1990

Binder 028, Bucephalidae [Trematoda Taxon Notebooks]

Harold W. Manter Laboratory of Parasitology

Alcicornis MacCallum, 1917 [1])

Generic diagnosis. — Bucephalidae, Bucephalinae: Body elongate. Rhynchus wedge-shaped, with 7 tentacular appendages. Mouth opening in middle third of body. Intestine short. Genital organs as in *Bucephalus* and *Bucephalopsis*. Vitellaria may extend as far backward as testicular zone. Excretory vesicle long. Parasitic in marine fishes.

Genotype: *A. carangis* MacCallum, 1917, in *Caranx ruber*; Florida, Cuba.

Other species:

A. baylisi Nagaty, 1937 (Pl. 1, Fig. 4), in *Caranx* sp.; Red Sea. Also in *Caranx equula* from Okinawa.

A. longicornutus Manter, 1954, in *Kathetostoma giganteum*; New Zealand.

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[1]) Syn. of *Bucephalus* — Eckmann (1932).

Alcicornis carangis MacCallum, 1917

Alcicornis carangis MacCallum, 1917
Figure 2 N.P.C. 1964
Host: Caranx ruber (C).
Site: intestine.
Deposited specimen: U.S.N.M. 60249.

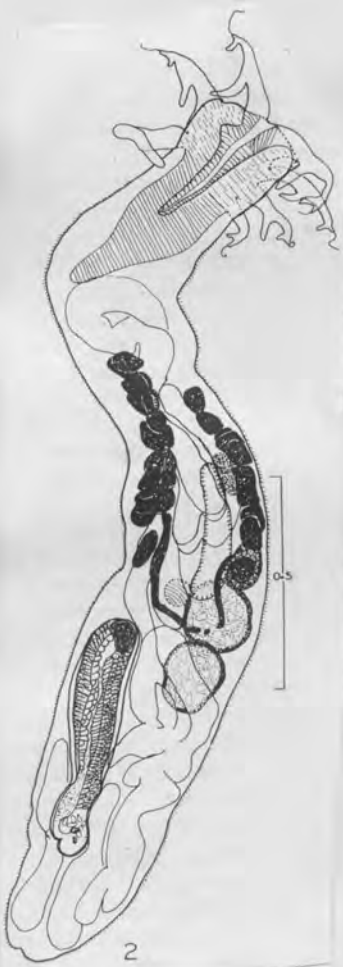
Description based on 3 specimens. Body elongate, 1.58-2.1 long, 0.30-0.40 wide. Entire cuticle spinose. Rhynchus wedge-shaped, 0.566-0.633 long, 0.167-0.200 in greatest width; tentacles 7, varying in shape and length with degree of extension, 0.180-0.267 long exclusive of filament, 0.030-0.045 wide at base; each with 2 lateral prongs and terminal filament, proximal prong more than twice as long as distal one; filament may be lost. Pharynx, seen in only one specimen, at level of anterior testis, 0.060 in diameter; esophagus not evident; cecum mostly anterior to anterior testis. Testes tandem, contiguous, to right of midline, level variable, 0.120-0.186 in diameter; cirrus sac 0.567-0.580 long, 0.100-0.133 wide, on left side of body, containing ovoid seminal vesicle, long pars prostatica and prostate cells. Ovary entire, anterior to testes, 0.133-0.146 long, 0.080-0.100 wide; uterus voluminous, extending from rhynchus to posterior end of body, sometimes overlapping posterior end of rhynchus. Genital atrium wide; genital pore at a distance from posterior end of body. Vitellaria in 2 lateral groups of 12-17 follicles each, mostly in anterior half of body. Eggs 18-22 by 13-15 μ. Excretory vesicle not seen; excretory pore terminal.

This species was known only from its incorrect description by MacCallum (1917) until it was found again by Pérez Vigueras (1955a). Our specimens agree with his redescription and show tentacles which have 2 lateral prongs. MacCallum described the tentacles as being "branched like the antlers of a deer" and his figure shows a single prong on each tentacle. In our specimens, the number of prongs visible depends on the degree to which the tentacle is extended. Thus in the same individual, one tentacle may show both prongs and another only the distal one.

Siddiqi and Cable (1960) reported *A. carangis* from *Caranx ruber* in Puerto Rico. Comparing their specimens with ours indicates that their material represents a new species of *Alcicornis,* for which the name *A. siddiqii* is proposed. The following description was included by Siddiqi and Cable in their original manuscript from which redescriptions of known species were deleted before publication.

from Caranx ruber in Puerto Rico

from Siddiqi & Cable, 1960



MacCallum, 1917

Alcicornis carangis, ~~gen. et sp. nov.~~

(Fig. 29)

Host—*Caranx ruber*, t. h.
Habitat—Intestines.
Locality—Aquarium of New York, brought from Key West, Florida.

In the intestine of a *Caranx ruber* there were found on May 4, 1916, in moderate numbers, a small worm whose characteristics are so unusual that a new genus must be established for its reception. The head is a most remarkable structure, since it is surrounded generally by from three to seven antler-like projections or tentacles, each tipped with a cilium. These tentacles are branched like the antlers of a deer, and their function can only be guessed at as no live specimens were seen, but perhaps they are used as sensory organs or feelers. No particular anatomical structure in them indicates their use. The mouth is presumably at the anterior end, at the base of and between the antlers, but it is not very distinct. It is followed by a wide oesophagus which is triangular in shape, gradually narrowing as it proceeds posteriorly to terminate in a single rather large intestine, which extends towards the posterior end of the worm. Thus it is seen that the alimentary tract is of the simplest. The neck is almost half the length of the worm, and in some specimens it is armed thickly with small spines almost as far back as the beginning of the body. This latter is about twice the width of the neck, and it also is covered sparsely with spines.

The genital arrangement is not easily made out—there are two comparatively large testes situated on one side of the body, and immediately in front of these is the irregularly shaped ovary, which is almost half the size of each testis. The vitellaria are very prominent, in the form of ten or twelve roundish lobules situated across the body in front of the ovary. The greater part of the body is occupied with coils of the uterus, filled with rather large yellowish eggs, and these with the vitellaria so cover in the structures in the abdomen that no ventral sucker, vagina or seminal reservoir may be seen, indeed, on this account, the genital junction cannot be wholly made out. The testes are situated on the right side of the worm, and their efferent tubes unite to form the vas deferens which passes over to the left side and there, about the middle of the body, enters the cirrus sac which extends along the left side nearly to the posterior end, where is situated the genital pore. Here also the uterus finds its outlet. The excretory pore opens at the extreme end of the worm.

The host belongs to the same family as the pompano and although the parasites are numerous they are so small that it is unlikely that they were of much detriment to the fish.

For the purpose of classification this remarkable worm is characterized by the peculiar formation of its head, which is provided with relatively large branched tentacles, which are of the shape of deer's horns, each of said horns provided with a fairly long cilium. Neck forms one third of the length of the body. No pharynx, vagina or seminal reservoir seen.

Measurements of *Alcicornis carangis*

Length	2.50 mm.
Width	.20 mm.
Length of tentacles on head	.10 mm.
Width of tentacles on head	.02 mm.
Length of oesophagus	.60 mm.

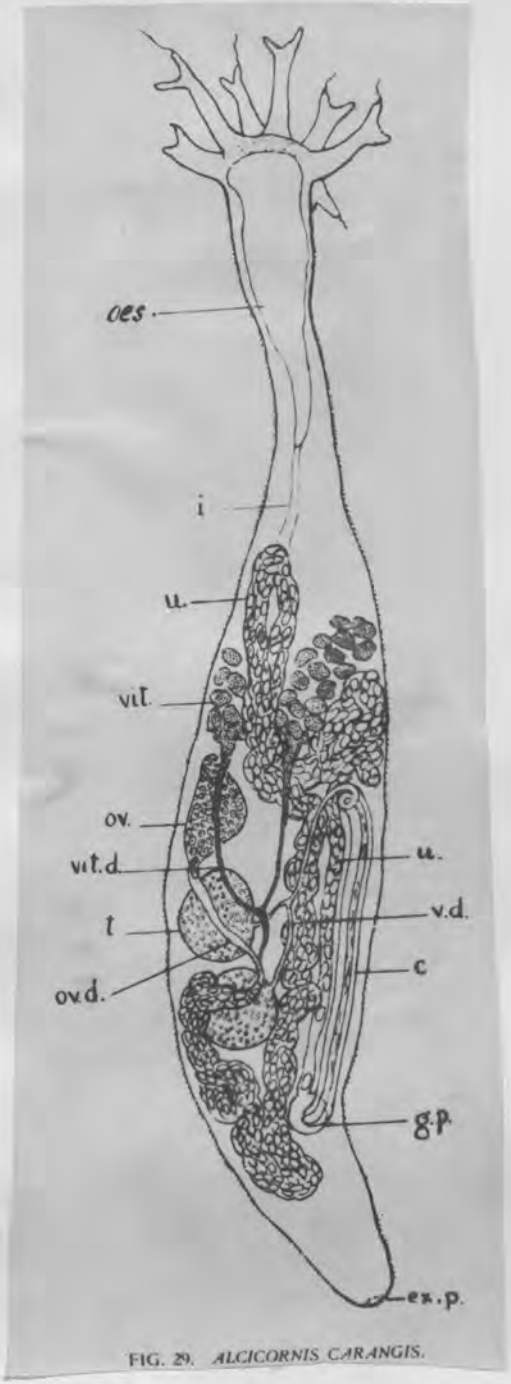


FIG. 29. *ALCICORNIS CARANGIS.*

Nagaty, 1937

Alcicornis baylisi Yamaguti, 1942

Size 1.7 to 5. by 0.25 to 0.45 mm.
Seven tentacles in a semicircle, each tapering to a point and provided on posterior border with a larger proximal and a smaller distal, horn-like process.
Rhynchus funnel-shaped, solid, muscular, 0.32 to 0.6 long
Pharynx 50 to 85 u in diameter, at midbody or a little behind.
Intestine directed dorsal and then backward 0.3 to 0.4 long
Testes oval, tandem in region of middle and posterior thirds
Cirrus sac may or may not reach posterior testis.
Genital lobe crooked, without accessory lobe.
Ovary immediately in front of anterior tetis and to the right.
Vitellaria 13 on right, 16-20 on left from a little in front of midbody to anterior testis (on left)
Uterus reaching to anterior ends of vitellaria or a little more.
Excretory vesicle ending a little anterior to uterus.
Host: Caranx equula , stomach and intestine
Japan; Naha
Larger than Nagaty's material

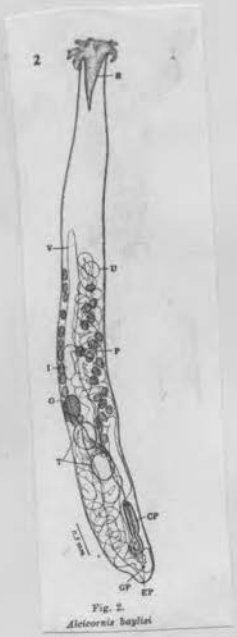


Fig. 2.
Alcicornis baylisi

from Yam, 1942

Alcicornis cirrudiscoides n. sp.
(Figs. 23–25) Velasquez, 1959

Host: Caranx sp.
Location: intestine
Locality: Navotas, Rizal, Luzon island Philippines.
Prevalence: 5 from 4 of 26 hosts examined.
Type: U.S. Nat. Mus. Helm. Coll. No. 37696
Paratypes: University of the Philippines, Dept. of Zoology, Helm. Coll. Nos. 409(1)f, 412-(2)d_2

Specific diagnosis: (Based on 2 specimens). Body elongate, truncate, 0.54–0.67 by 0.12–0.13. Cuticular spines minute. Rhynchus wedge-shaped with 7 tentacles, tentacular prongs single, prominent (Fig. 25). Mouth at midbody, directed posteriorly; pharynx small, weakly muscular; intestine small, saccular. Gonads at midbody. Testes posterior to pharynx; anterior testis oblong, posterior one elongate, sausage-shaped. Cirrus sac elongate, 0.13–0.2 by 0.022, anterior end peculiarly shaped, concave, disc-like into which vas deferens enters to join the vesicula seminalis. Genital atrium elongate, provided with prominent papillae; muscular duct leading to genital pore (pushed out by pressure); pars prostatica long; seminal vesicle sub-globular (Fig. 24). Ovary small, anterior to and overlapping anterior testis, overlapped by intestine. Uterus occupying much of body, extending anteriorly to extreme limits of vitellaria, posteriorly not beyond genital atrium. Vitelline glands about 11 on the right and 15 on the left. Eggs thick-shelled, 34–39 microns by 21–26 microns.

Discussion: Only 3 other species of *Alcicornis* have been described. *A. carangis* MacCallum, 1917 from *Caranx ruber*, Florida; *A. baylisi* Nagaty 1937 from *Caranx* sp., Red Sea and *Caranx equula*, Okinawa; and *A. longicornutus* Manter 1954 from *Kathetostoma giganteum*, New Zealand.

All species except the last show acute conical rhynchus with well defined tentacles provided with small basal prongs. My species differs from all other described species in the size of the rhynchus, nature of tentacular prongs (Fig. 25), the relative position of the cirrus sac with its peculiar discoidal anterior end; position of the gonads; shape of posterior testis; extent of vitellaria and uterus.

Alcicornis hainanensis, ~~sp. nov.~~ CHANGDONG AND JIWEI, 1976

Host: *Zonichthys nigrofasciata* (Rüppell)

Location: Stomach and intestine.

Locality: Baimajing Hainan Dao, Nan Hai, China.

Date: May 24, 1964.

Infection: 63 specimens from one of three hosts.

Body slender. Cuticle smooth. Rhynchus solid, short, surrounded with 7 tentacles bearing single proximal prong without terminal filament, 0.029—0.033 mm. in length. Pharynx situited in posterior half of body, ventro-lateral to ovary, rounded. Caecal sac small, extending anteriorly.

Gonads in posterior third of body. Testes elliptical shaped, tendem, in close contact, to each other, rarely separated. Cirrus sac club shaped, anterior limit in posttesticular level and extending to posterior end of body; seminal vesicle elliptical shaped, pars prostatica comparatively shorter, 0.397—0.413 mm. in length surrounded with well developed prostate cells, and ending in pear shaped genital lobe.

Ovary pretesticular, ovoid. Vitellaria in two rows forming an arc at anterior end and asymmetrically on two sides. Uterus starting as descending limb from pretesticular level and anteriorly to vitellaria, then curved backward forming a descending limb dorsal to gonads and cirrus sac and terminally to genital pore ventral to genital lobe.

Eggs small, brownish yellow in color.

Excretory vesicle tubular, moderately long, extending anteriorly near posterior border of rhynchus.

Discussion: *Alcicornis hainanensis* n. sp. differs from the previous recognized species in the elongated body, the size of the rhynchus and its host. The name of *A. hainanensis* refers to its locality.

