

ON A NEW MONOGENETIC TREMATODE *HOMOSTOMA CHURA*
GEN. ET SP. NOV. FROM THE MARINE FISH *EUTHYNNUS AFFINIS*
(CANTOR) WITH A NOTE ON THE FAMILY HEXOSTOMATIDAE,
PRICE, 1936

by

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The new monogenetic trematode described in this paper was collected during the course of studies on the parasites of marine food fishes from the south west and south east coasts of India. These studies were carried out in the Marine Biological Laboratory, Trivandrum and at the Central Marine Fisheries Research Institute, Mandapam Camp, as referred in a previous work (UNNITHAN, 1957).

Order MAZOCRAEIDEA BYCHOWSKY, 1957.

Family HEXOSTOMATIDAE PRICE, 1936.

PRICE (1936) created the family with *Hexostoma* RAFINESQUE, 1815, as the type genus and he (1943) defined it under the superfamily Diclidophoroidea PRICE, 1936. SPORSTON (1946) revised the diagnosis of the family and accepted it in the superfamily Diclidophoroidea on the basis of the similarity in the structure of the clamps between Hexostomatidae PRICE, 1936, and Chimericolidae BRINKMANN, 1942. BRINKMANN (1952) however, raised the family Chimericolidae, to the new superfamily Chimericoloidea and gave a detailed discussion on the group. UNNITHAN (1957) removed Microcotylidae TASCHEBURG, 1879, from the superfamily Diclidophoroidea and erected the superfamily Microcotyloidea. In his new rationale for the systematic scheme on Monogenoidea, BYCHOWSKY (1957) included Hexostomatidae PRICE, 1936, in the new order Mazocraidea, along with Mazocraeidae PRICE, 1936.

PRICE (1936) and SPORSTON (1946) included only one genus, *Hexostoma* RAFINESQUE, 1815, in this family; the finding of a new species described below has necessitated the creation of a new genus which is named *Homostoma*. It is interesting to note that both these genera are recorded from scombroid fishes. The diagnosis of the family is modified to accommodate the new genus.

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Diagnosis of family Hexostomatidae PRICE, 1936, *emend.*

Mazocraeidea, usually with four pairs of clamps, modified to form 'cuticular suckers', with irregular and dissimilar sclerites: two often bipartite and situated on each side of the lateral walls of the capsule, and one superficially 'X' shaped in the middle; posterior pair of clamps sometimes reduced; of the remaining pairs two or more occasionally absent on one side, or unequal in size, or all the clamps equally well developed; anchors persistent, two or three pairs, placed between the posterior pairs of 'suckers' or borne on a short lappet; mouth with a cuticular 'sucker'; intestine reticulate; vitellaria extend from the region of genital pore to the posterior level of the testes; testes follicular, postovarian; ovary inverted 'U' shaped or tubular; male genital pore usually unarmed; vagina median dorsal, armed and situated behind the male pore. Parasitic on scombroid fishes.

Type genus *Hexostoma* RAFINESQUE, 1815.

Generic diagnosis of *Hexostoma* RAFINESQUE *emend.*

Hexostomatidae, with clamps modified as 'suckers', of which a pair or at least one is much reduced in size and structure, occasionally some of the clamps absent; male terminalia armed or unarmed; lappet absent, but anchors embedded in the posterior extremity of the haptor.

Type species *Hexostoma thynni* (DE LAROCHE, 1811) RAFINESQUE, 1815.

Homostoma chura gen. *et* sp. n.

(Figs. 1 - 3)

- Several specimens of this new monogenetic trematode were collected from the gills of the marine fish *Euthynnus affinis* (CANTOR) examined at Trivandrum on 25 February 1956. Five medium sized 'tunnies' were examined and all were infected with this new species and also specimens of *Uraxine chura* UNNITHAN, 1957.

Body lanceolate, cuticular, divisible into a long slightly curved body proper and posterior broad triangular haptor, demarcated by a prominent constriction; total length 4 - 4.9 mm and maximum width 0.69 - 0.71 mm in front of the haptor (Fig. 1).

