1990

Binder 121, Lepocreadiidae H-I [Trematoda Taxon Notebooks]

Harold W. Manter Laboratory of Parasitology

Bravo & Manter, 1957

DIAGNOSIS OF GUGGENHEIMIA: Lepocreadiidae. Body disc-like with ventral concavity. Oral sucker, mouth, and genital pore all dorsal in position Spherical cirrus sac at extreme anterior end of body. Pharynx and esophagus ventral to oral sucker. Ovary and uterus pretesticular. Seminal receptacle present. Metraterm absent. External seminal vesicle not observed. Otherwise similar to *Pseudocreadium*.

TYPE SPECIES: *G. pacifica*.

NOMBRES GENÉRICOS NUEVOS PARA *GUGGENHEIMIA*

BRAVO HOLLIS Y MANTER, 1957 Y *CESTOTREMA* MOROSOV, 1960 AMBOS PREOCUPADOS

Margarita Bravo Hollis y H. W. Manter publicaron en 1957 el nombre genérico *Guggenheimia* para un tremátodo digéneo de la familia Lepocreadiidae Nicoll, 1934 de peces marinos del Pacífico mexicano en Proc. Hel. Soc. Wash. *24*(11):39. Como este nombre fue usado por el Dr. C.P. Couto en 1952 para un mamífero Didelphidae del cenozoico del Brasil, Am. Mus. Novitates (1567), se propone el cambio a *Haroldmanteria* nom. nov. con las especies *Haroldmanteria pacifica* (Bravo & Hollis y Manter 1957) n. comb. y *Haroldmanteria thuni* (Manter, 1967) n. comb. M.

El Dr. F. N. Morosov en 1960 utilizó el nombre genérico *Cestotrema* para un tremátodo digéneo de la familia *Lecithodendri idae Odhner, 1911 parásito del hígado de un pez marino de aguas de la península de Kamchatka, U.R.S.S., pero este nombre ya había sido utilizado por M. E. Simon en 1902 para un arácnido y publicado en Bull. Mus. Hist. Nat. París, *8*:597 en 1903; por tal razón se cambia a *Kamchatkinella* nom. nov. con la especie *Kamchatkinella malissimus* (Morosov, 1960) n. comb.

EDUARDO CABALLERO Y C. Y MARGARITA BRAVO HOLLIS

*Lecithochiriidae Skrjabin y Guschanskaja, 1954

FROM CABALLERO AND BRAVO, 1969

HAROLDMANTERIA Caballero and Bravo, 1969
syn. Guggenheimia Manter and Bravo, 1957

Haroldmanteria pacifica (Bravo Hollis and Manter, 1957) Caballero & Bravo, 1969

Syn. *Guggenheimia pacifica*, n. gen., n. sp. (Figs. 6-8)
Bravo & Manter, 1957

HOSTS: *Balistes verres* (Gilbert and Starks) (type host) and *B. capistratus* (Shaw), triggerfishes.

LOCATION: Intestine.

LOCALITY: Mazatlan, Sinaloa.

NUMBER: 1; 7 others kindly loaned by Howard Winter, University of Southern California.

HOLOTYPE: U. S. Nat. Mus. Helminth. Coll. No. 38178.