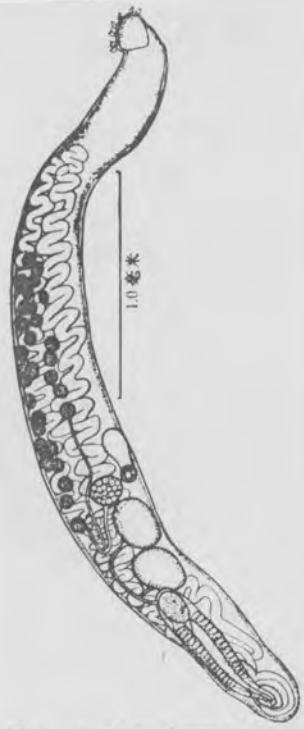


图 6 海南触吻牛首吸虫，新种 *Alcicornis hainanensis* sp. nov. 的腹面图。

图 7 海南觸吻牛首吸虫 *A. hainanensis* 的前端示觸手图。

种名 / 虫体与器官量度	海南触吻牛首吸虫 Alcicornis hainanensis sp. nov.
体长 Body length	2.432—4.492
体宽 Body width	0.374—0.478
前吸器 Rhynchus	0.099—0.212× 0.084—0.281
咽 Pharynx	0.099—0.116直径
食道 Oesophagus	未见
肠囊 Caecal sac	0.212—0.297× 0.116—0.165
前睾 Anterior testis	0.198—0.304× 0.149—0.228
后睾 Posterior testis	0.297—0.330× 0.148—0.297
生殖囊 Cirrus sac	0.594—0.611× 0.165
贮精囊 Seminal vesicle	0.165—0.212× 0.116—0.132
卵巢 Ovary	0.149—0.182× 0.116—0.165
卵黄腺数目 Number of vitelline follicles	
左侧 left side	25—35个
右侧 right Side	25—35个
卵黄腺滤泡大小 Size of vitel line follcle	0.054—0.089
卵子 Ova (μ)	18—25×11—15

Alcicornis karachii ~~new species~~ ZAIDI AND KHAN, 1977

(Fig. 2)

Host: *Platycephalus scaber* (Day)

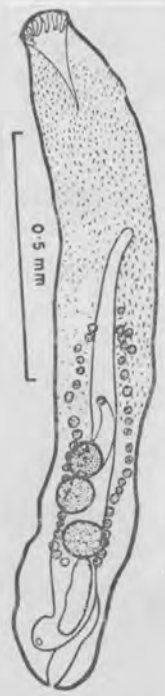
Location: Intestine

Locality: Fish Harbour Karachi (Arabian Sea)

The description is based on a single worm extracted from the intestine of *Platycephalus scaber* (Day). In February, 1968 sixteen specimens of *Platycephalus scaber* were examined, one yielded one worm.

The body is elongated, cylindrical, rounded at posterior extremity. Rhynchus wedge shaped, tapering posteriorly. It has seven tentacular appendages. The appendages are simple, tubular in shape, all are attached to the anterior border of the rhynchus. The togument is covered by minute spines. The pharynx is rounded. The intestine is short, saccular and is directed backwardly upto the posterior level of the ovary. The testes are obliquely placed in the posterior third of the body. These are somewhat rounded in shape with entire margins. Cirrus pouch cylindrical in shape and is extended upto the posterior level of posterior testis. The genital pore is submedian. The ovary is pretesticular, spherical in outline, with entire margins and is located just in front of the anterior testis. Vitelline follicles extend from the middle of the body to the posterior level of the posterior testis.

The excretory vesicle is tubular and long, reaching upto the posterior region of the anterior third of the body.



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MEASUREMENTS (IN MM.)

Body length	1.360
Body width	0.203
Rhynchus	0.288 × 0.892
Pharynx	0.015 × 0.015
Anterior testis	0.081 × 0.089
Posterior testis	0.071-0.089
Cirrus pouch	0.153-0.051
Ovary	0.076-0.076
Vitellaria	0.022-0.025 × 0.017-0.020

DISCUSSION

The genus *Alcicornis*, MacCallum, 1917 at present contains five valid species, of these *A. baylisi* Nagaty, 1937 is more than six times and *A. cirrudiscoides* Velasquez, 1959 is less than half the present species. *Alcicornis cirrudiscoides* also differs in the nature of tentacular appendages, the relative size of the cirrus sac and in the disposition of intestine. *Alcicornis baylisi* differs in the position of the mouth, nature of rhynchus and tentacular appendages and the disposition of intestine. *Alcicornis longicornutus* Manter, 1954 has comparatively much larger tentacular appendages and a widely different position of vitellaria. It also differs from the material under study in having very long cirrus sac and in shape of rhynchus. *Alcicornis carangis* MacCallum, 1917 differs in having quite different rhynchus, tentacular appendages, in position of vitellaria and in size of cirrus sac. *Alcicornis siddiqii* Nahhas and Cable, 1964 differs from the species under study in having tentacular appendages with two processes, in disposition of testes and in the extent of cirrus pouch. In view of above comparison it is concluded that a new species of *Alcicornis* is being dealt with, for which the name *Alcicornis karachii* is proposed.

DAULAT ALI ZAIDI AND DAUER KHAN
1977

Alcicornis **siddiqii** n.sp.
Figure 3 Nahhas & Cable, 1964

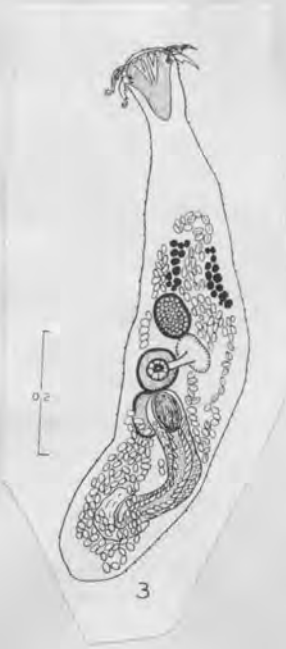
Synonym: ****Alcicornis carangis* of Siddiqi & Cable, 1960, nec MacCallum, 1917.

Host: Caranx ruber (Puerto Rico).

Site: stomach.

Holotype: U.S.N.M. 39302 (deposited by Siddiqi & Cable).

"Description based on 10 specimens: Body 0.884-1.293 long, 0.165-0.198 wide; cylindrical posteriorly, tapering anteriorly. Cuticle spinose. Rhynchus wedge-shaped, 0.118-0.147 by 0.067-0.099 exclusive of tentacles of which there are 7, each with 2 processes; cilium absent. Pharynx spherical. 0.039-0.045 in diameter, somewhat posterior to midlevel and submedian; intestinal sac median, small, equatorial. Testes 2, entire, 0.082-0.097 by 0.075-0.090, tandem, contiguous, submedian to right, overlapped by pharynx and cirrus sac. Cirrus sac within posterior half of body, contaning sac-like seminal vesicle, long pars prostatica and prostate cells; genital pore ventral, a short distance from posterior end of body. Ovary entire, 0.070-0.096 by 0.066-0.075, submedian, anterior to testes and intestine; seminal receptacle absent. Vitellaria scanty, in 2 short lateral bands of small follicles immediately anterior to ovarian level. Uterus voluminous, confined to posterior 2/3 of body, extending slightly anterior to vitellaria. Eggs numerous, 0.024-0.026 by 0.012-0.014. Excretory vesicle tubular, extending to level of vitellaria; excretory pore terminal, without evident sphincter."



Of the 4 species of *Alcicornis* that have been previously recognized, *A. siddiqii* differs from *A. carangis* in size of rhynchus, in the anterior extent of the uterus and evidently by lacking tentacular filaments; from *A. baylisi* Nagaty, 1937, in having a smaller *rhyncus*, shorter excretory vesicle and more anterior vitellaria; from *A. longicornutus* Manter, 1954, in having relatively much shorter tentacles with 2 prongs each; and from *A. cirrudiscoides* Velasquez, 1959, in having much smaller eggs.

*ALCICORNIS THAPARI** ~~n. sp.~~ Hafeezollah and Siddiqi, 1970
Figures 6, 7

Host : *Caranx sexfasciatus* Quoy and Gaimard; six-banded trevally, Carangidae
Intestine
Number : 4
Locality : Karachi

Description (Based on 4 specimens) : Body 2.822-3.67 mm long, 0.259-0.306 mm wide, elongate, subcylindrical, slightly tapering anteriorly, posterior end rounded. Rhynchus 105-122 long, 108-116 wide, wedge-shaped, provided with short tentacles (probably 7). Mouth ventral, postequatorial, at about junction of middle and posterior one third of body; pharynx 78-102 in diameter; intestine saccular, short.

Testes 140-196 by 131-175, tandem, separated, in middle of posterior one third of body, to right of median line. Cirrus sac 482-518 by 119-164, cylindrical, in posterior part of body, not quite reaching poterior testis, containing a saccular seminal vesicle and a long pars prostatica surrounded by prostatic gland cells. Genital atrium 140-164 by 111-140, quite wide. Genital pore ventral, at a short distance in front of posterior end.

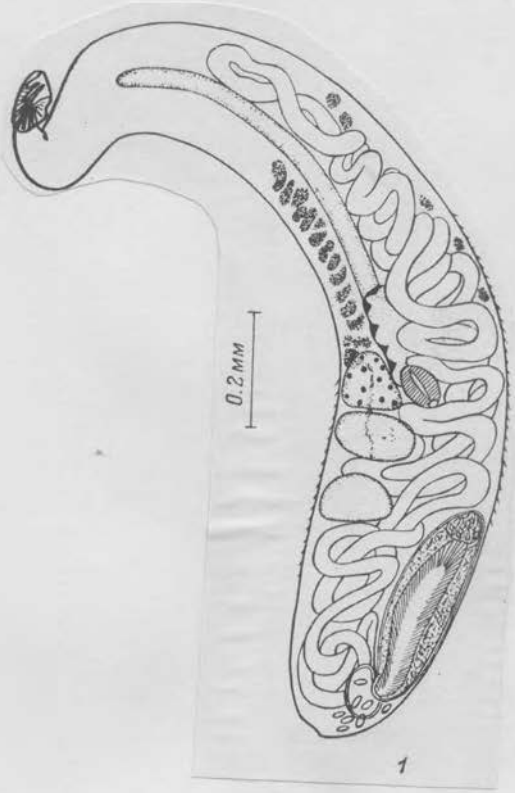
*Named after Prof. G. S. Thapar.

Ovary 87-140 in diameter, globular, pretesticular, contiguous with anterior testes. Uterine seminal receptacle present. Vitellaria follicular, in two lateral groups in middle one third of body. Uterus reaching posteriorly behind genital atrium and anteriorly to anterior level of vitellaria. Eggs 12-22×7-15, thick-shelled. Excretory vesicle tubular, reaching slightly anterior to middle of body; pore terminal.

The following 5 species are included in the genus *Alcicornis* MacCallum, 1917 : *Alcicornis carangis* MacCallum, 1917—redescribed by Nahhas and Cable (1964), *A. baylisi* Nagaty, 1937, *A. longicornutus* Manter, 1954, *A. cirrudiscoides* Velasquez, 1959 and *A. siddiqii* Nahhas and Cable, 1964. The present species differs from the first two in the shape and size of rhynchus, nature of tentacles and the distribution of vitelline follicles. It further differs from *A. carangis* in the extent of cirrus sac with respect to the position of gonads. It differs from *A. longicornutus* in shape and size of body, length and structure of tentacles, distribution of vitellaria, position of mouth and relative position of gonads and cirrus sac; from *A. cirrudiscoides* chiefly in the absence of "peculiarly shaped, concave, disc-like" anterior end of cirrus sac and size of eggs (34-39×21-26 in *A. cirrudiscoides*) and from *A. siddiqii* in the structure of tentacles, position of gonads and cirrus sac with respect to that of testes and distribution of vitelline follicles.

? Alcicornis sp.

Ex. Caranx melampygus
Loc. India
From Zhukov, 19?? see reprint



ALCICORNIS MacCallum, 1917

Body elongated, anterior half flattened, the posterior cylindrical. Cuticle spiny. Anterior end with a funnel-shaped rhynchus and seven tentacles. Oral aperture simple, not guarded by an oral sucker and opens on the ventral surface. Muscular pharynx present. Intestinal caecum simple and sac-shaped with its blind end either directed anteriorly or posteriorly. Testes two in the posterior half of the body. Cirrus sac elongated at the posterior end. Vesicula seminalis present inside the cirrus-sac. Ovary anterior to testes. Receptaculum seminis absent. Vitelline glands composed of two lateral sets. Uterine coils fill the posterior two thirds of the body in mature specimens. Male and female genital ducts open in a common genital atrium subterminally at he posterior end on the ventral surface. Excretory vesicle simple tubular sac opening independently terminally at the posterior end.

Type species: A. carangis MacCallum, 1917
Other species: A. baylisi Nagaty, 1937

A. baylisi Nagaty, 1937

Bellumcorpus g. n. Kohn, 1962

Neoprosorhynchinae. Corpo alongado, sem espinhos. *Rhynchus* de formato oval. Bôca no meio do corpo. Intestino dirigido de diante para trás. Átrio genital bem desenvolvido situado na extremidade posterior do corpo. Bôlsa do cirro alongada, relativamente pequena, com vesícula seminal e parte prostática. Testículos pós-faringeanos, com campos total ou parcialmente coincidentes e zonas afastadas ou em parte coincidentes. Ovário pós-faringeano, geralmente pós-testicular. Glândula de Mehlis imediatamente pós-ovariana. Canal de Laurer não evidenciado. Útero ocupando todo o espaço entre a extremidade anterior próximo ao *rhynchus* até o átrio genital. Vitelinos laterais, da zona pré-cecal à zona ovariana. Poro excretor terminal. Parasitos de peixes de água doce.

Espécie tipo — *B. major* sp. n.

Êsse nôvo gênero se distingue fàcilmente de *Neoprosorhynchus* Dayal, 1948 pelos testículos não situados no mesmo campo e pela glândula de Mehlis pós-ovariana.

BUCEPHALIDAE

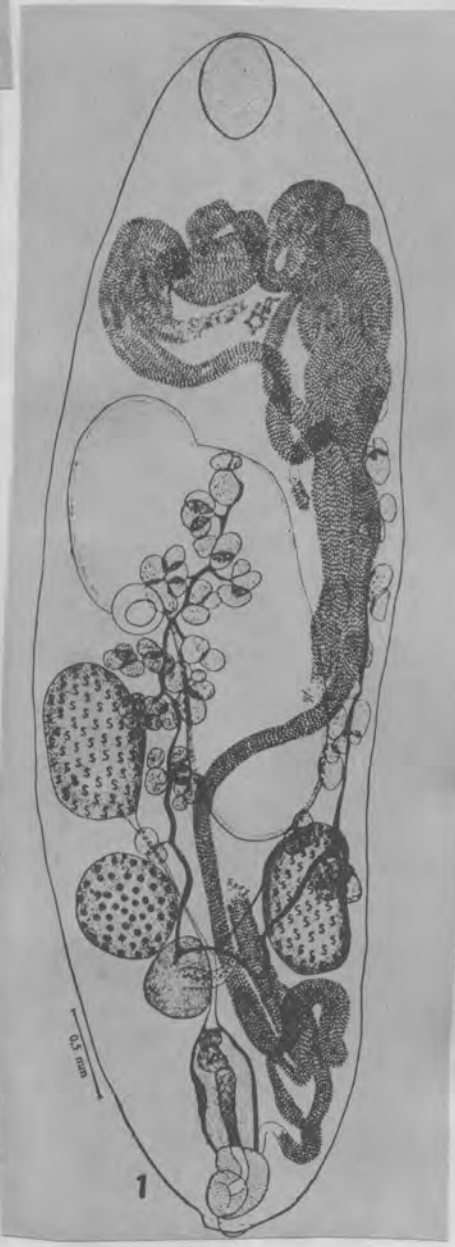
Bellumcorpus major sp. n. Kohn, 1962

Trematódeos de corpo alongado, com extremidades arredondadas; medem 3,54 a 7,36 mm de comprimento por 1,08 a 2,25 mm de largura. Cutícula não espinhosa. Extremidade anterior com *rhynchus* de formato oval, com 0,42 a 0,63 mm de comprimento por 0,18 a 0,28 mm de largura. Bôca simples, ventral, situada no 1/3 médio do corpo. Faringe muscular com 0,19 a 0,31 mm de comprimento por 0,18 a 0,28 mm de largura. Ceco intestinal dirigido de diante para trás, com 1,37 a 2,74 mm de comprimento por 0,42 a 1,08 mm de largura. Átrio genital bem desenvolvido, situado na extremidade posterior do corpo. Bôlsa do cirro alongada, dirigida do poro genital para diante, relativamente pequena, medindo 0,58 a 1,66 mm de comprimento por 0,22 a 0,33 mm de maior largura; encerra vesícula seminal pouco desenvolvida, ligando-se a um canal prostático saliente no átrio genital, e que é cercado por numerosas células prostáticas. Testículos pós-faringeanos, mais ou menos arredondados, situados no mesmo campo ou com campos parcialmente coincidentes e com zonas parcialmente coincidentes ou um pouco afastadas. O testículo situado no campo ovariano e anterior a êsse órgão mede 0,22 a 1,08 mm de comprimento por 0,38 a 0,67 mm de largura; o testículo oposto mede 0,43 a 1,21 mm por 0,36 a 0,50 mm, podendo ficar na zona ovariana ou ser anterior ou posterior a ela. Ovário de contôrno liso, arredondado, pós-faringeano, situado na zona de um dos testículos ou em parte anterior ou posterior a êsse órgão, deslocado lateralmente, sempre no campo do testículo que lhe é anterior; mede 0,25 a 0,63 mm de comprimento por 0,25 a 0,62 mm de largura. Glândula de Mehlis bem desenvolvida situada logo abaixo do ovário, medindo 0,33 a 0,50 mm de comprimento por 0,38 a 0,47 mm de largura. Canal de Laurer não evidenciado. Útero com alças sinuosas, dirigindo-se da região da glândula de Mehlis para a extremidade anterior do corpo até próximo ao *rhynchus;* depois dirige-se para trás, localizando-se ao lado da bôlsa de cirro e indo terminar no átrio genital. Ovos de casca lisa, operculados, com 0,022 a 0,026 mm de comprimento por 0,015 a 0,018 mm de largura. Vitelodutos nítidos, confluindo ao nível da glândula de Mehlis. Vitelinos constituídos por folículos arredondados, de diâmetro e número variáveis; são situados lateralmente, estendendo-se da zona pré-cecal até a zona ovariana. Poro genital feminino abrindo-se no átrio genital. Poro excretor terminal. Vesícula excretora não estudada com detalhe.

