral to oral sucker.

Ovary 28-38 by 36-80, subglobular or transversely elongated, entire, median, immediately post-testicular. Vitellaria 91-98 by 84-112, globular, indented anteriorly, immediately post-ovarian. Uterus reaching posterior end, beyond ceca, uniting with male duct at base of sinus sac. Eggs 14-18 by 8. Excretory vesicle Y-shaped ; excretory arms uniting dorsal to pharynx ; excretory pore terminal.

Aphanurus tuberculatus is distinct from all other members of the genus *Aphanurus* Looss, 1907 in the presence of a sinus organ beset with fine tubercles.

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