DESCRIPTION (based on 8 specimens; measurements on 4): Body ovoid in outline, somewhat longer than wide, 1.073 to 1.406 long by 0.918 to 1.206 wide, broadly rounded at each end. Sides of body curved inward ventrally, with concentric cuticular rings; the entire body cup-like with ventral concavity. No spines observed. Oral sucker dorsal, embedded in body; 0.158 to 0.214 long by 0.207 to 0.289 wide. Mouth dorsal, a transverse slit, 0.168 to 0.276 from anterior end of body, posterior to genital pore which is also dorsal. Radial muscles in parenchyma between mouth and oral sucker. Acetabulum ventral, just anterior to midbody, 0.303 to 0.434 long by 0.269 to 0.365 wide, with transverse aperture, partly overlapping the dorsal oral sucker. Distance from anterior edge of acetabulum to anterior edge of body 0.296 to 0.42. Sucker ratio (widths): 1:1.26 to 1.51. Pharynx directly ventral to oral sucker, 0.113 to 0.179 long by 0.152 to 0.207 wide. Esophagus dorso-ventral, very short; bifurcation of ceca slightly posterior to mouth; ceca, bowing around acetabulum, distant from sides of body, ending at level of middle of posterior testis. Genital pore dorsal, varying from near mouth to near anterior end of body, slightly to left (as viewed from ventral surface). Testes tandem to slightly diagonal, close together, smooth, in posterior third of body. Cirrus sac large, spherical, at extreme anterior end of body, anterior to oral sucker, about same size as oral sucker, 0.165 to 0.234 long by 0.179 to 0.289 wide; containing a tubular, U-shaped seminal vesicle, mass of very large, vesicular cells, and short muscular cirrus. External seminal vesicle not seen. Ovary spheroid, to left of midline between anterior testis and acetabulum, partly overlapping left side of anterior testis; seminal receptacle preovarian, inconspicuous, overlapping left posterior edge of acetabulum. Vitelline follicles large, not reaching edges of body, from level of middle of cirrus sac to near posterior end of body, surrounding ceca; contiguous posterior to testes, slightly overlapping testes, ovary, and acetabulum. Uterus pretesticular, extending dorsally along right side of acetabulum to genital pore. No metraterm. Eggs thin-shelled, 0.066 to 0.08 long by 0.041 to 0.051 wide. Excretory system not seen.

The name *Guggenheimia* is in honor of the John Simon Guggenheim Foundation.

DISCUSSION: This trematode is related to *Pseudocreadium* and *Hypocreadium*, but is most remarkable in the dorsal position of the mouth and oral sucker. Evidently the ventral concavity of the body is used for attachment, and perhaps the oral sucker and genital pore moved forward and dorsally to be on a free surface. There is no indication of any bending or folding of the rounded body at least in the adult stage. The cercaria of this trematode should be interesting. The genus is unique in possessing the entire cirrus sac anterior to the mouth, a condition resulting from the dorsal position of the oral sucker and mouth.

Haroldmanteria thumi (Manter 1963) Caballero and Bravo, 1969

syn. ~~*Guggenheimia thumi* sp. n.~~ Manter, 1963

(Figs. 6 to 7)

Host: Triggerfish; "thum"; Balistidae; possibly *Melichthys vidus* (Solander).

Location: Intestine.

Holotype: No. 59847.

Description (based on one specimen): Body almost circular in outline; very small, scalelike spines present; entire edge of body curved inwardly ventrally to form several concentric rings or ridges so that entire ventral surface of body probably serves as a sucking disc. Length 1.4; width 1.33; both ends broadly rounded. Oral sucker embedded in body; mouth a transverse slit opening dorsally at anterior end of body; oral sucker 0.231 wide; acetabulum large, but weakly muscular, near midbody, wider than long, 0.539 wide; acetabulum with transverse aperture surrounded by clear area with few outer circular muscles; most of acetabulum rather cellular with scattered radial muscles. Sucker ratio 1:2.33. Sphincter muscle at anterior edge of pharynx; pharynx 0.068 long by 0.153 wide, with lobed anterior border and narrow transverse lumen; esophagus lacking; ceca diverging then extending around sides of acetabulum, becoming slightly sinuous, curving around posterior end of posterior testis and almost meeting medianly.

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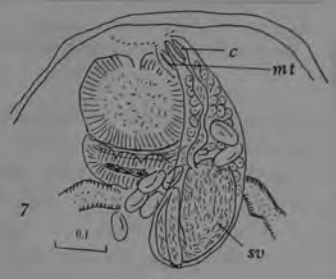

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Genital pore at anterior end of body but dorsal to ventral body fold, anterior to oral sucker, opening into left side of mouth. Testes subsymmetrical, rounded, midway between acetabulum and posterior end of body. Cirrus sac (Fig. 7) large, 0.447 long by 0.162 wide, claviform, curving around left side of oral sucker, overlapping anterior fourth of acetabulum; seminal vesicle first a rather narrow tube which soon bends backward then forward, becoming a broad sac filling most of basal half of cirrus sac; pars prostatica long, almost straight; cirrus short, thick-walled, opening into very short, thin-walled atrium at left side of mouth. External seminal vesicle lacking.