Habitat — Estômago de *Salminus hilarii* Cuv. & Val., 1849

Proveniência — Rio Mogi-Guaçu, Cachoeira de Emas, Pirassununga, Estado de São Paulo, Brasil.

Tipo n.º 28.746a e parátipos n.º 28.746b-h depositados na Coleção Helmintológica do Instituto Oswaldo Cruz.



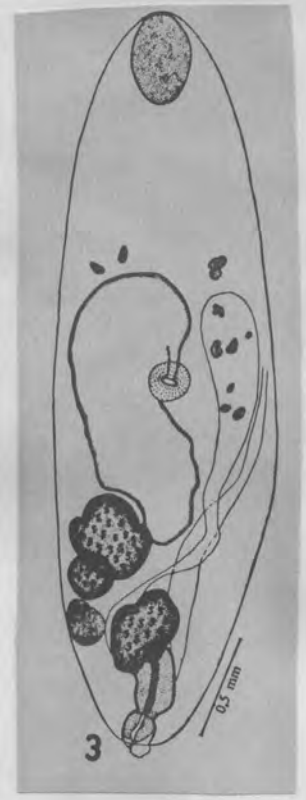
Bellumcorpus major g. n., sp. n. — Fig. 1: Tipo;

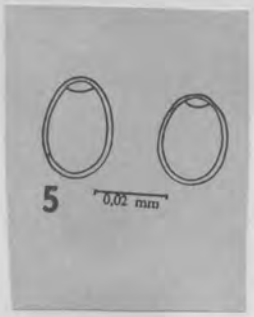
over

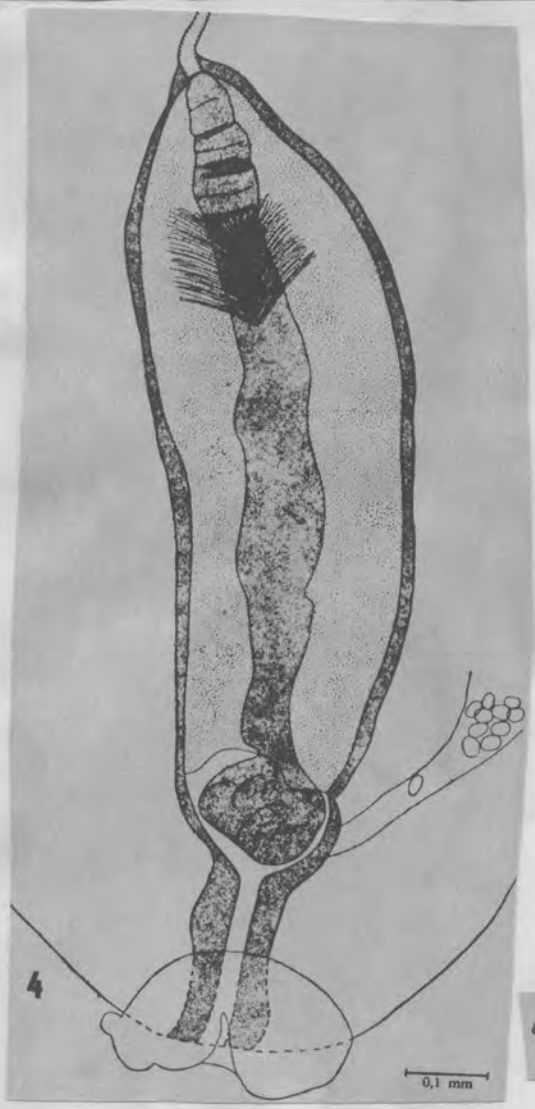
Bellumcorpus major g. n., sp. n.
(Medidas em milímetros)

Col. Helm. I.O.C. N.º	28.746 A	28.746 B	28.746 C	28.746 D	28.746 E	28.746 H
Espécime	Tipo	Parátipo	Parátipo	Parátipo	Parátipo	Parátipo
Comprimento	6,99	7,36	6,19	6,04	6,99	3,54
Largura	2,16	2,08	1,99	1,88	2,25	1,08
Rhynchus	0,60 x 0,43	0,57 x 0,47	0,49 x 0,47	0,49 x 0,39	0,63 x 0,45	0,42 x 0,28
Faringe	0,31 x 0,28	0,26 x 0,25	0,21 x 0,18	0,26 x 0,28	0,21 x 0,19	0,19 x 0,18
Ceco	2,74 x 0,74	2,33 x 0,47	2,61 x 1,08	1,99 x 0,77	2,42 x 1,02	1,37 x 0,42
Bôlsa do cirro	1,17 x 0,33	1,66 x 0,25	1,33 x 0,32	1,29 x 0,29	1,25 x 0,33	0,58 x 0,22
Testículos	0,92 x 0,57	0,75 x 0,53	0,99 x 0,42	0,82 x 0,57	1,08 x 0,67	0,43 x 0,38
	0,88 x 0,50	0,69 x 0,42	1,21 x 0,39	1,08 x 0,42	1,19 x 0,45	0,43 x 0,36
Ovário	0,63 x 0,60	0,53 x 0,53	0,60 x 0,60	0,62 x 0,62	0,59 x 0,59	0,25 x 0,25
Glândula de Mehlis	0,50 x 0,43	0,42 x 0,38	0,50 x 0,42	0,33 x 0,42	0,37 x 0,47	?
Ovos	0,022 x 0,016	0,024 x 0,016	0,022 x 0,015	0,024 x 0,016	0,022 x 0,018	0,022 x 0,016
	0,022 x 0,015	0,026 x 0,018	0,022 x 0,016	0,024 x 0,018	0,026 x 0,018	0,022 x 0,016

fig. 2: parátipo n.º 28.764 d.







Bellumcorpus major g. n., sp. n. — Fig. 3: Parátipo n.º 28.746 h; fig. 4: bôlsa do cirro do tipo; fig. 5: ôvo do tipo.

Bellumcorpus schubarti (Kohn, 1963) Comb. nov.

Paurorhynchus schubarti sp. n. KOHN, 1963

Paurorhynchinae. Trematódeo de corpo alongado, com extremidades arredondadas; medem 7,73 mm de comprimento por 2,8 mm de largura. Cutícula lisa. Extremidade anterior com *rhynchus* muito pequeno, que mede 0,50 mm de comprimento por 0,29 mm de maior largura. Bôca simples, ventral, situada no 1/3 médio do corpo. Faringe muscular com 0,29 mm de comprimento por 0,32 mm de largura. Ceco intestinal dirigido de diante para trás, com 2,13 mm de comprimento por 0,67 mm de largura. Átrio genital situado na extremidade posterior do corpo. Bôlsa do cirro alongada, dirigida do poro genital para diante, medindo 2,40 mm de comprimento por 0,33 mm de maior largura; encerra vesícula seminal que se liga a um canal prostático, cercado por numerosas células prostáticas. Testículos pós-faringeanos, lobados, com zonas coincidentes e campos afastados; o testículo situado mais próximo da faringe mede 0,75 mm de comprimento por 0,59 mm de largura, e o outro 0,67 mm por 0,59 mm. Ovário arredondado, pós-testicular, situado na linha mediana, abaixo da zona testicular, próximo à bôlsa do cirro; mede cêrca de 0,22 mm de comprimento por 0,25 mm de largura. Glândula de Mehlis situada na zona ovariana, medindo 0,17 mm de comprimento por 0,15 mm de largura. Canal de Laurer não evidenciado. Útero sem ovos, estendendo-se desde a parte anterior do corpo, na zona dos vitelinos até o átrio genital. Vitelinos constituídos por pequenos folículos arredondados, situados no 1/3 anterior do corpo. Poro genital feminino abrindo-se no átrio genital. Poro excretor terminal. Vesícula excretora não estudada com detalhe.

Habitat – Fígado (em quisto) de *Salminus maxillosus* (Cuv. & Val.).

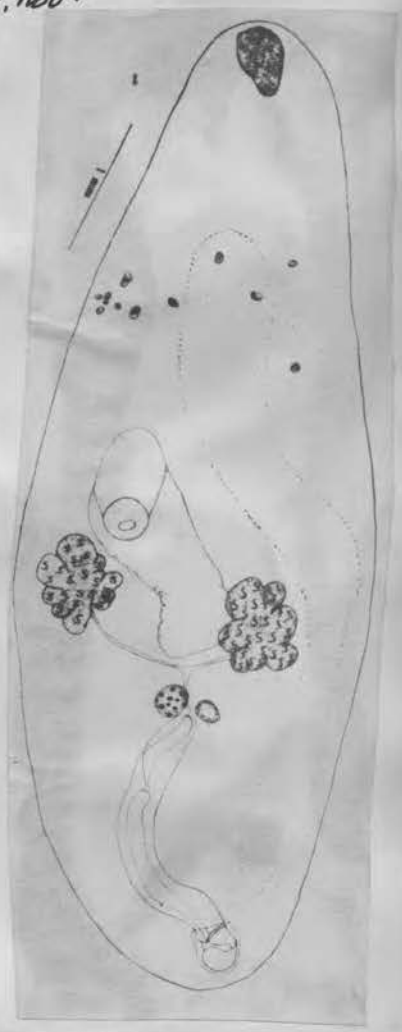
Proveniência – Cachoeira de Emas, Rio Mogi-Guaçu, Pirassununga, Estado de São Paulo.

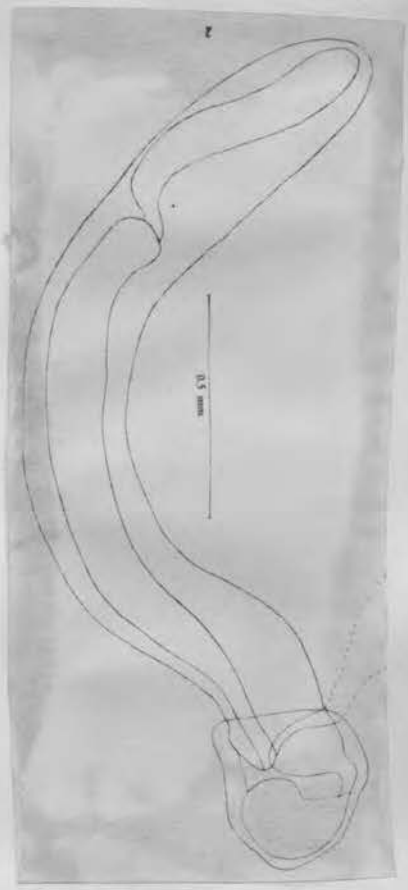
Tipo n.º 29.177 e parátipo n.º 29.178 depositados na Coleção Helmintológica do Instituto Oswaldo Cruz.

Nossa descrição é baseada sòmente em um dos exemplares, pois o outro se apresentava muito pouco desenvolvido.

O nome da espécie é dado em homenagem ao Dr. Otto Schubart, que foi um dos grandes pesquisadores da Estação Experimental de Biologia e Piscicultura em Emas.

Discussão – O gênero *Paurorhynchus* foi proposto por DICKERMAN em 1954, para *P. hiodontis* Dickerman, 1954 parasito de *Hiodon tergisus*, sendo esta até o momento a única espécie referida. *P. schubarti* sp. n. difere de *P. hiodontis* principalmente pelo tamanho da bôlsa do cirro e pela posição das gônadas.





Paurorhynchus schubarti sp. n. – Fig. 1: Tipo; fig. 2: bôlsa do cirro do tipo (semi-esquemática).

1963) comb. nov. — Fig. 1: Total

Paurorhynchus schubarti Kohn, 1963: 259-261, figs. 1-2.

Paurorhynchus schubarti Travassos, Freitas & Kohn, 1969: 47-48, fig. 21.

Corpo oval, com 8,95 a 9,75 mm de comprimento por 2,45 a 3,35 mm de maior largura. Cutícula lisa. Extremidade anterior com **rhynchus** muscular oval, que mede 1,04 a 1,24 mm de comprimento por 0,72 a 0,94 mm de largura. Bôca ventral, situada no têrço médio do corpo. Faringe muscular presente, com 0,25 a 0,26 mm de comprimento por 0,31 a 0,34 mm de largura. Ceco intestinal com paredes pregueadas, dirigido de diante para trás, mede em um dos exemplares 2,80 mm de comprimento por 0,50 mm de largura. Átrio genital situado na extremidade posterior do corpo, com 0,60 a 0,70 mm de comprimento por 0,60 a 0,64 mm de largura. Bôlsa do cirro alongada, dirigida do poro genital para diante; mede 2,20 a 2,25 mm de comprimento por 0,40 a 0,45 mm de largura; encerra vesícula seminal globosa com 0,76 mm de comprimento por 0,36 mm de largura (medidas do exemplar 30.497) e que se liga a um canal prostático cercado por numerosas células prostáticas. Testículos pósfaringeanos, lobados, com zonas parcialmente coincidentes e campos afastados; o testículo situado no campo ovariano mede 0,76 a 0,86 mm de comprimento por 0,60 a 0,78 mm de largura; o outro mede 0,83 mm por 0,60 mm. Ovário arredondado, pósteslicular, situado no lado esquerdo do corpo, medindo 0,41 a 0,42 mm de comprimento por 0,41 a 0,46 mm de largura. Glândula de Mehlis situada junto ao ovário, tendo 0,31 a 0,36 mm de comprimento por 0,31 a 0,34 mm de largura. Canal de Laurer presente. Espermateca ausente. Útero com alças sinuosas que se dirigem da região da glândula de Mehlis para a extremidade anterior até as proximidades do **rhynchus**, que depois vão para trás, localizando-se ao lado da bôlsa do cirro, indo terminar no átrio genital. Ovos de casca lisa, operculados, com 0,020 a 0,025 mm de comprimento por 0,015 a 0,020 mm de largura. Poro genital feminino abrindo-se no átrio genital. Poro excretor terminal. Vesícula excretora não estudada.