Mouth subterminal, circular and surrounded by a broad muscular ridge 68 μ wide; oral pouches thin and fibrous spherical or oval 24 - 30 μ wide, and placed obliquely on either side close to the posterior rim of the oral ridge; pharynx small spherical 24 μ in diameter, situated between the oral pouches and devoid of gland cells; oesophagus long, wide and

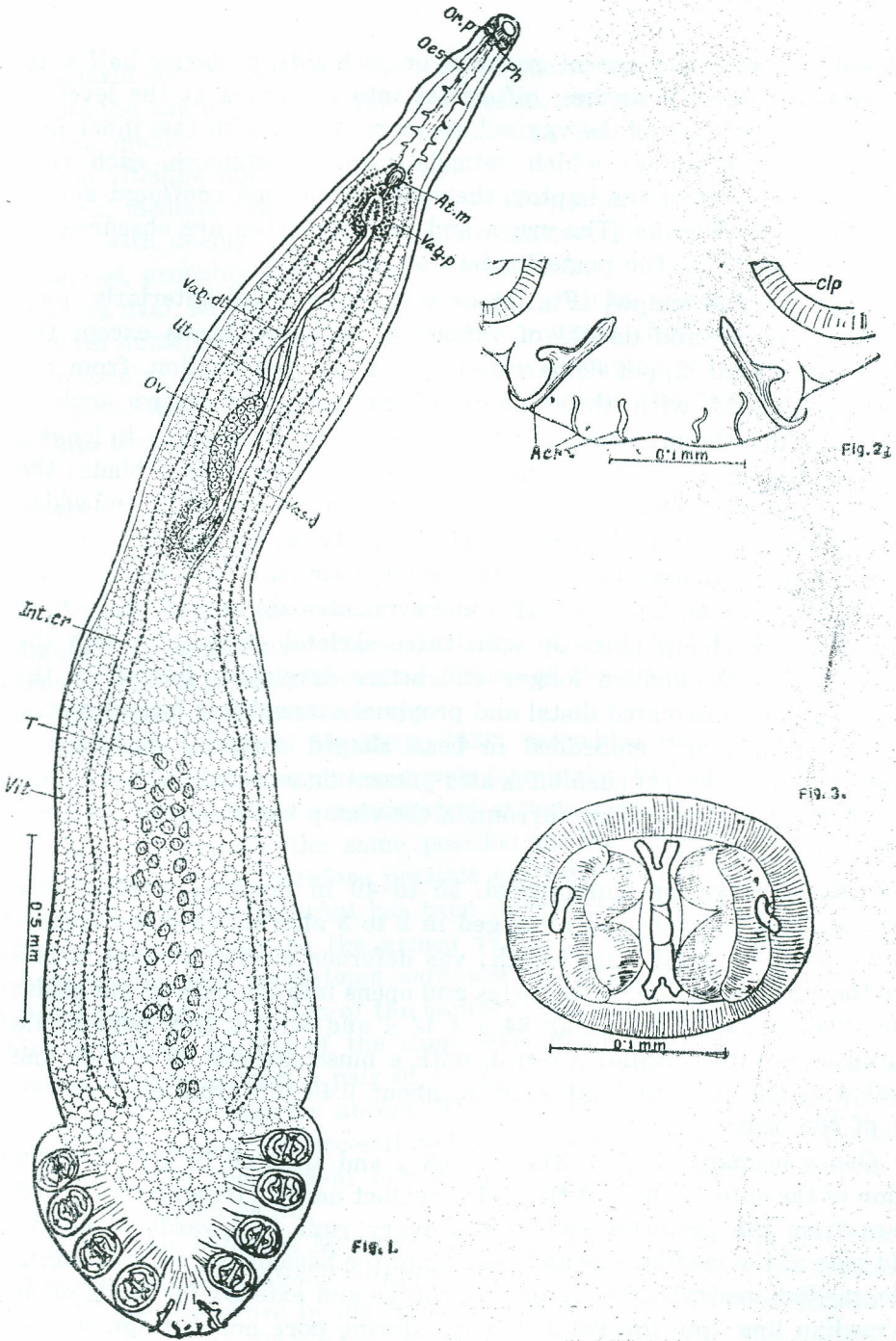


Fig. 1.