Ovary spheroid, immediately anterior to right testis; seminal receptacle ovoid, empty of sperm, partly dorsal to ovary and acetabulum; uterus extending between testes and partly ventral to them almost to posterior edge of testes, then forward dorsal to acetabulum; metraterm short, about same length as cirrus; vitelline follicles large, extending from level of middle of oral sucker, lateral and dorsal to ceca, contiguous posterior to testes; posterior to acetabulum a few follicles are ventral to ceca and a few are median to ceca. Eggs large, 60 to 66 by 34 to 35 μ. Excretory system not observed.

Discussion: The genus *Guggenheimia* Bravo and Manter, 1957 is previously known only by its type species, *G. pacifica* Bravo and Manter, 1957, from a triggerfish, *Balistes verres* Gilbert and Starks, from the Mexican Pacific. It is a peculiar genus in which the entire body functions as a sucking disc, and both the mouth and the genital pore are located dorsally at the anterior end of the body. *G. thumi* differs from *G. pacifica* in its diagonal rather than tandem testes, more posterior extent of the uterus which is entirely pretesticular in *G. pacifica*, and in the elongate rather than spherical, cirrus sac.

The name "*thumi*" is from the native name of the host.

The genus *Guggenheimia* was compared with *Pseudocreadium* Layman, 1930 and *Hypocreadium* Ozaki, 1936. Another related genus is probably *Plectognathotrema* Layman, 1930.

Haroldmanteria

Harveytrema ~~gen. n.~~ KRUSE, 1980

Generic diagnosis: Lepocreadiidae: Lepocreadiinae. Body pyriform, spined, with deeply notched posterior end. Oral sucker relatively large, with circumoral collar. Gland cells massed posterolateral to oral sucker. Acetabulum in ventral depression. Genital pore submedian, preacetabular. Prepharynx and esophagus short; ceca with terminal ani. Testes multiple, in 2, symmetrical, intercecal postacetabular groups. Cirrus sac present, cirrus short, internal seminal vesicle tubular. External seminal vesicle lateral to cirrus sac; prostatic cells few, free in parenchyma. Ovary dextral, pretesticular; seminal receptacle present; uterus short, preovarian. Vitelline follicles lateral to ceca from level of genital pore to near posterior end of body, median to ceca in posttesticular region but not confluent. Excretory vesicle I-shaped, pore in posterior body cleft. Parasitic in intestine of marine fishes.

Type and only species: H. bisulcatum.

DISCUSSION

The five specimens of *H. bisulcatum* were recovered from different hosts on different days, and although somewhat contracted, all show the conspicuous circumoral collar and the cleft at the posterior end of the body, which are characteristic of the genus *Harveytrema*. Other characters relate it to the family Lepocreadiidae. In a detailed discussion of that family Howell (1966) concluded that it contains only two subfamilies, Lepocreadiinae and Homalometroninae, which are distinguishable, respectively, by the presence and absence of a cirrus sac. Lühe (1906) described *Schistorchis carneus*, the genotype, as having 10 testes in two lateral groups, a preoral (but simple) extension of the body wall, a short uterus, and a cirrus sac. Odhner (1928) found ani in sectioned material. Yamaguti (1942) erected the family Schistorchiidae which was characterized by the lack of a cirrus sac and the presence of a tubular genital sinus which Yamaguti called ductus hermaphroditicus. Hanson (1953) described two new, spined species of *Schistorchis* and transferred the genus to the family Lepocreadiidae, subfamily Homalometroninae, thus suppressing Schistorchiidae as a synonym of Lepocreadiidae.

Harveytrema combines characters from genera in the two subfamilies. It has similarities with the genus *Schistorchis* Lühe, 1906, especially the type species, *S. carneus*, from *Tetrodon stellatus* Günther from Ceylon. It is also similar to *S. tetrodontis* (Nagaty, 1956) Sogandares and Hutton, 1959, from *Tetrodon* sp. from Ghardaga, Egyptian Red Sea, which has ani and a glandular oral sucker surrounded by two large, lateral and one smaller, posterior lobe which is "scalloped or frilled with short processes."