Habitat — Cavidade geral e intestino (?) de **Salminus maxillosus** Cuv. & Val.

Proveniência — Pirassununga, Estado de São Paulo e Salobra, Estado de Mato Grosso, Brasil.

Kohn, A, 1970

CHABAUDTREMA Kohn, 1970

Chabaudtrema gen. n.

Prosorhynchinae. Corpo alongado, sem espinhos. **Rhynchus** muscular em forma de funil, sem apêndices. Bôca situada no meio do corpo. Intestino dirigido para diante.

Átrio genital situado na extremidade posterior do corpo. Bôlsa do cirro alongada, bem desenvolvida, com vesícula seminal, região prostática e canal ejaculador. Testículos de contôrno liso, obliquos, com campos afastados e zonas parcialmente coincidentes. Ovário pós-faringeano, mediano, situado em parte no campo do testículo mais anterior e na zona do testículo posterior. Glândula de Mehlis, espermateca e canal de Laurer não evidenciados. Útero ocupando todo o espaço entre o fim do ceco intestinal e o átrio genital. Vitelinos laterais, da zona pré-cecal até a zona ovariana. Poro excretor terminal. Vesícula excretora sacular. Parasitos de peixes marinhos.

Espécie tipo — **C. rarus** sp. n.

Chabaudtrema gen. n. afasta-se dos demais gêneros principalmente pela disposição das gônadas; julgamo-lo mais próximo de **Bellumcorpus** Kohn, 1962, do qual se distingue também, pelo aspecto do **rhynchus**.

ATAS Soc. Biol. Rio de Janeiro
vol. 13 : 147-148

Chabaudtrema rarus Kohn, 1970

Chabaudtrema rarus gen. n., sp. n.

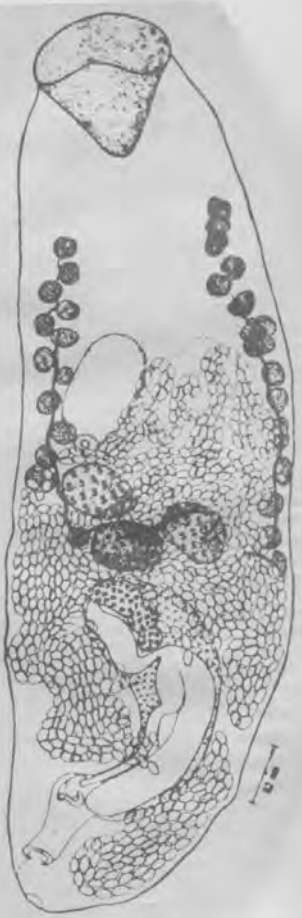
Trematódeo alongado com extremidades arredondadas; mede 2,94 mm de comprimento por 0,90 mm de largura. Cuticula lisa. Extremidade anterior com **rhynchus** simples, muscular, em forma de funil, que mede 0,44 mm de comprimento por 0,43 mm de maior largura. Bôca simples, ventral, situada no têrço médio do corpo. **Faringe** muscular presente, medindo 0,072 mm de diâmetro. Esôfago nulo. Ceco intestinal dirigido da faringe para diante, com 0,36 mm de comprimento por 0,22 mm de largura. Átrio genital alongado, situado próximo à extremidade posterior do corpo. Bôlsa do cirro bem desenvolvida, alongada, curva, dirigida do poro genital para diante; mede 1,02 mm de comprimento por 0,30 mm de maior largura; encerra vesícula seminal trilobada, região prostática e canal ejaculador. Testículos de contôrno liso, obliquos, com campos afastados e zonas parcialmente coincidentes; o testículo situado mais próximo da abertura bucal mede 0,17 mm de comprimento por 0,26 mm de largura, e o outro 0,20 por 0,22. Ovário de contôrno liso, pós-faringeano, com campo parcialmente coincidente com o do testículo mais anterior e em contato com o do testículo posterior, e em parte em sua zona; mede 0,15 mm de comprimento por 0,23 mm de largura. Glândula de Mehlis, espermateca e canal de Laurer não evidenciados. Útero sinuoso, dirigindo-se da região do ovário para diante, alcançando o nível anterior do ceco intestinal, e depois dirigindo-se para trás, estendendo-se até a extremidade posterior do corpo. Ovos operculados, de casca lisa, com 0,042 a 0,045 mm de comprimento por 0,024 mm de largura. Vitelodutos nítidos, confluindo ao nível da porção anterior do ovário. Vitelinos constituídos por folículos arredondados que medem 0,06 a 0,10 mm de comprimento por 0,04 a 0,10 mm de largura, situados lateralmente, estendendo-se da zona pré-cecal à zona ovariana. Vesícula excretora sacular, estendendo-se até o nível da porção mais anterior do ceco intestinal.

Habitat — Intestino de **Garrupa sp.**

Proveniência — **Baía de Guanabara, Estado da Guanabara, Brasil.**

Tipo nº 30.284 depositado na Coleção Helmintológica do Instituto Oswaldo Cruz.

ATAS Soc. Biol. Rio de Janeiro
13: 147-148



Chabaudtrema rarus gen. n. sp. n.

Dollfustrema Eckmann, 1934

Syn. *Dollfusina* Eckmann, 1932, preoccupied

Generic diagnosis. — Bucephalidae, Bucephalinae: Body plump, spined all over. Rhynchus inverted conical, muscular, with triple crown of spines larger than those of body surface. Mouth opening in middle third of body. Intestine short. Testes tandem or oblique, on one side or one on each side in middle third of body. Cirrus pouch muscular, comparatively large. Vesicula seminalis winding. Genital lobe present. Genital pore ventroterminal. Ovary pretesticular or intertesticular. Vitellaria divided into paired preovarian groups. Uterus variable in extent. Excretory vesicle long, giving off collecting vessels sideways. Parasites of freshwater and marine fishes, larva also in fishes.

Genotype: *D. vaneyi* Tseng Shen, 1930 (Pl. 1, Fig. 7), in *Siniperca scherzeri*, Setschouen, China. Freshwater fish

Other species:

D. echinatum (Komiya et Tajimi, 1941) (syn. *Prosorhynchus e.* K. et T.) in muscle of *Pseudorasbora parva;* Shanghai. Freshwater

D. gavidum Manter, 1940, in *Gymnothorax moringa;* Florida, Cuba.

D. macracanthum Hanson, 1950, in *Gymnothorax moringa:* Bermuda.

Yamaguti (1954, 1958) included in the generic diagnosis of *Dollfustrema,* "Rhynchus inverted conical . . . with triple crown of spines . . . Vitellaria divided into paired preovarian groups." This description actually applies only to the type species; in others the rhynchus may be inverted conical or rounded, the crown of spines is multiple (3 to 6), and the vitellaria are either divided into paired preovarian groups or continuous across the body. His key to the genera of Bucephalinae (1958) reflects the restricted description of the rhynchus and its spines. Yamaguti's generic diagnosis of *Dollfustrema* provides for pretesticular or intertesticular ovary, but the subfamily diagnosis (1958) provides only for a pretesticular ovary.

Manter (1940a) once considered *Dollfustrema* a synonym of *Mordvilkovia* Pigulewsky, 1931; but later the same year (1940b) he proposed retention of *Dollfustrema,* assuming the absence of cephalic spines in *Mordvilkovia.* Nagaty (1937) and Yamaguti (1954, 1958) consider *Mordvilkovia* a synonym of *Prosorhynchus* Odhner, 1905.

FROM MANTER AND PRITCHARD, 1961

Dollfustrema vaneyi (Shen 1930) Eckmann 1934.

Syn. Dollfusina vaneyi (Shen, 1930) Eckmann, 1934
Prosorhynchus vaneyi Shen, 1930

Description: Length 580 to 840μ; width 160 to 220μ. Body spined, elongated, more pointed posteriorly. Rhynchus about 90μ long by 57μ wide, very retractile; bears a triple-row ring of cuneiform spines with quincunx arrangement; those of the middle row are larger and heavier (6 by 12μ) alternating with those of the other two (3 by 1 to 5μ). Muscles of rhynchus easily visible: some large bundles (3μ) from disk to lateral wall serving for retraction; bundles of annular fibers limiting a cup-shaped cavity filled with glandular cells surrounded by parenchymal tissue. Mouth ventral, near union of middle and posterior thirds of body. Pharynx 60μ diameter; radiate musculature well developed. Esophagus about 30μ long. Intestine sac-like; 105μ long by 81μ wide. Digestive tube directed anterodorsally reaching the anterior part of the middle third where the vitellaria arc around it. Glandular and epithelial cells observed in walls of esophagus and intestine; villi-like structures in intestine.

Vitellaria about 30 small follicles, oval or round, 9 to 10μ by 15 to 18μ; distributed in an arc embracing the anterior end of the intestine. Ovary dorsal to intestine, oval, 63 by 48μ. Testes irregularly oval; position not absolutely fixed; anterior to right of pharynx reaching anterior to ovary; posterior more to left extending from pharynx to cirrus sac.

Cirrus sac 186μ long by 45μ wide; cyllindrical; somewhat to left; extends anterior almost to mouth level. Coiled seminal vesicle continued by pars prostatica which terminates in short ejaculatory canal opening into genital sinus beside the more or less conical protuberance of the rather large "Geschlechtszapfen". The sinus opens to exterior by the subterminal genital pore on ventral surface. Near the genital pore is a mass of glandular cells which secrete the envelope of the spermatophore. Specimens immature--uterus not observed. Excretory system unobserved except for short canal and pore at posterior extremity of body.

Shen, Tseng, 1930.
from: Ann. Parasit VIII(5): 554-561

Host: Siniperca scherzeri (Basil.)
Locality: Chung-King, China

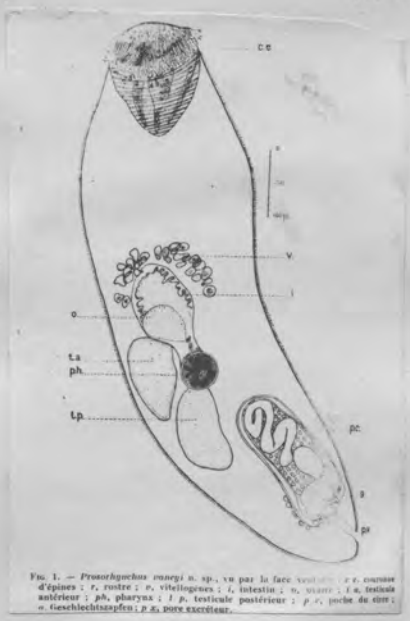


Fig. 1. — *Prosorhynchus vaneyi* n. sp., vu par la face ventrale. *ce*, couronne d'épines ; *r*, rostre ; *v*, vitellogènes ; *i*, intestin ; *o*, ovaire ; *ta*, testicule antérieur ; *ph*, pharynx ; *tp*, testicule postérieur ; *pc*, poche du cirre ; *o*, Geschlechtszapfen ; *p e*, pore excréteur.

Prosorhynchus vaneyi Tseng, 1930

SUR UN GASTEROSTOMIDE IMMATURE CHEZ *SINIPERCA*

Par TSENG SHEN

Tseng 1930.

Mon collègue, l'ichthyologiste Hsien-Wen Wu, m'a aimablemen remis des viscères de *Siniperca scherzeri* (Basil.), dans lesquels i avait remarqué la présence de parasites. Le *Siniperca* parasité pro venait de Chung-King (Province de Sétschouen, Chine). J'ai soumi ces viscères parasités à l'examen de R.-Ph. Dollfus, qui y a découvert trois espèces de trématodes digénétiques et a bien voulu me guider dans l'étude de l'une d'entre elles, qui appartient à la famille des *Gasterostomidæ* = *Bucephalidæ*. Je me fais un devoir de remercier R.-Ph. Dollfus pour tous les précieux conseils qu'il m'a donnés.

Rappelons brièvement que la systématique des *Gasterostomata*, actuellement en usage, dérive de celle établie par Odhner (1905) qui, le premier, a nettement défini le groupe et a réparti les espèces alors connues dans les deux genres *Gasterostoma* von Siebold sensu str. et *Prosorhynchus* Odhner, d'après la structure de leur organe de fixation, occupant l'extrémité antérieure du corps. Chez *Gasterostoma* von Siebold (Odhner, 1905 sensu), l'extrémité antérieure est en ventouse ; chez *Prosorhynchus* Odhner, elle est en rostellum.

W. Nicoll (1914), ayant repris l'étude des *Gasterostomata*, proposa de diviser *Gasterostoma* von Siebold (Odhner, 1905 sensu) en trois genres :

Bucephala von Baer, 1827, pour les espèces à organe antérieur pourvu de tentacules musculaires rétractiles (fimbriæ).

Bucephalopsis Diesing, 1855, pour les espèces à organe antérieur consistant en une simple ventouse globuleuse.

Rhipidocotyle Diesing 1858, pour les espèces à organe antérieur comprenant une ventouse à faible musculature, surmontée d'un lobe contractile en éventail. Pour ces trois genres, Nicoll a proposé la sous-famille des *Bucephalinæ* Nicoll, 1914. Pour le genre *Prosorhynchus* Odhner, Nicoll a proposé la sous-famille des *Prosorhynchinæ* Nicoll, 1914.

Nicoll, comme auparavant Poche (1907), a rejeté le genre *Gasterostoma* von Siebold, 1848 au profit de *Bucephala* von Baer, 1826, conformément à la loi de priorité, qui s'applique bien que *Buce-*

Annales de Parasitologie, t. VIII, n° 5, — 1er octobre 1930, p. 554-561.

phala ait été créé pour une forme larvaire. Plus récemment, Y. Ozaki (1924 et 1927) a révisé les *Gasterostomata*, conservant les deux sous-familles établies par Nicoll mais ajoutant trois genres nouveaux : *Gobionius* Ozaki, 1924 dans les *Prosorhynchinæ* ; *Nannoenterum* Ozaki, 1924 et *Dolichoenterum* Ozaki, 1924, dans les *Bucephalinæ*, ce qui portait le nombre total des genres à sept. Un huitième a été, depuis lors, proposé par R.-Ph. Dollfus : *Prosorhynchoides* R.-Ph. Dollfus, 1929, pour une espèce à long intestin formant une arcade entre la face ventrale et la face dorsale, puis se prolongeant postérieurement, le long de la paroi dorsale, jusqu'à l'union des deux derniers tiers de la longueur du corps, ou un peu au-delà.