Fig. 3.

Homostoma chura gen. et sp. nov.

- (1) Complete worm, ventral view. (2) Posterior end of haptor with anchors.
 (3) Clamp, ventral view.

boardered by a row of pigment granules on each side, posterior half with short, simple, lateral branches, bifurcates into the crura at the level of the male pore, in front of the vaginal aperture; crura with few inner and numerous outer branches which reticulate and anastomose, each crus terminating in front of the haptor, their extremities not confluent across the median field (Fig. 1). The crura and their branches are obscured by vitellaria especially in the posterior half of the body.

Haptor, tongue shaped (Fig. 1) or triangular broad anteriorly, narrowing posteriorly and devoid of extensions of body organs except the vitellaria; terminal lappet demarcated by a slight constriction, from the haptor and armed with three pairs of symmetrically placed anchors (Fig. 2) of which the proximal pair is the largest measuring 88μ in length, typically sickle shaped with a long root and well cuticularised blade; the intermediate pair irregularly curved 28μ long and completely embedded in the musculature of the lappet; distal pair more or less sickle shaped 24μ long and well cuticularised. Clamps similar, four pairs, identical, sucker like, wider than long, $105 \mu \times 147 \mu$ and symmetrically placed one behind the other. Each clamp (Fig. 3) with three skeletal pieces of which the middle piece is 'X' shaped longer and better developed, jointed in the middle and with bifurcated distal and proximal extremities; lateral pieces, small, ill defined and embedded in bean shaped muscular cushions; a bilobed muscular ventral cushion is also present on each side of the middle piece. A rigid muscular rim surrounds the clamp skeleton and its inner musculature.

Testes postovarian, intercrural, 35 to 40 in number, more or less spherical, $21 - 30 \mu$ wide and arranged in 2 to 3 alternating rows occupying one third the total body length; vas deferens median ventral, arises from the anterior region of the testes and opens into the base of the penis; penis unarmed, oval, muscular $84 \mu \times 42 \mu$ and with a tiny pore at its tip; male pore oval median ventral, with a muscular rim 63μ wide and situated at the intestinal bifurcation, about 0.48 mm from the anterior end of the body.

Ovary median, tubular, $378 \mu \times 63 \mu$ and situated in the posterior region of the anterior half of the body; oviduct narrow irregularly curved, arises from the posterior end of the ovary runs backwards along the right side of the median line and opens into the base of the ootype; uterus wide, median ventral, arises from the ootype and extends forwards along the median line upto the vaginal zone; uterine pore not distinguishable; eggs not observed.

Vitellaria commences from the level of the vagina and extends backwards into the haptor, between the clamp rows, confluent at several places behind the middle region of the body and in the haptor; median and transverse vitelline ducts not observed.

Oötype, median, pear shaped $147 \mu \times 42 \mu$, situated behind the ovary and filled with deeply staining granular matter; genito-intestinal canal not observed, probably obscured by the vitellaria.

Vagina oval, $84 \mu \times 63 \mu$, median dorsal, with an irregular inner rim armed with numerous conical spines curved inwards, (Fig. 1), vaginal rim highly muscular and thick, posterior margin of vagina devoid of spines; vaginal canal median, dorsal, runs backwards along the median line and opens into the ootype.

Discussion.

In general appearance *Homostoma chura* resembles *Hexostoma* RAFINESQUE, 1815, but differs from it mainly in the nature of the haptor. Unlike *Hexostoma*, in the present species the haptor is tongue shaped or triangular and demarcated from the body by deep lateral constrictions. Moreover, the shelf like muscular cushions of the clamps of *Homostoma chura* are absent in *Hexostoma* spp.