Harveytrema differs from *Schistorchis* in its strongly developed cirrus sac with longitudinal and circular muscles rather than no cirrus sac. This character relates *Harveytrema* to the genus *Multitestis* Manter, 1931, especially to *M. chaetodoni* Manter, 1947, from *Chaetodon ocellatus* Block from Tortugas, Florida, which displays a glandular forebody.

The presence of the muscular cirrus sac places *Harveytrema* in the subfamily Lepocreadiinae rather than in Homalometroninae, but it should be pointed out that this genus could be considered as a connection between the two subfamilies.

Harveytrema bisulcatum ~~sp. n.~~ KRUSE, 1980
(Figs. 1-3)

Host: *Achoerodus gouldii* Richardson; Bodianidae; Blue Groper.

Location: Intestine.
Locality: Pearson Island, South Australia, 1960.
Types: Holotype and paratype (sectioned)—South Australian Mus. No. V 1677 and V 1678. Paratype—Australian Helminth. Coll. No. AHC S290; Paratype—USNM Helminth. Coll. No. 74928; Paratype—Univ. Nebraska State Mus., Manter Lab. No. 20885.

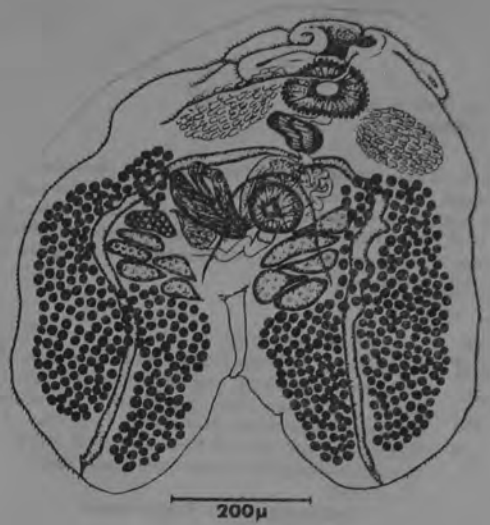
Description (based on 5 specimens): With characters of the genus. Body 670 to 893 (747) long; maximum width 623 to 760 (645), in hindbody. Tegumental spines extending to near posterior end of body. Oral sucker with lobate or frilled circumoral collar bearing tegumental spines, withdrawn into forebody of contracted specimens, length 100 to 149 (117), width 131 to 160 (143). Acetabulum preequatorial, 72 to 80 (77) long, 80 to 88 (85) wide; in midventral depression. Sucker width ratios 1:0.55 to 0.64 (0.59). Forebody 224 to 320 (258) long; postoral gland cells, small, numerous, apparently in connection with oral sucker and collar; eyespot pigment not observed. Prepharynx and esophagus short; pharynx 64 to 80 (70) long by 48 to 72 (65) wide; ceca divergent, narrow, terminating with ani in posterior body lobes.

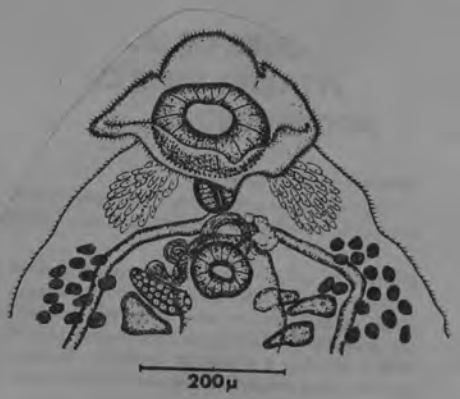
Genital pore submedian, immediately preacetabular. Testes 10, wider than long, immediately postacetabular, in two separated, lateral, intercecal groups of 5; each group closely spaced. External seminal vesicle tubular, coiled, between acetabulum and dextral cecum. Cirrus sac ovoid, 100 to 160 (124) long by 56 to 80 (69) wide, tapered posteriorly, anterodorsal to acetabulum, with thick wall of outer longitudinal and inner circular muscles; containing tubular seminal vesicle and short cirrus.