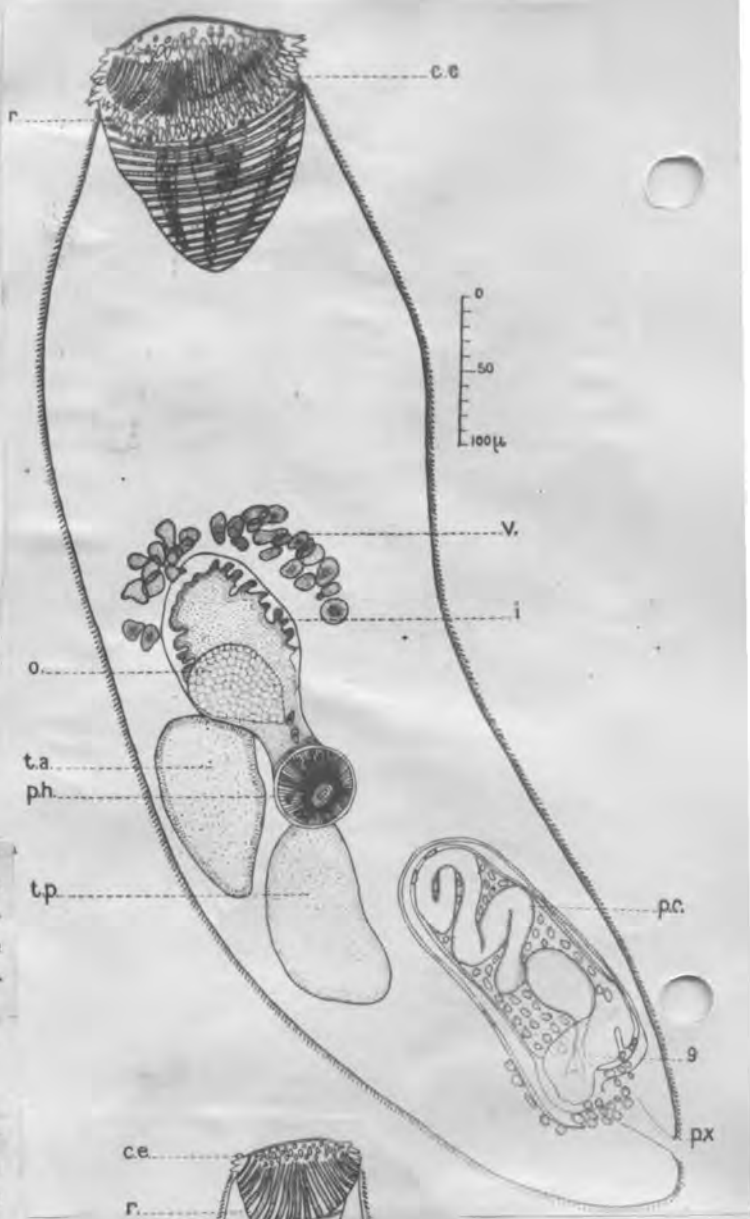
Le gastérostomide de *Siniperca* a son extrémité antérieure pourvue d'un rostre épineux, je le rapporte au genre *Prosorhynchus* Odhner et je dédie l'espèce au Prof. Clément Vaney, de la Faculté des Sciences de Lyon, en souvenir de son bon accueil.

(over)

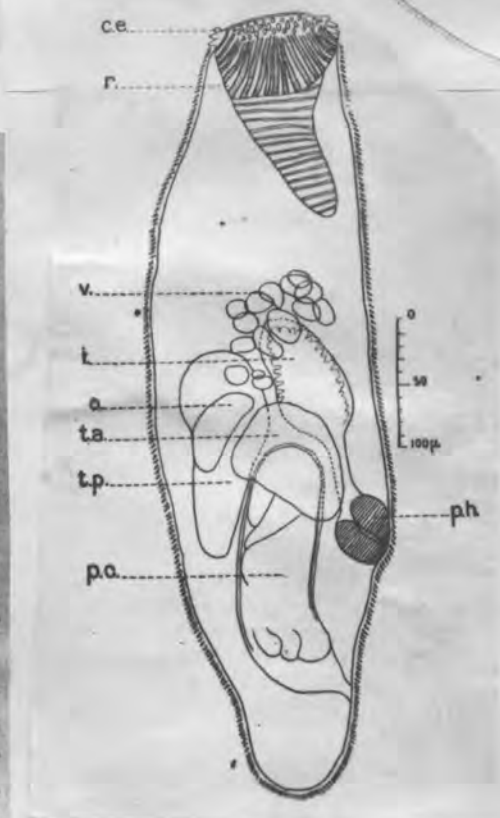
Prosorhynchus vaneyi n. sp. Tseng, 1930

Corps allongé, plus pointu postérieurement qu'antérieurement, long de 580 à 840 µ, large de 160 à 220 µ, à cuticule entièrement couverte de spinules. Appareil antérieur de fixation long d'environ 90 µ, large d'environ 57 µ, très rétractile ; en extension, il montre une triple couronne d'épines cunéiformes, nettement plus grosses que les spinules (longueur 3 µ sur largeur 1 µ 5 environ), qui garnissent toute la surface du corps.

Les épines de la triple couronne sont en quinconces, celles de la rangée moyenne alternant avec celles des deux autres. On remarque que les épines de la rangée moyenne sont plus grandes et plus grosses (6 × 12 µ) que celles des deux autres. Toutes les épines ont leur pointe dirigée postérieurement. La musculature du rostre est bien visible, on distingue : 1° des faisceaux larges d'environ 3 µ s'insérant d'une part sur le disque, d'autre part sur la paroi latérale de l'appareil terminal et servant à la rétraction. 2° au-dessous de la couronne, des faisceaux (larges d'environ 4 à 5 µ) de fibres annulaires limitant une cavité en cupule, comblée par des cellules glandulaires environnées de tissu mésenchymateux. La bouche est située sur la face ventrale vers l'union du tiers moyen et du tiers postérieur du corps. Le pharynx a un diamètre de 60 µ et sa musculature radiaire est assez fortement développée. L'intestin, en forme de poche, est long de 105 µ, large de 81 µ ; il est séparé du pharynx par l'œsophage, qui mesure environ 30 µ de long. L'ensemble du tube digestif a son axe dirigé antérodorsalement à partir de la face ventrale, à peu près dans le plan sagittal du corps. Le fond de l'intestin atteint antérieurement à peu près la limite entre les deux premiers tiers de la longueur totale du corps, où se trouve la concavité de l'arc formé par les follicules vitellogènes. Dans la paroi de l'œsophage et de l'intestin on voit des cellules glandulaires et épithéliales, la surface de l'épithélium du sac intestinal, présente des villosités.



Les vitellogènes sont composés d'un petit nombre (au maximum une trentaine) de follicules séparés, plus ou moins ovales ou arrondis, mesurant de 9 à 10 µ sur 15 à 18 µ ; ils sont disposés suivant un arc à concavité postérieure, embrassant le fond de l'intestin. L'ovaire est situé à un niveau intermédiaire au pharynx, au fond de l'intestin et masqué par lui lorsque l'on regarde l'animal par la face ventrale ; sa forme est ovale, il mesure environ 63 µ sur 48 µ. Les testicules ont une forme irrégulière et sont plus longs que larges, leur position n'est pas absolument fixe : l'antérieur, à droite du pharynx, atteint antérieurement l'ovaire ; le postérieur, plus à gauche, atteint antérieurement le pharynx et dépasse postérieurement le fond de la poche du cirre.



La poche du cirre mesure environ 186 µ de long sur 45 µ de large, elle est cylindrique et un peu à gauche du plan sagittal. Elle atteint antérieurement à peu près la limite entre les deux derniers tiers de la longueur du corps. Chez les spécimens montés *in toto*, on voit à travers la paroi musculaire de la poche, un tissu glandulaire où serpente un tube plusieurs fois replié, qui est la vésicule séminale continuée par la pars prostatica. Celle-ci se termine par le canal éjaculateur court, qui s'ouvre dans le sinus génital à côté de la protubérance plus ou moins conique dite « Geschlechtszapfen », qui est ici assez grosse.

Le sinus s'ouvre à l'extérieur par le pore génital, sur la face ventrale, un peu en avant de l'extrémité postérieure du corps. Au voisinage du pore génital il y a un amas de cellules glandulaires qui ont pour rôle de sécréter l'enveloppe du spermatophore. N'ayant eu à ma disposition que quelques individus immatures à utérus non développé, je ne peux rien dire des autres parties de l'appareil génital.

P. vaneyi Tseng, 1930

Chez nos échantillons, l'appareil excréteur n'est pas bien visible : tout au plus distingue-t-on, derrière la poche du cirre, un canal s'ouvrant à l'extrémité postérieure du corps.

A ma connaissance, il a été décrit seulement cinq espèces de *Prosorhynchus: P. squamatum* Odhner, 1905 (= *Gasterostoma armatum* Olsson, 1868 et Levinsen, 1881) ; *P. crucibulum* (Rudolphi, 1819) ; *P. aculeatum* Odhner, 1905 (= *Gasterostoma crucibulum* van Beneden, 1870 = *Gasterostoma armatum* Olsson, 1876) ; *P. triglæ* Nicoll, 1914 ; *P. uniporus* Ozaki, 1924.

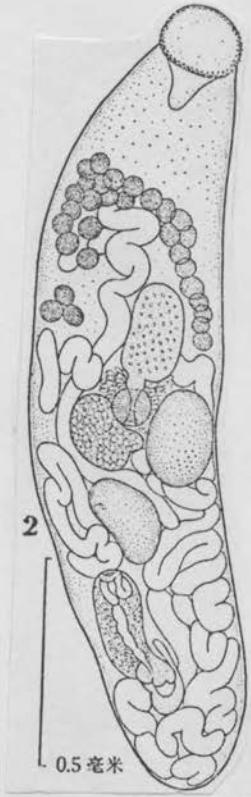
Je résume comparativement leurs caractéristiques dans le tableau ci-joint (p. 558-559).

Mon *Prosorhynchus* de *Siniperca* ne peut être rapporté à aucune de ces cinq espèces, en raison de sa triple couronne d'épines, de l'extension du sac intestinal jusqu'à la concavité de l'arc des vitellogènes, de la forme des testicules, de la position de l'ovaire dorsalement au tube digestif, au niveau du milieu de la longueur de celui-ci.

Chez *P. uniporus*, seule espèce à vessie ne s'ouvrant pas directement à l'extérieur, mais dans le sinus génital, le pharynx est situ

Espèces	Dimensions du corps		Rostre	Pharynx	Intestin	Testicules	Ovaire	Poche de cirre	Œufs	Hôtes
	Longueur	Largeur								
P. aculeatus Odh., 1905....	1-2mm5	650-950µ	Simple ovale ; 150-270µ.	140µ de diamètre, situé presque au quart postérieur du corps.	Un sac simple, atteignant à peine le milieu de la longueur du corps.	les, un de chaque côté du corps, auche souvent peu plus antér ; 260 × 200µ.	Au milieu du corps, ovale, du côté droit.	Du côté gauche du corps, en arrière du testicule gauche.	26-13 × 16-20µ	Dans l'intestin de *Conger conger* (L.).
P. squamatus Odh., 1905....	1-3mm	1/2, 1/3 ou 1/4 de la longueur.	Petit, ovale ; 150-90µ à l'état de repos.	90-130µ de diamètre, situé au milieu de la longueur du corps.	S'étendant de la partie postérieure du pharynx jusqu'au niveau des vitellogènes sur la ligne médiane.	esticule antér situé à droite pharynx, le érieur plus lan, dorsal, adi ou un peu gé.	Arrondi, situé dorsalement et à droite, immédiatement en avant du testicule antérieur.	Située à gauche dans la partie postérieure, son extrémité antérieure se trouvant au niveau du testicule postérieur.	29-32 × 20µ	Dans l'intestin et les cœca pyloriques de *Cottus scorpius* L. et *C. bubalis* Euphrasen, *Liparis montagui* Donov.
P. crucibulum (Rud.). Odh., 1905.....	1.75-3mm4	530µ-1mm3	Conique, partie saillante à peu près rectangulaire, avec musculatures longitudinale et annulaire.	Au milieu du corps.	Cul-de-sac s'étendant en avant jusqu'au tiers antérieur du corps.	chaque côté arynx.	Globuleux, un peu à droite ; en avant du testicule antérieur.	A gauche, en arrière des testicules	25-30 × 15-21µ	Dans l'intestin et les cœca pyloriques de *Leptocephalus myriaster* (Brevoort), *Conger conger* (L.).
P. triglæ Nicoll, 1914.....	2.2-2mm4	750µ	Cunéiforme, 300µ de diamètre.	Presque au milieu du corps, 100µ de diamètre.	Peu volumineux ; au milieu du corps.	cule postérieur situé près de he de cire, cule antérieur tre le pos- et l'ovaire.	En avant du testicule antérieur.	S'étendant en avant presque au niveau de la moitié de la longueur de la vessie excrétrice.	?	Dans l'intestin et l'estomac de *Trigla gurnardus* L.
P. uniporus Ozaki, 1924....	1.2-1mm7	520-700µ	120-140 µ peu profond, presque lenticulaire, limité par une musculature plutôt faible.	Au quart postérieur du corps ; 80-120µ de diamètre.	Un sac simple, claviforme, s'étendant jusqu'au milieu du corps.	aque côté s, globu- ovales, le gauche milieu du avant de de cirre.	Globuleux, en avant du testicule droit, 120-180µ.	A gauche 110-170µ.	23-26 × 17-18µ	Dans l'intestin de *Leptocephalus myriaster* (Brevoort).
P. vaneyi n. sp.	580-840µ	160-220µ	Conique, la partie externe arrondie, portant une triple couronne d'épines ; musculatures longitudinale et annulaire bien développées.	Au tiers postérieur du corps, 600µ de diamètre.	Sac simple s'étendant en avant du pharynx, jusqu'à l'arc des vitellogènes.	irrégu- de cha- du pha- roit plus que le	Dorsal à l'intestin et à son milieu.	A gauche de la partie postérieure, s'étendant en avant jusqu'au milieu du testicule postérieur.	?	Dans l'intestin de *Siniperca scherzeri* (Basil).

Dollfustrema vaneyi (Tseng, 1930)



From Tang and Tang, 1976

Dollfustrema bipapillosum ~~n. sp.~~ MANTER AND PRITCHARD, 1961
(Figs. 2–5)

Host: *Gymnothorax petelli* (Bleeker) (Muraenidae, moray eels or puhis); 8 specimens from 1 host.

Location: Intestine.

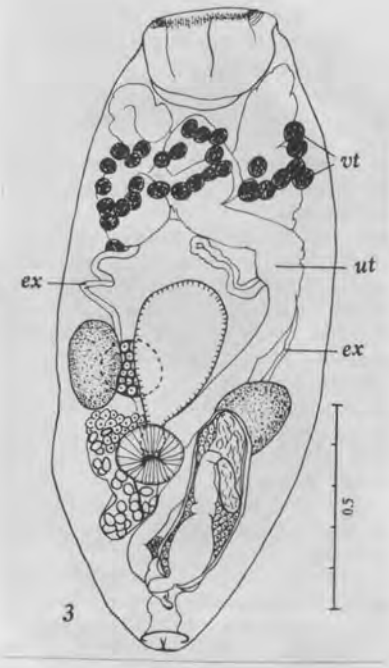
Holotype: U. S. Natl. Mus. Helm. Coll., No. 39060.

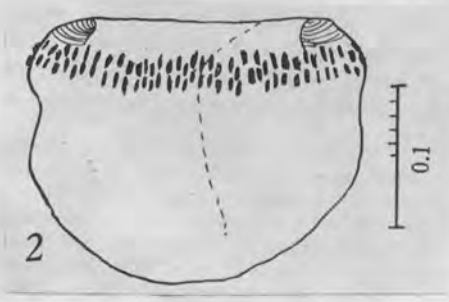
Description (based on 8 specimens): Body oval, rounded anteriorly, tapered and somewhat pointed posteriorly, 1.253 to 1.561 long by 0.456 to 0.570 wide; spines sparse or lacking (probably lost). Rhynchus (fig. 2) 0.194 to 0.235 long by 0.221 to 0.268 wide, terminal, rounded; with anterior, deep, cup-shaped depression almost filled by a large, lateral lobe (usually left, but right in two specimens); muscular papilla occurring laterally on each side of anterior edge of rhynchus; four rows of inconspicuous spines located near anterior edge of rhynchus (fig. 4). Mouth about one-third body length from posterior end, opposite middle or anterior part of cirrus sac; pharynx globular, 0.134 to 0.154 in diameter; cecum saccular in middle one-third of body, 0.315 to 0.369 long by 0.194 to 0.281 wide.