Hexostoma euthynni MESERVE, 1938, resembles the present species especially in the haptor, vagina and male terminalia. In *Hexostoma euthynni*, MESERVE has described a 'beanshaped' structure as the cirrus armature; this structure occupies the same position as the armed vagina of the present species. It is therefore possible (as referred by SPROSTON (1946) and HARGIS (1956)) that what has been described as cirrus in *Hexostoma euthynni* may actually be the armed vagina. Resemblance between the present species and *Hexostoma euthynni* MESERVE, 1938, is much more in the shape and disposition of the haptor: both have four pairs of clamps which are more or less of the same size, while most other species of *Hexostoma* have at least a pair of clamps much smaller than the rest or some clamps may even be absent. This difference in the disposition of clamps on the haptor has necessitated the creation of a new genus *Homostoma* to include the present species and its allies. The new species is named *Homostoma chura*.

Hexostoma euthynni MESERVE, 1938, is transferred to this new genus and is renamed *Homostoma euthynni* (MESERVE, 1938), due to its similarity to *Homostoma chura* in the structure and disposition of the haptor as described above. In *Hexostoma acutum* (GOTO, 1894) also the clamps do not vary in number or size, it is always 4 pairs more or less similar and

symmetrical as in the new genus. Hence this species is also transferred to the new genus and renamed *Homostoma acutum* (GOTO, 1894). *Hexostoma thunninae* (PAR. & PER., 1889) is described to have the "posterior pair of sucker of almost the same size as the three more anterior pairs". Hence this species also is included in the new genus and renamed *Homostoma thunninae* (PAR. & PER., 1889). Thus it may be seen that all the species included under the new genus invariably have four pairs of clamps which are more or less equal in size and symmetrically arranged on shelf like cushions on each side of the haptor. On the other hand in all the species of *Hexostoma* not included under the new genus, the number of clamps vary, it is generally less than four pairs or if four pairs are present, one pair, usually the last, is much reduced in size.

Generic definition of *Hexostoma* RAFINESQUE is modified accordingly and it contains all the existing species of *Hexostoma* except those species which have four pairs of more or less similar and symmetrically placed clamps as in the present species.

Homostoma chura differs from *Homostoma euthynni* (MESERVE, 1938) comb. nov. *Homostoma acutum* (GOTO, 1894) comb. nov. and *Homostoma thunninae* (PAR. & PER., 1889) comb. nov. in the number of hooks on the lappet, the lopping of the ovary, armature of the vaginal pore and the shape of the penis.

Generic diagnosis of *Homostoma* gen. nov.

Hexostomatidae, with 4 pairs of identical symmetrically placed clamps, a terminal anchored lappet, unarmed penis and male pore; clamps sessile, sucker like with two lateral and one median 'X' shaped cuticular piece; oral pouches not cuticular; intestinal crura not confluent; parasitic on scombroid fishes.

• Type species *Homostoma chura* gen. et sp. nov.

• Generic name *Homostoma* signifies the similarity in size and shape of the clamps; specific name is the Malayalam name of the host fish in Kerala.

List of species included under the two genera of the family

Hexostomatidae.

Genus *Hexostoma* RAFINESQUE 1815.

Hexostoma thynni (DELAROCHE, 1811) RAFINESQUE, 1815.

Hexostoma dissimili (YAMAGUTTI, 1937) SPROSTON, 1946.

Hexostoma extensicaudum (DAWES, 1940).

Hexostoma grossum (GOTTO, 1894) SPROSTON, 1946.

Hexostoma macracanthum FUJII, 1944.

Hexostoma pricei KORATHA, 1953.

Homostoma gen. nov.

Homostoma acutum (GOTTO, 1894) comb. nov.

Homostoma euthynni (MESERVE, 1938) comb. nov.

Homostoma thunninae (PAR. & PER., 1889). comb. nov.

Homostoma chura gen. et sp. nov.

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