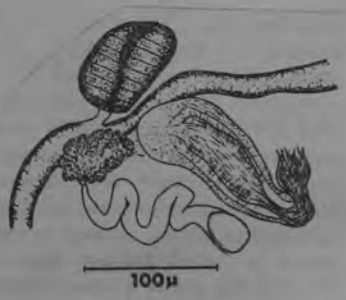
Ovary transversely elongate, 36 to 60 (50) long by 76 to 92 (82) wide, immediately anterior to dextral group of testes and lateral to acetabulum. Seminal receptacle large, flask-shaped, median or dorsomedian to ovary. Vitelline fields as in generic diagnosis. Uterus short, narrow, median to ovary, extending along sinistral side of acetabulum; metraterm short, surrounded by mass of deeply staining gland cells. Eggs 36 to 37 (37) by 24; one in each of two specimens, none in others.

Excretory vesicle extending to testicular level.

The genus *Harveytrema* is named for Prof. T. Harvey Johnston; the species name *bisulcatum* (= making two furrows) refers to the body shape.







HARVEY TREMA

Helicometroides Yamaguti, 1934

Generic diagnosis. — Allocreadiidae, Allocreadiinae: Body small, tapered toward two extremities, spinulate, Oral sucker followed by long prepharynx, pharynx small, esophagus moderately long, ceca not reaching to posterior extremity. Acetabulum small, toward midbody. Testes at posterior extremity, one on each side. Cirrus pouch subcylindrical, curved, extending back of acetabulum, enclosing elongate seminal vesicle, prostate complex and protrusible cirrus. Genital pore a little out of median line in front of acetabulum. Ovary just medial to right cecum behind acetabulum. Receptaculum seminis present. Uterus convoluted between testes and acetabulum. Vitellaria extending in lateral fields between intestinal bifurcation and testes. Eggs with long polar filament. Excretory vesicle tubular, reaching to acetabulum. Parasitic in intestine of marine fishes.

Genotype: *H. longicollis* Yamaguti, 1934 (Pl. 12, Fig. 155), in *Plectorhynchus pictus;* Inland Sea of Japan.

Allocreadiidae
Lepocreadiinae ?

HELICOMETROIDES Yamaguti, 1934

Helicometroides n. g.

GENERIC DIAGNOSIS. Allocreadiidae Stoss., 1903. Body small, attenuated anteriorly. Cuticle thin, armed with small, scale-like spines. Subcuticular musculature poorly developed. Oral sucker slightly subterminal. Prepharynx long. Pharynx small. Esophagus long, slender. Intestinal ceca simple, terminating in anterior part of posterior third of body. Acetabulum smaller than oral sucker, equatorial. Testes obliquely juxtaposed, near posterior end of body. Cirrus pouch arcuate, extending farther backwads than acetabulum. Vesicula seminalis elongate. Pars prostatica indistinct, but prostatic cells well developed. Cirrus protrusible. Genital atrium present. Genital pore anterosinistral to acetabulum. Ovary irregularly indented or lobed, posterodextral to acetabulum, separated from testes by uterine coils. Receptaculum seminis small. Laurer's canal present. Uterus strongly convoluted, pretesticular. Metraterm sharply differentiated, surrounded by numerous glandular cells. Vitellaria follicular, lateral, extending from cecal bifurcation to near testes. Eggs numerous, with long polar filament. Excretory vesicle simple, voluminous, extending to near acetabulum. Parasitic in marine fishes.

Genotype. *Helicometroides longicollis*.

Helicometroides longicollis n. sp.

SPECIFIC DIAGNOSIS.[1] Body 1.6–1.74 × 0.39–0.46 mm, broadest at about junction of middle with posterior third of body. Oral sucker 0.073–0.095 mm long. Prepharynx 0.042–0.073 mm long. Pharynx 0.053–0.07 × 0.042–0.053 mm. Esophagus 0.34–0.38 mm long. Acetabulum 0.063–0.084 mm in diameter. Testes oval 0.21–0.28 × 0.13–0.2 mm; right testis usually larger. Ovary 0.17–0.19 × 0.11–0.17 mm. Eggs slightly asymmetrically oval, 0.036 × 0.0184 mm, with long polar filament attaining a length of about 0.3 mm.

Habitat. Small intestine of *Plectorhynchus pictus*.
Locality and date. Inland Sea; August 31, 1932.
Type and paratypes in my collection.