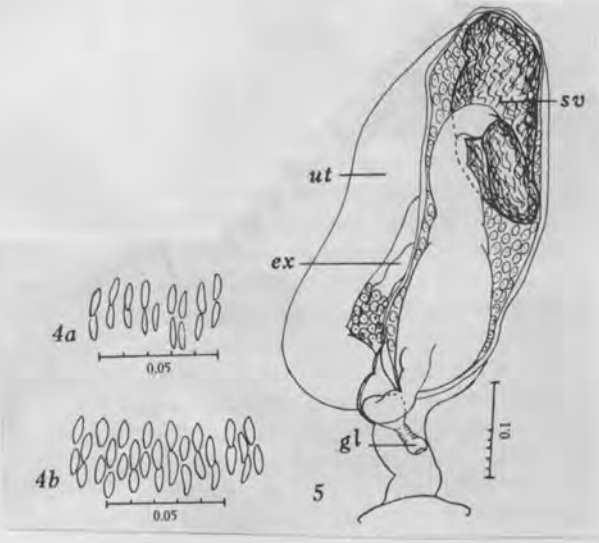
Gonads in more or less transverse, or slightly oblique, row, immediately postequatorial. Testes symmetrical or only slightly oblique, oval, 0.161 to 0.235 long by 0.114 to 0.154 wide, far apart, separated by ovary and cecum; cirrus sac sinistral, 0.375 to 0.469 long by 0.101 to 0.121 wide, rather thick-walled, in posterior one-third of body and extending into middle one-third; internal seminal vesicle descending about one-half length of cirrus sac, then ascending one-third or more, up to all, distance to anterior end of sac, thence turning posteriorly to become the straight pars prostatica; prostatic cells largely filling cirrus sac; genital lobe single; genital atrium about one-fifth to one-fourth length of cirrus sac; genital pore 0.047 to 0.134 from posterior end of body.

Ovary spherical, intertesticular, usually nearer right testis and often partially anterior to testes, 0.114 to 0.147 in diameter; Mehlis' gland postovarian, about same size as ovary; uterus descending almost to genital atrium, ascending sinistral to ovary, more or less filling anterior half of body, then descending to genital atrium; uterine seminal receptacle; vitellaria follicular, in uninterrupted transverse band several follicles wide, close to rhynchus; eggs 21 to 24 by 16 to 19 (transparent eggs 22 to 35 by 19 to 24, collapsed eggs 22 to 30 by 13 to 18). Excretory pore terminal, excretory vesicle extending forward to cirrus sac, sometimes reaching mid-cirrus sac; two well-developed, sinuous tubules extending forward more or less laterally. The name *bipapillosum* refers to the two papillae present on the rhynchus.

Discussion. *D. echinatum* (Komiya & Tajimi, 1941) Yam., 1954; *D. muraenae* Sogandares-Bernal, 1959; and *D. bipapillosum* are the only species of *Dollfustrema* with vitellaria across the body anterior to the testes and cecum, rather than in two lateral groups, although this condition is approached in *D. vaneyi* (Tseng,** 1930) Eckmann, 1934. *D. bipapillosum* is unlike the other species in that the vitellaria do not form a curved row; and the rhynchus has an internal lobe, a pair of papillae, and four rows of spines. *D. echinatum* has a conical rhynchus with three rows of spines, testes posterior to the







-OVER-

pharynx, a more anterior mouth, and the cirrus sac does not reach the level of the mouth. *D. muraenae* is most similar and differs chiefly in the details of the rhynchus (shorter; with six rows of spines; more slender spines; and apparent lack of depression, lobes, or papillae). The genital pore is somewhat more anterior and the eggs are slightly wider. *D. muraenae* would be even more similar if further collections of it show oblique as well as symmetrical testes, and demonstrate that the protruded region in the center of the rhynchus (fig. 1) represents the everted base of a shallow cavity.

Examination of the type specimen, kindly loaned by the U. S. National Museum, reveals that *D. muraenae* was actually figured in dorsal view and that the cirrus sac is sinistral. Also, the spines circling the rhynchus are arranged in six horizontal rows (fig. 6) rather than three. The scale shown with the figure of *D. muraenae* should be 0.1 mm rather than 0.5 mm.

Although Sogandares-Bernal (1959) stated that *D. echinatum* had testes side by side and a preequatorial mouth, the original description (Komiya and Tajimi, 1941) stated that the testes may be "situated one directly behind the other" while "in others they are located obliquely." The mouth may be preequatorial (as in K. and T.'s fig. 18), but it may be slightly postequatorial (as in K. and T.'s photomicrograph, fig. 67). *D. echinatum* is the only species with testes posterior to the pharynx.

All species of *Dollfustrema* are from eels (*Gymnothorax* sp.) except two from China, *D. echinatum* and *D. vaneyi*. *D. echinatum* is known only from the muscles of a fresh-water fish where it is progenetic; *D. vaneyi* was immature in the intestine of another fresh-water fish. In both these cases, migratory eels may be involved.

** In spite of the fact that the description of this species appeared under the authorship of "Tseng Shen" (Ann. Parasit. 8: 554–561), the correct name of the original author (according to the "Index-Catalogue of Medical and Veterinary Zoology," part 16, p. 5187) is Shen Tseng, so the authors of *D. vaneyi* should be: (Tseng, 1930) Eckmann, 1934. Eckmann (1932) used "Tseng Shen" but changed it to "S. Tseng" in 1934. The "Tseng Shen, 1930" of Yamaguti (1954, 1958); "(Shen, 1930) Eckmann, 1934" of Hanson (1950); "(Shen, 1930) Eckmann, 1932" of Montgomery (1957); and "(Tseng & Shen, 1930) Eckmann, 1934" of Sogandares-Bernal (1959) are all incorrect.

Family BUCEPHALIDAE

Montgomery, 1957

Dollfustrema californiae n. sp.

(Figs. 1–3)

Description (based on four specimens): Body approximately 3.7 times longer than wide, 1.9–2.9 mm. wide, 0.53–0.83 mm. long, widest near anterior end, tapering posteriorly to a point, anterior ⅔ of body spined; rhynchus saucer-shaped, poorly developed, 0.41–0.43 mm. in transverse diameter, having longitudinal muscles separated by glandular areas, with four alternating rows of slender cephalic spines 24–36 μ long; body spines 13 μ long (Fig. 3).

Mouth ⅓ of body length from posterior end; pharynx globular, 0.15–0.20 mm. × 0.22 mm.; esophagus 0.07–0.16 mm. long, with gland cells; cecum extending forward as far as anterior edge of anterior testis, about ¼ the body in maximum length; both circular and longitudinal muscles in walls of cecum.

Gonads tandem, in middle ⅓ of body; ovary between testes; testes two, rounded; posterior edge of posterior testis dorsal to pharynx; size 0.24–0.28 mm. long, 0.23–0.30 mm. wide; anterior testis at anterior edge of middle ⅓ of body, 0.27–0.34 mm. long, 0.23–0.30 mm. wide; cirrus sac 0.49–0.60 mm. × 0.11–0.134 mm. in posterior ¼ of body, anterior end at level of posterior testis, dorsal to pharynx; seminal vesicle tubular, C-shaped, arched dorsally, ¼ length of cirrus sac (Fig. 2); ovary rounded, 0.16–0.20 mm. long, 0.13–0.20 mm. wide.

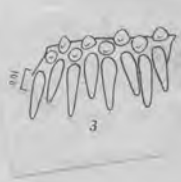
Vitelline follicles in lateral fields, in two separated groups with 16 follicles in left group and 14 follicles in the right, 0.067–0.121 mm. in diameter, extending from middle of posterior testis to a point immediately anterior to anterior testis; uterus extending anteriorly almost to rhynchus; eggs ovoid, 22–30 μ × 14–20 μ (average 26 μ × 18 μ).; genital atrium 0.13–0.14 mm. long, opening near posterior end of body, anterior extent of excretory vesicle not observed.

Host: *Gymnothorax mordax* (Ayres). California moray, (Muraenidae).

Location: Intestine.

Holotype: U. S. National Museum Helminthological Collection No. 38191.

Discussion: Four species have been described in the genus *Dollfustrema: D. vaneyi* (Shen, 1930) Eckman, 1934; *D. gravidum* Manter, 1940; *D. macracanthum* Hanson, 1950; and *D. echinatum* (Komiya and Tajimi, 1941) Yamaguti, 1953. *D. californiae* is similar to *D. gravidum* in having four alternating rows of similar cephalic spines, the gonads tandem, and ovary between testes. It differs from *D. gravidum* by possessing a much shorter intestine, the mouth opening more posterior, the cirrus sac extending more anteriorly (as far as posterior testis), and the seminal vesicle only ¼ (not ½) of the length of the cirrus sac. *D. californiae* differs from *D. macracanthum* in these same characters. In addition, *D. macracanthum* possesses rhomboid-shaped spines, the cirrus sac does not extend as far anteriorly as the posterior testis, and the vitelline follicles are distributed in a larger area. *D. echinatum* has the vitellaria anterior to the gonads, the ovary anterior to the testes, and the cecum anterior to the gonads.



4. *Dollfustrema californiae* Montgomery, 1957.

Hospedador: *Gymnothorax dovii* (Gunther)*

Localización: intestino.

Distribución geográfica: Bahía Santa Inés, Baja California, México.

Los catorce ejemplares de esta especie son comparables a los encontrados por Montgomery (1957) en *Gymnothorax mordax* en La Jolla, California. Los ejemplares estudiados sin embargo, muestran muchas variaciones en la forma de la pseudoventosa.

Esta varía considerablemente, algunas veces tiene la forma de un pequeño bulto esférico, en otras ocasiones es ancha y plana, como un platillo; algunos parásitos muestran una pseudoventosa como en los parásitos descritos por Montgomery. La variación en la pseudoventosa está acompañada por un cambio marcado en la forma del cuerpo: los que tienen la pseudoventosa abultada son alargados y los que tienen la pseudoventosa aplanada son casi ovoides. Basándome en esto, dudo de la validez de algunos géneros de la familia Bucephalidae, especialmente de aquellos en donde los criterios más importantes son: la forma del cuerpo y de la pseudoventosa.

From: Arai, H. P., 1962

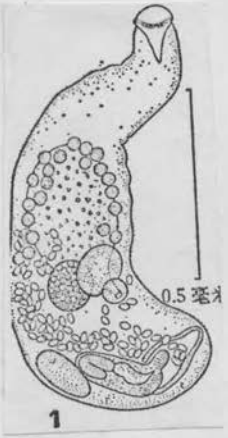
Bucephalidae

Dollfustrema foochowensis Tang Changti and Tang Zhongzhang, 1963

Not in Yamaguti (1971)

Life Cycle by Tang and Tang (1976)

in Life Cycle Notebook



From Tang and Tang, 1976

Dollfustrema gravidum, n. sp. Manter, 1940

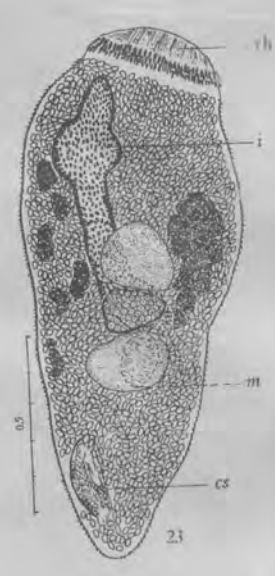
(Figures 23-26)

Synonym. *Gasterostomum* sp. Linton, 1910, p. 79, from "*Lycodontis moringa*"

Host. *Gymnothorax moringa* (Cuv.)

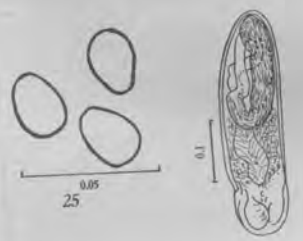
Location. Intestine

Frequency. 5 specimens in 1 of 2 hosts examined



Diagnosis (based on 4 specimens). Body plump, ovoid, 0.840 to 1.512 by 0.525 to 0.675; widest near anterior end; anterior end bluntly rounded or truncate, posterior end more pointed. Rhynchus weakly developed and flattened but with short longitudinal muscles alternating with glandular (?) regions. Anterior end of body at posterior edge of rhynchus provided with a triple-row ring of large spines (fig. 24). These cephalic spines are numerous, arranged in three alternating rows, much larger than body spines. Mouth well posterior to midbody; pharynx ovoid, 0.119 to 0.153 long by 0.085 to 0.102 wide; intestine very large, extending forward to base of rhynchus, thus being more than 1/2 body length. The intestine often has one or more swellings and may be bent back at its anterior end as if too long for the body.

Gonads in midbody region, tandem or in triangular arrangement (probably the normal condition). Ovary either between testes (fig. 23) or to the left beside anterior testis and directly anterior to posterior testis. Ovary ovoid to subtriangular in shape; Mehlis' gland at right posterior edge of ovary. Vitelline follicles large, irregular in shape, usually so compactly close together as to appear fused, sometimes widely scattered, in two separate groups from level of ovary about halfway to anterior end. Uterus filling entire body except for a few small areas near pharynx, intestine, or cirrus sac, and a narrow strip across the body at base of rhynchus; covering most organs. Eggs (fig. 25) large, ovoid but tapering somewhat toward anterior end; 24 to 26 by 16 to 18 microns.



Testes globular or irregular in shape, somewhat larger than ovary; anterior testis usually to the right, dorsal to intestine; posterior testis about at pharynx level. Cirrus sac (fig. 26) relatively small; not reaching posterior testis; 0.207 to 0.277 by 0.080 to 0.090; seminal vesicle about 1/2 length of sac, curving backward before entering the looped, colorless connecting tube; genital atrium moderately small; genital pore near posterior end of body. Excretory system not seen.

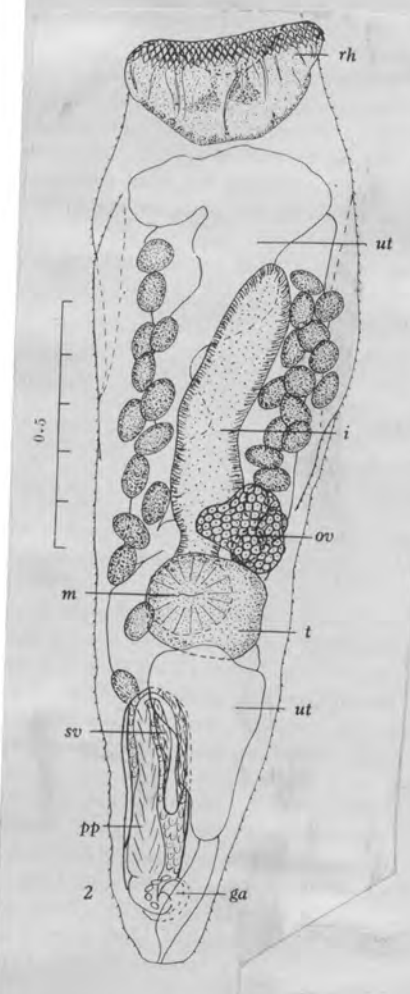
The name *gravidum* refers to the large number of eggs filling the body.

Comparisons. Only one other species, *D. vaneyi* (Shen, 1930), is known in the genus. *Dollfustrema gravidum* differs in the large size of the intestine and the poor development of the rhynchus. The egg size of *D. vaneyi* is not known.

Recently the author (Manter, 1940) was inclined to consider *Dollfustrema* Eckmann, 1934 a synonym of *Mordvilkovia* Pigulewsky, 1931. Such a conclusion is probably correct but assumes the presence of cephalic spines in *Mordvilkovia*. Until it is more certain that these are present, the description of Pigulewsky probably should be accepted and the genus characterized by "cuticular folds" on the rhynchus.

Also from moray at Bermuda - Hanson - 1950

(over)



D. macracanthum
acc. Hanson, 1950

Spines of D. gracilum
acc. Hanson (1950)

Dollfustrema macracanthum Hanson, 1950
Hosts: Gymnothorax moringa (C); **G. vicinus* (C).
Site: intestine.

Deposited specimen: U.S.N.M. 60250.

This species was described by Hanson as having one testis. Her material included 80 specimens but her description is based on "eleven larger specimens, and particularly the holotype." A reexamination of the type specimen reveals to us what looks like the faint outline of an anterior testis located at about the same level as the one seen distinctly in our material.

N & C 1964

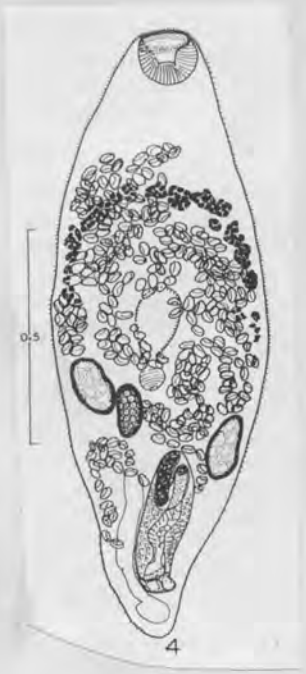
Dollfustrema **gymnothoracis** n.sp.
Figure 4 Thomas & Cable, 1964

Host: Gymnothorax vicinus (C).
Site: upper intestine.
Holotype: U.S.N.M. 60252.

Description based on 18 specimens. Body elongated oval, more pointed posteriorly, 1.03-1.66 long, 0.400-0.714 wide. Entire cuticle spinose. Rhynchus 0.098-0.120 long, 0.120-0.165 wide, sucker-like when inverted; with 5 or 6 rows of spines, 5 μ long, which, except for being closer together than those on adjacent cuticle, are not noticeably different from spines elsewhere. Pharynx at level of gonads, 0.060-0.075 in diameter; esophagus about same length as pharynx, cecum directed anteriorly. Testes symmetrical in younger specimens, diagonal in larger ones, 0.135-0.200 long, 0.075-0.113 wide; cirrus sac 0.293-0.333 long, 0.093-0.146 wide, containing elongated seminal vesicle, long pars prostatica and prostate cells. Ovary intertesticular, close to right testis, 0.100-0.113 long, 0.068-0.105 wide; uterus extending anteriorly in front of vitellaria, but never reaching rhynchus, and posteriorly almost to end of cirrus sac. Genital atrium spacious; genital pore ventral, well removed from posterior end of body. Vitelline follicles form an inverted U extending anteriorly from midlevel of testes in immature specimens, distinctly anterior to testes in older ones, but never intruding into anterior fifth of body length. Eggs thick-shelled, 33-42 by 22-27 μ. Excretory vesicle tubular extending to about anterior end of cirrus sac.

The arcuate arrangement of the vitelline follicles and the more posterior testes distinguish this species from all others in the genus except *D. echinatum* (Komiya and Tajimi, 1941). That species, known only from the metacercaria, differs from *D. gymnothoracis* in having a conical rather than cup-shaped rhynchus. In other respects, *D. gymnothoracis* is similar to *D. muranae* and *D. bipapillosum* Manter and Pritchard, 1961. In those species, however, the vitellaria and uterus extend to the rhynchus which is larger than in *D. gymnothoracis,* and has rows of long spines well differentiated from the adjacent body spines.

Nearly all of our specimens of *D. gymnothoracis* were massively infected with coccus-like granules.



Dollfustrema macracanthum Hanson, 1950

4. *Dollfustrema macracanthum* n. sp. (Figs. 2–3) Host: Moray, *Gymnothorax moringa* (Cuvier). Location: Intestine.

Eighty specimens present a continuous series in body size, 0.328 to 1.927 by 0.182 to 0.569 mm. with no conspicuous breaks. The smaller specimens (those less than 0.800 mm. long) tend to be ovoid, the length usually less than twice the width, while the larger specimens are more elongate being over three times as long as wide. The smaller specimens are completely filled with eggs so that no internal organs are visible and sectioning was unsuccessful; the spines of the anterior sucker are difficult to observe except in three or four specimens which are definitely *D. macracanthum*, and it is assumed that the others are also *D. macracanthum*.

The description of the species, therefore, is based upon the eleven larger specimens, and particularly the holotype.

Description.—Body elongated, approximately three times as long as wide, 0.803 to 1.927 by 0.241 to 0.569 mm.; widest near anterior end; anterior end bluntly rounded or truncate, posterior end more pointed. Rhynchus well developed, flattened, consisting of alternating longitudinal muscles and glandular regions; surmounted by four alternating rows of large spines. Cephalic spines numerous, much larger than body spines (30 to 34 by 12 μ as compared with the 12 μ length of body spines), more or less rhomboid, overlapping ⅓ their length or less; forming a ring around the rhynchus. Body spines directed posteriorly; slightly curved.

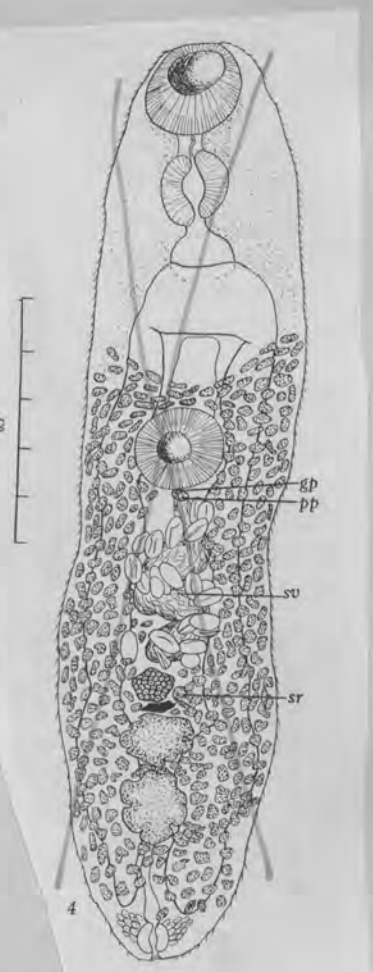
Mouth in posterior half of middle third of body length. Pharynx rounded, 0.102 to 0.182 mm. in diameter; esophagus short; intestine saccular, 0.438 to 0.694 mm. long, extending anteriodorsad ⅔ or more the distance to the rhynchus, but always a bit short of that organ.

Gonads in middle third of body; ovary anterior at level of esophagus and initial part of intestine, medial or to the left, 0.161 to 0.219 by 0.131 to 0.182 mm., subglobular to subtriangular, somewhat longer than wide; single testis immediately dorsal to or to right of pharynx, subglobular, 0.197 to 0.219 by 0.146 to 0.241 mm. Vitelline follicles usually longer than wide, 0.073 to 0.110 by 0.058 to 0.073 mm.; from base of cirrus sac to just anterior to intestine (those of smaller specimens tending to arc but never meeting); 17 follicles on right, 14 on left. The uterus is chiefly ventral except for a more dorsal posterior portion near the cirrus sac. It completely fills smaller specimens and more or less fills larger ones. Eggs ovoid, 19 to 27 by 14 to 20 μ with only a few, possibly abnormal, examples of each extreme of the measurements, usually 24 to 26 by 17 μ, thick shelled (2.5 μ), yellowish in color. Cirrus sac 0.365 to 0.511 by 0.124 to 0.168 mm., thick walled (13 to 15 μ), to the left, extending almost to pharynx. Seminal vesicle over half the length of cirrus sac, followed by colorless connecting tube which loops anteriorly to pars prostatica; genital atrium medium sized; genital pore near posterior end of body.

Excretory system not completely observed. Excretory pore terminal, preceded by a rather narrow tube, the extent of which could not be determined.

Comparisons.—The genus *Dollfustrema* contains two other species, *D. vaneyi* (Shen, 1930) Eckmann, 1932, and *D. gravidum* Manter, 1940. *D. macracanthum* differs from the first in possessing four rows of spines on the rhynchus, in the lateral distribution of the vitellaria, the greater length of the intestine, and the relatively longer cirrus sac. *D. vaneyi* was described from immature specimens and neither egg size nor uterine extent is known.

D. macracanthum is very closely related to *D. gravidum*. Both have four rows of spines on the rhynchus and a body filled with thick-shelled, ovoid eggs averaging 24 by 17 μ. The vitellaria are lateral and the length of the intestine is over half the body length with a mouth in the posterior part of the middle third of the body length. *D. macracanthum* differs from *D. gravidum* in its comparatively well developed rhynchus bearing spines which are heavier and more rhomboid in shape. The cirrus sac is approximately twice the length of the one in *D. gravidum*. The vitellaria are definitely follicular—not tending to become compact—and the intestine, which never reaches the rhynchus or bends posteriorly at its anterior extremity, has no swellings.



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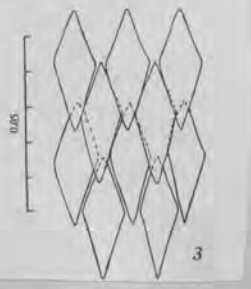


3

Dollfustrema **muraenae**, sp. nov.[2]
Sofandares-Bernal, 1959

Host.—*Gymnothorax vicinus* (Castelnau), brown moray.

Location.—Proximal to pyloric junction in one host and in 3/4 intestine of another.

Locality.—N. Bimini, B.W.I.

[2] The name *muraenae* indicates the host which is in the family Muraenidae.

Holotype.—U.S.N.M. Helm. Coll. No. 38860.

Diagnosis (based on 2 specimens; 4 specimens lost).—Body completely spined, elongate, rounded at anterior end, tapering to a point posteriorly, 1.273 to 1.35 long by 0.399 to 0.47 wide. Rhynchus terminal, well developed, elliptical in shape, with 3 equatorial rows of spines. Spines difficult to measure due to their position. Dorsal spines in linear arrangement, (fig. 5) approximately equal in length, from 12 to 24 microns long, (fig. 3A). Ventral spines, alternately arranged, (figs 3, 4), unequal in length; anterior spines shortest, from 10 to 11 microns long by 5 microns at their base; middle usually longest, 20 to 22 microns long by 3 microns wide at their base and tapering only very gradually to a point; bottom row of spines approximately 3/4 length and same diameter of spines in middle row. Mouth postequatorial, level with anterior tip of cirrus sac. Pharynx immediately following mouth, globular, 0.101 to 0.114 long by 0.121 to 0.126 wide. Cecum club-shaped, extending from pharynx approximately 2/3 distance to posterior edge of rhynchus. Gonads immediately postequatorial, side by side in a transverse row. Testes spherical, on each side of body, separated by cecum and ovary in one specimen; ovary to right of sinistral testis and cecum, and intertesticular in another specimen. Cirrus sac dextral, in posterior 1/3 body; 0.295 to 0.37 long; internal seminal vesicle with one ascending one one descending loop in anterior half of sac; pars prostatica in posterior half of sac; genital lobe single in a genital atrium which is approximately 1/10 length of cirrus sac; genital pore ventral 0.075 to 0.167 from posterior end of body. Vitellaria follicular, beginning at anterior level of cecum on each side of body, confluent at mid-body immediately posterior to edge of rhynchus. Ovary intertesticular or dextral to right testis, but always at level of testes. Uterus descending posteriorly beyond ovary for a short distance, ascending to fill area between rhynchus and anterior edge of cecum, descending again to end in genital atrium. Eggs 24 to 33 by 19 to 27 microns. Excretory vesicle not observed.

Discussion.—Five species of Dollfustrema Eckmann, 1934 (syn. *Dollfusina* Eckmann, 1932) have been named. These species are: *D. californiae* Montgomery, 1957; *D. echinatum* (Komiya & Toyami, 1941) Yamaguti, 1953 (described from its metacercaria); *D. gravidum* Manter, 1940; *D. macracanthum* Hanson, 1950; and *D. vaneyi* (Tseng & Shen, 1930) Eckmann, 1934 (type species).

In *D. californicum, D. gravidum, D. macracanthum,* and *D. vaneyi,* the testes are tandem, whereas in *D. echinatum* and *D. muraenae,* the testes are side by side. *D. muraenae* differs from *D. echinatum* by having a postequatorial mouth, pharynx opposite anterior edge of cirrus sac, and secum extending only two-thirds distance from pharynx to rhynchus as compared with a preequatorial mouth, pharynx distant from anterior edge of cirrus sac, and cecum almost in contact with rhynchus.

All of the species of *Dollfustrema* reported from the coasts of the American Continent have been from *Gymnothorax.* One record (*D. vaneyi*) from the China coast has been from a fish other than eel. The other record (*D. echinatum*) is of a metacercaria in the muscle of a fish.

-OVER-

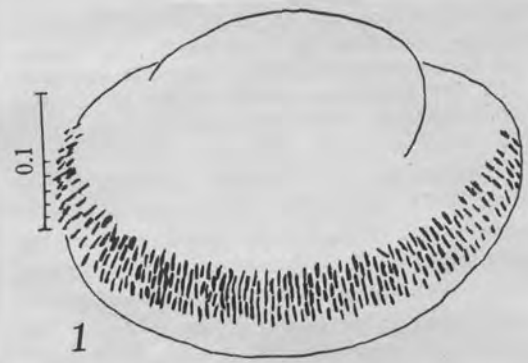
Dollfustrema muraenae Sogandares-Bernal, 1959

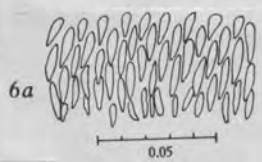
Hosts: **Gymnothorax funebris* (J); **G. moringa* (C, J).

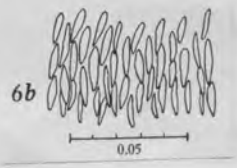
Site: intestine.

Deposited specimen: U.S.N.M. 60251.

The most distinctive features of this species are the position of the vitellaria and the 3 rows of slender spines on the rhynchus. In our 37 specimens, topography of the gonads varies. The testes are usually symmetrical but may be diagonal, often with the right testis anteriormost. The ovary is usually nearer the left testis and either anterior to it or between the testes. The uterus occupies all available space between the rhynchus and the posterior end of the body. In contracted specimens, the rhynchus is drawn into the expanded anterior end of the body so that the vitellaria form a semicircle just posterior to the rhynchus and the cecum is drawn closer to that organ. Eggs in the Curaçao specimens measure 24-26 by 15-18 μ, and in the Jamaican material 24-28 by 16-21; Sogandares-Bernal (1959) gave a range of 24-33 by 19-27. NAC. 1964







1, *Dollfustrema muraenae* from *Gymonthorax vicinus*, holotype; dorsal view of rhynchus;

6, *D. muraenae*, holotype; spines of rhynchus: a, ventral view; b, dorsal view;

FROM: MONTER AND PRITCHARD, 1961

Host: *Platycephalus indicus* (L.) and *Pseudosciaena crocea* (Richardson)
Location: Intestine.

Locality: Haikou, Hainan Dao, Nan Hai; Zhou Shan Qun Dao, Dong Ha

Date: May 20, 1958 and April 2, 1960.

Infection: 8 specimens from one of 5 *Platycephalus indicus* and 10 s from one f 4 *Pseudosciaena crocea.*

Body tongue shaped. Cuticle spinose. Rhynchus conical, with 3 rows o 0.018—0.047 × 0.004—0.011 mm. Pharynx in posterior portion of anterior body, rounded, and caecal sac as an inverted flask, directed anteriorly.

Testes tandem left to anterior half of body, ovoid. Cirrus sac club extending anteriorly behind posterior testis and posteriorly 0.161—0.215 mm from posterior end of body, containing slender curved seminal vesicle, long pars prostatica 0.346—0.429 mm. long, ending in genital pore on ventral su genital lobe.