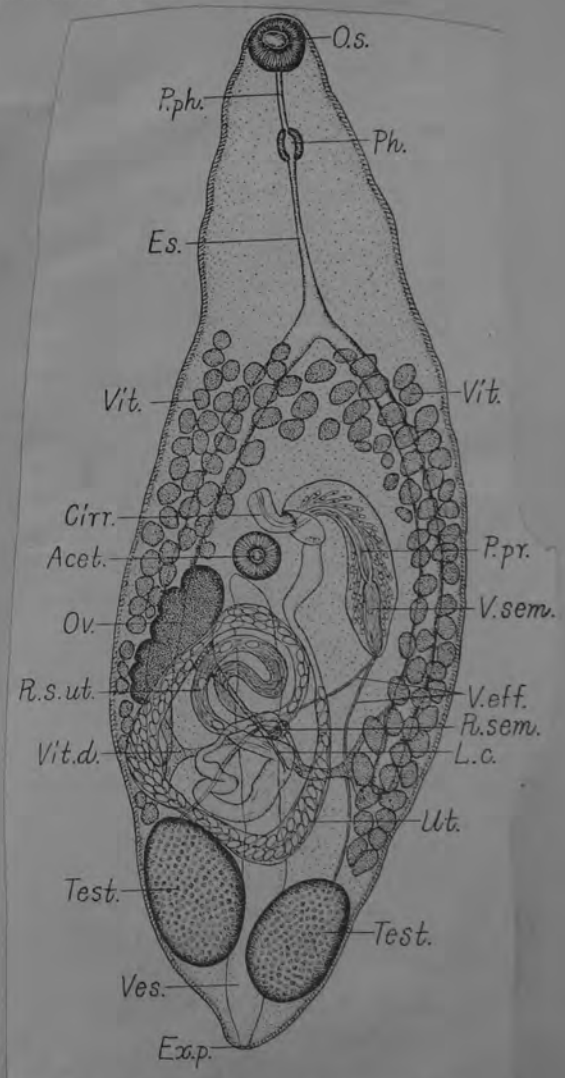
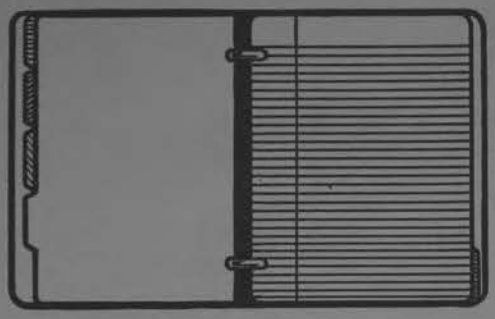


Fig. 26. *Helicometroides longicollis*; ventral view. Type 2.0 × 0.63 mm.

HELICOMETROIDES

LOOSE LEAF INDEX



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IDEAL FOR CLASSIFYING, OR SEPARATING STUDIES, VARIOUS SUBJECTS OR MISCELLANEOUS DATA.

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Holorchis Stossich, 1901

Generic diagnosis. — Allocreadiidae, Lepocreadiinae: Body elongate, attenuated anteriorly, spined. Oral sucker subterminal, pharynx longer than broad, esophagus of moderate length. Ceca terminating at posterior extremity. Acetabulum in anterior half of body. Testes tandem, in posterior half of body. Vesicula seminalis externa present. Cirrus pouch containing prostatic cells and muscular ejaculatory duct. Genital pore median, about midway between intestinal bifurcation and acetabulum. Ovary submedian, postacetabular, separated by uterus from anterior

testis. Receptaculum seminis and Laurer's canal present. Vitellaria extending in lateral fields of hindbody, occupying po ttesticular intercecal field. Uterus strongly coiled in intercecal field between acetabulum and anterior testis; eggs without filaments. Excretory vesicle tubular, reaching to testicular zone, with terminal pore. Intestinal parasites of marine fishes.

Genotype: *H. pycnoporus* Stossich, 1901, in *Sargus* ~~*salvelini;*~~ *salviani* Triest.

Other species: *H. legendrei* Dollfus, 1946 (Pl. 15, Fig. 19?) in *Mullus surmuletus;* Finistère.

The diagnosis of this genus being based mainly on *H. Legendrei* whose generic assignment is left undertermined is subject to later emendation.

HOLORCHIS: Body somewhat pointed anteriorly, with spined cuticle. Prepharynx lacking; esophagus long, with intestinal ceca to posterior end. Ovary lateral midway between ventral sucker and anterior testis and separated from latter by uterus. Testes entire one behind the other in the posterior part of the body. Seminal receptacle? Vitellaria well developed occupying all the space left free between the genital glands. Intestine of fish.

Typical form and only species: Holorchis pycnoporus Stoss.

from Stossich (1900)
italics from original

1900 correct (1-2)

HOLORCHIS M. Stossich, ~~1900~~ 1901

The following is from Dollfus, 1946, ~~who based it on his~~ H. legendrei from Mullus surmuletus collected at Concarneau West Coast of France ~~(Bay of Biscay)~~:

Body elongated with subparallel sides, tapering anteriorly, rounded posteriorly. Spined. Oral sucker a little smaller than acetabulum which is located at end of first ~~fourth~~ third of body length. Prepharynx absent; pharynx longer than wide; esophagus as long as pharynx; ceca reaching posterior end. Two subequal, smooth, subelliptical testes in posterior half of body, not contiguous tandem, the posterior testis distant from posterior end by about its own diameter. Ovary globular, smaller than testes, not lobed, to the right, some distance in front of anterior testis, Vitellaria well developed, beginning a little in front of the ovary and filling all the posterior part of the body. Uterus entirely pretesticular and intercecal, occupying space between ovary and anterior testis, passing to left of ovary, coiling in front of ovary then passing to left of cirrus sac to the median genital pore located a little in front of the acetabulum and posterior to intestinal bifurcation.

The above apparently applies to the type species, H. pycnoporus Stossich, 1901 which was based on a single specimen from Sargus salviani at Trieste. The H. legendrei of Dollfus agrees except that the testes are not so far apart and the ovary is much nearer the acetabulum.

Other details are not known for H. pycnoporus but in H. legendrei there is a small seminal receptacle, a pyriform cirrus sac dorsal to the acetabulum and ending near posterior edge of acetabulum. The seminal vesicle in the form of a large coiled tube is external to the cirrus sac and lies along the right side of the acetabulum. It can extend a little anterior to acetabulum. The large thick walled tube in the cirrus sac is termed an ejaculatory duct.

Holorchis

verrebbe caratterizzato dalla seguente diagnosi: Corpo anteriormente alquanto assottigliato, con la cute aculeata. *Manca la prefaringe; esofago lungo*, con intestina estese fino all'estremo posteriore. *Ovario laterale* nel mezzo fra ventosa ventrale e testicolo anteriore e da questo separato dai giri dell'utero. *Testicoli a contorno ovoide* uno sopra l'altro nella parte posteriore del corpo. Ricettacolo seminale? Vitellogeni sviluppatissimi occupano tutto lo spazio lasciato libero dalle glandole genitali. Intestino di pesci.

Forma tipica ed unica finora conosciuta: *Holorchis pycnoporus* Stoss.

FROM STOSSICH (1900)

-1 VER-

Le genre Holorchis

Le genre *Holorchis* était fort mal connu, jusqu'à ce que paraissent les travaux de Paggi et Orecchia. On ignorait pratiquement tout de l'appareil génital du générotype puisque M. Stossich n'en avait presque rien dit. Par contre, on connaissait davantage le genre *Holorchis* par l'espèce *legendrei* Dollfus, 1946 que cet auteur avait rattaché, non sans hésitation au genre *Holorchis*. Dollfus disait de ce distome: «il rappelle beaucoup *Holorchis*» et qu'il était «peut être attribuable au genre *Holorchis*»; il l'appela «*Holorchis legendrei* (gen?) Dollfus, 1946». Yamaguti (1958, 1971) s'est servi des caractères de *H. legendrei* (gen?) pour établir la diagnose du genre *Holorchis*. Heureusement que *H. legendrei* s'avère aujourd'hui extrêmement voisin du générotype (voir remarque ci-dessous). Il convient donc de donner une diagnose précise de ce genre. Nous émendons celle proposée par Paggi et Orecchia (1974) et y ajoutons les données concernant le cycle biologique.