Ovary pretesticular, oval. Vitellaria containing variably sized follicles, two separated rows. Uterus containing only few coils with uterine seminal r passing intertesticular space and forming ascending loop reaching caecal le descending dorsal to cirrus sac.

Eggs large with thickened shell, few in uterus about 300 in number.

Discussion: This is one of those two species of *Dollfustrema* with pret ovary, that is *D. vaneyi* (Tseng Shen, 1933) and *D. macracanthum* Hanso But it differs from the former in the arrangement of the vitellaria, the po the cirrus sac and the size of the eggs, and differs from the latter in the dist of the vitellaria, the position of the uterus, the shape of the rhynchal spi the size of the eggs.

种名 / 虫体与器官量度	中华道弗牛首吸虫 Dollfustrema sinica, sp. nov.
体长 Body length	1.238—1.650
体宽 Body width	0.247—0.412
前吸器 Rhynchus	0.211—0.249× 0.132—0.198
咽 Pharynx	0.049 直径
食道 Oesophagus	未见
肠囊 Caecal sac	0.132×0.148
前睾 Anterior testis	0.082—0.165× 0.082—0.132
后睾 Posterior testis	0.032—0.132× 0.066—0.148
生殖囊 Cirrus sac	0.297—0.396× 0.099—0.115
贮精囊 Seminal vesicle	0.132—0.181× 0.017—0.033

MANTER AND PRITCHARD, 1961

Dollfustrema stromborhynchum ~~n. sp.~~
(Figs. 7–9)

Host: *Gymnothorax petelli* (Bleeker) (Muraenidae, moray eels or puhis); 2 specimens from 1 host.

Location: Intestine.

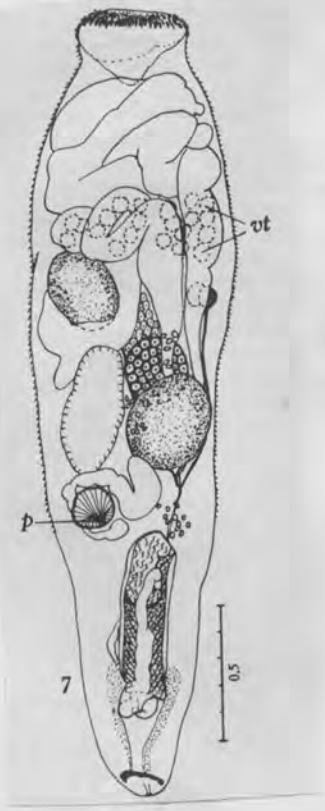
Syntypes: U. S. Natl. Mus. Helm. Coll., No. 39061.

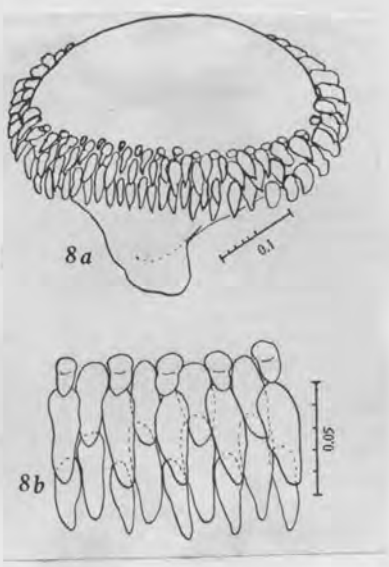
Description (based on 2 specimens): Body elongate, 2.700 to 2.854 long by 0.509 to 0.650 wide, rounded anteriorly, tapering from near midbody and rather pointed posteriorly; body spines short, decreasing in size and density from rhynchus to level of mouth, scattered posterior to mouth. Rhynchus (fig. 8a) 0.288 to 0.322 long by 0.308 to 0.335 wide, terminal, conical, composed of both muscular and glandular tissue, with 4 rows of relatively large spines and one row of smaller spines (fig. 8b). Mouth one-third body length from posterior end, opening directly into pharynx; mouth overhung anteriorly by oral papilla; pharynx globular, 0.121 to 0.141 long by 0.141 to 0.154 wide; esophagus 0.088 to 0.104 long, surrounded by gland cells; cecum extending anteriorly from pharynx one-third to one-half distance to posterior edge of rhynchus.

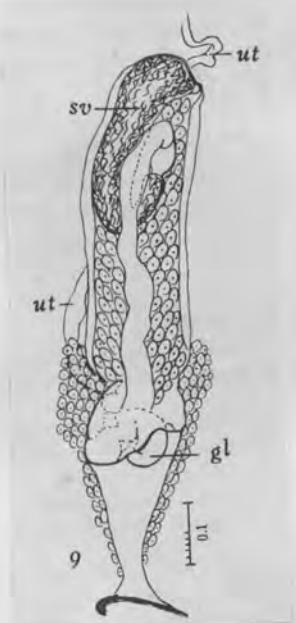
Gonads in middle one-third of body, in diagonal row. Testes rounded to oval, 0.288 to 0.415 long by 0.221 to 0.268 wide, one on either side of body with anterior testis dextral; cirrus sac more or less median, in posterior one-third of body, 0.670 to 0.683 long by 0.141 to 0.147 wide, with thick, muscular wall, extending forward to near level of mouth; internal seminal vesicle descending in anterior half of sac, turning forward, ascending about one-half its length; pars prostatica straight, about three-fourths length of cirrus sac, surrounded by prostatic cells; genital lobe single, long, folded at base of genital atrium; genital atrium long, about one-third or more length of cirrus sac; genital pore 0.067 to 0.101 from posterior end of body.

Ovary intertesticular, almost median, mostly dorsal to testes, 0.225 to 0.261 long by 0.201 wide; Mehlis' gland anterior to ovary; uterus extending anteriorly from ovary on left, filling most of space between ovary and rhynchus, then descending to genital atrium; initial part of uterus serving as seminal receptacle; vitellaria follicular, forming uninterrupted band several follicles wide immediately anterior to gonads, separated from rhynchus by loops of uterus; eggs near ovary (transparent) 26 to 30 by 19 to 21, collapsed (yellow) eggs 22 to 26 by 13 to 16. Excretory pore terminal, excretory vesicle extending forward to cirrus sac. The name *stromborhynchum* is from *strombo* (= top) for the top-shaped rhynchus.

Discussion. *D. stromborhynchum* is a fourth species in which the vitellaria are distributed across the body anterior to the cecum and testes. It is similar to *D. bipapillosum* (with which it is sympatric), *D. echinatum,* and *D. muraenae.* The conical rhynchus, the elongate body, the location of the vitellaria midway between the pharynx and the anterior end of the body, and the diagonal testes are like *D. echinatum,* but







D. stromborhynchum differs by having 5 rows of spines on the rhynchus, larger spines, an oral papilla, testes anterior to the pharynx, cirrus sac reaching level of pharynx, ovary between the levels of the testes, and the vitellaria not arranged in an arc. Specimens of *D. stromborhynchum* are three times longer than specimens of *D. echinatum*, but the latter species was described from a metacercaria.

The band of vitellaria, testes anterior to the pharynx, and pharynx at or very near anterior end of the cirrus sac are like *D. bipapillosum* and *D. muraenae*, but *D. stromborhynchum* differs in its elongate body, conical rhynchus with 5 rows of spines, the vitellaria midway between the pharynx and the anterior end of the body, one testis extending anterior to the cecum, and longer genital atrium.

6. *Dollfustrema stromborhynchum* Manter et Pritchard, 1961

(Fig. 6)

HABITAT: Intestine of *Gymnothorax undulatus* and *G. flavomarginatus*; Hawaii.

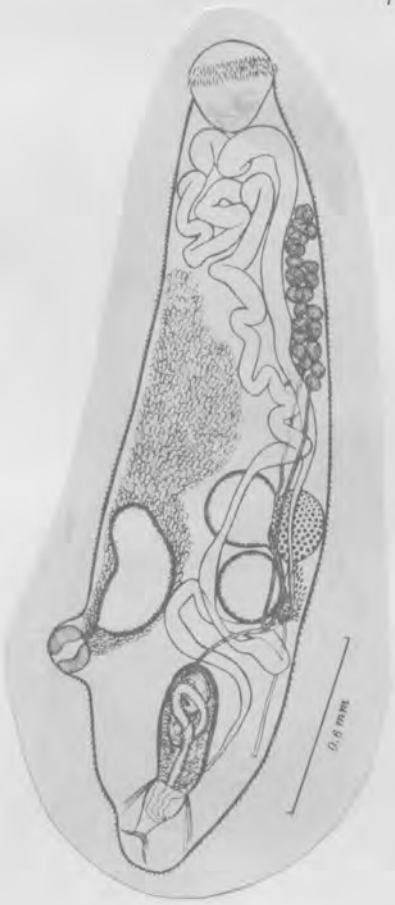
DESCRIPTION (based on 37 whole mounts: Body approximately fusiform, more pointed posteriorly than anteriorly, spinose except on top of rhynchus, 1.0-4.1 X 0.37-0.95 mm. Rhynchus 0.1-0.35 X 0.14-0.45 mm, with rounded or excavated top and four alternating rows of marginal spines; its posterior portion rounded or conical, provided with very strong transverse muscles. On living specimens 180 rhynchus spines were counted and measured 20-35 μ long in first row, 35-49 μ in second, 37-45 μ in third, 32-50 μ in fourth. Pharynx 70-160 μ in diameter. Esophagus 30-80 μ long by 20-30 μ wide, surrounded by periesophageal gland cells and numerous ducts coming from dense mass of periesophageal gland cells extending ventrally along esophagus and intestine and further forward. The presence of this very conspicuous periesophageal gland has not been mentioned by the original authors. Intestine rounded saccular or more elongate or cylindrical, 0.2-0.55 X 0.1-0.3 mm, directed forward into middle third of body.

Testes subglobular to elliptical (in extended specimens), 0.11-0.5 X 0.1-0.3 mm, obliquely tandem, largely in middle third of body; posterior testis in front of cirrus pouch. Cirrus pouch cylindrical, thick-walled, 0.2-0.68 X 0.08-0.2 mm, in posterior third of body; seminal vesicle subcylindrical, curved, 0.1-0.3 X 0.04-0.17 mm; prostatic complex well developed. Genital lobe crooked, occupying greater part of genital atrium. Genital atrium funnel-shaped, 0.08-0.3 X 0.07-0.16 mm; genital pore ventral, near posterior extremity.

Ovary subglobular, 0.08-0.32 X 0.1-0.22 mm, dorsal or posterodorsal to anterior testis. The germiduct arising from the posterior end of the ovary turns back on itself at the point where it unites with the vitelline duct and passes forward on left side of ovary. No seminal receptacle. Laurer's canal opening dorsally at level of cirrus pouch. Initial portion of uterus ascending ventral to vitelline follicles, turning backward immediately behind rhynchus and descending ventral to ascending portion, describing one loop or two near anterior end of cirrus pouch. Eggs oval, 23-28 X 13-16 μ in life. Vitelline follicles 23-40 in total number, divided into two longitudinal groups, separate or confluent in median line anteriorly, situated close to dorsal surface of body between rhynchus and anterior testis, usually nearer to latter than to former, or overlapping anterior testis. Excretory pore terminal, excretory vesicle narrow, extending in dorsal area as far forward as middle or anterior end of cirrus pouch.

DISCUSSION: In the original description by Manter and Pritchard (1961) the shell gland complex is stated and illustrated to be pre-ovarian, but it is postovarian in all of our specimens. The authors must have misinterpreted the periesophageal gland as Mehlis' gland. The periesophageal gland, which extends beyond the base of the intestine, is too conspicuous to be overlooked.

Yam., 1970



DOLLFUSTREMA sp.
Fig. 8

Host : *Lycodontis undulatus* (Lacepede); leopard moray; Muraenidae

Site : Intestine

Number : One

Locality : Visakhapatnam

Description (Based on a single specimen) : Body 4.152 mm long, 0.859 mm wide, elongate, spindle-shaped. Cuticle with spines on entire body. Anterior sucker 494 by 553; spines probably lost. Mouth almost midventral, slightly preequatorial, surrounded by well developed muscles; pharynx 255-263 in diameter, globular, highly muscular, followed by an esophagus; intestine saccular, extending posteriorly almost up to anterior level of ovary.

Testes unequal, anterior one 659 by 518, quite large, almost in midbody; posterior one 426 by 330, far smaller than anterior one and widely separated by ovary and uterine seminal receptacle. Cirrus sac 600 by 106, largely cylindrical, enclosing a winding, tubular seminal vesicle and a pars prostatica surrounded by gland cells; slightly overlapping posterior testis. Genital atrium 165 by 71, elongate conical; long, narrow, tapering genital lobe present, projecting into genital atrium. Genital pore ventral, in front of posterior end.

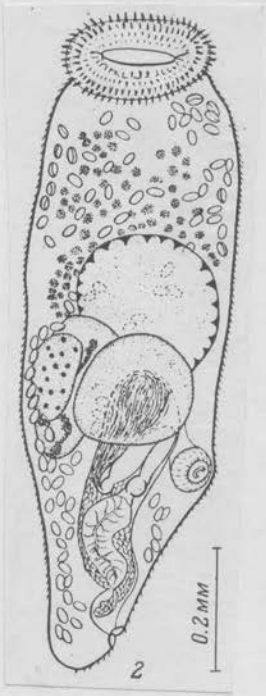
Ovary 324-365 in diameter, globular, intertesticular. Uterine seminal receptacle present. Vitelline follicles large, 68-152 in diameter, in two lateral groups, 18 in right and 20 in left, distributed in middle of body. Uterus extensive, from posserior end of cirrus sac to posterior level of sucker. Eggs 14-17 × 13-15, thick-shelled. Excretory vesicle undetermined.

Except for the absence of spines in the adhesive organ and the posterior direction of the intestine, this specimen appears to be a member of the genus *Dollfustrema* Eckmann, 1934. Since only one specimen is available, this worm is not assigned to any species.

From Hafeezullah and Siddiqi, 1970

Dollfustrema sp.

Ex. Gymnothorax favagineus
Loc. India
From Zhukov, 19?? see reprint



Folliculovarium ~~gen. nov.~~ Gu and Shen, 1983

Generic diagnosis Bucephalidae, Prosorhynchinae. Body spindle shaped. Rhynchus plug-shaped with one rows of circumspines, pharynx in anterior of posterior half of body. Testes juxtaposed in posterior of pharynx. Cirrus pouch in posterior or in level of testes. Seminal vesicle crescent-shaped. Ovary lobed as scattered follicles, lateral to right testis. Vitellaria arranged in two rows in frent of caecal sac laterally. Uterus extending to or over anterior border of vitellaria. Excretory vesicle tubular. Intestinal parasite of marine teleost.

Type species *Folliculovarium xishaese* gen. nov. et sp. nov.

Folliculovarium xishaense ~~gen. nov. et sp. nov.~~ (fig. 7) GU and Shen, 1983

Two specimens were recovered from the intestine of one of six *Epinephelus fasciatus* (Forskal).

This species is characterized by the lobed ovary which differs from all the other described genera of the family Bucephalidae.

Xisha Islands, Guangdong Province, CHINA

图 7 西沙泡巢吸虫(新属、新种) *Folliculovarium xishaense* gen. nov. et sp. nov. 的腹面图

Folliculovarium gymnotheracis ~~sp. nov.~~ (fig. 8) Gu and Shen, 1983

Nine specimens were obtained from the intestine of a *Gymnothorax undulatus* (Lecepede).

This species can be distinguished from the above species *F. xishaense* sp. nov. by (1) the largerbody size, (2) the presense of two rows of circumspines on the rhynchus, (3) vitellaria being united to form an arc, and (4) host being an anguilliform.

Xisha Islands, Guang dong Province, China

图 8 裸胸鳝泡巢吸虫(新种) *Folliculovarium gymnothoracis* sp. nov. 的腹面图