Diagnose du genre Holorchis, M. Stossich 1901

Corps allongé, à bords latéraux subparallèles, arrondi à ses extrémités. Tégument spinulé, glabre dans la région postérieure du corps. Pigments oculaires présents. Ventouse orale subterminale pourvue d'un sillon médio-ventral. Prépharynx court. Cellules glandulaires prépharyngiennes nombreuses. Pharynx pourvu de lobes dans sa partie antérieure. Oesophage modérément long. Caecums digestifs longs, terminaux. Ventouse ventrale de taille comparable à la ventouse orale, située à la limite des tiers antérieur et médian. Testicules arrondis, en tandem ou légèrement en oblique, situés l'un près de l'autre et dans la moitié postérieure du corps. Vésicule séminale externe longue, très contournée. Poche du cirre à paroi peu épaisse, de longueur comparable au diamètre de la ventouse ventrale, contenant une vésicule séminale interne contournée, des cellules prostatiques,

1901». Ce n'est pourtant pas là l'avis de Thomas (1960); de même, Yamaguti (1971) (note infrapaginale, p. 152) estime que *Holorchis* ne peut être comparé à *Aephnidiogenes* chez lequel on observe une poche du cirre de petite taille (mais que signifie «petite»? par rapport à quoi?) et des cellules prostatiques externes. Si en effet ce dernier caractère ne se trouve pas chez *H. pycnoporus*, on le retrouve toutefois chez *H. plectorhynchi* Durio et Manter, 1968. Skrjabin et Koval (1964) distinguent les genres *Aephnidiogenes* et *Holorchis* par un caractère purement morphologique: les testicules sont largement séparés l'un de l'autre chez *Aephnidiogenes*, plus ou moins rapprochés chez *Holorchis*. Nous soulignons toutefois l'exception que constitue *Holorchis* (gen?) *ioannoui* A. Brinkmann Jr, 1966 chez qui les testicules sont éloignés l'un de l'autre. Sans aucun doute, la systématique des Lepocreadiidae est encore artificielle, reposant sur des bases trop morphologiques et anatomiques. C'est seulement dans la mesure où l'on connaîtra davantage de cycles biologiques que l'on pourra subdiviser plus rationnellement cette grande famille des Lepocreadiidae.

From Bartoli and Prévôt, 1978

The genus *Holorchis* Stossich, 1901, has been variously related to *Aephnidiogenes* by Dollfus (1946), Manter (1954), Dollfus and Capron (1958), Yamaguti (1958), Thomas (1960), and Skrjabin and Koval (1960). All but Yamaguti placed these two genera in Lepocreadiidae Nicoll, 1935.

Holorchis legendrei was described by Dollfus (1946) from *Mullus surmuletus* (Mullidae) from the Atlantic; from a specimen from *Mullus barbatus* from the Mediterranean, he (1948) added to and corrected in part his earlier description. He (1946) indicated that the cirrus sac contained a large, sinuous, thick-walled, muscular ejaculatory duct (but no cirrus) surrounded by large prostate gland cells; the metraterm was short and surrounded by longitudinal muscles; and the testes were smooth. Through the courtesy of Dr. R. P. Dollfus we were able to study 12 syntypes in whole mount and three in serial frontal and sagittal sections. Our study indicated that the cirrus sac contained a short, tubular, relatively thin-walled, slightly muscular internal seminal vesicle continuous with the external seminal vesicle; this was followed by a longer, thicker-walled, very muscular, tubular internal seminal vesicle; a short, muscular, tubular, cell lined pars prostatica was next; a very short, muscular cirrus opened into the short, tubular genital atrium. The distal thicker-walled portion of the internal seminal vesicle in sections showed a relatively thin inner circular muscle layer and a much thicker outer longitudinal muscle layer. The pars prostatica in sections showed an inner layer of cells, a thin middle layer of circular muscles, and a very much thicker outer layer of longitudinal muscles; it was much thicker-walled and muscular proximally than distally; the cells were not readily detectable in whole mounts. The cirrus was composed of a thick inner circular and equally thick outer longitudinal muscle layers. The metraterm also consisted of an inner cell layer, and inner circular and outer longitudinal muscle layers. The testes in all whole mounts and sectioned specimens showed deep crypts, the walls of each crypt in contact so that a lumen was not visible. It is our opinion that *H. legendrei* is a valid species.

Holorchis rhabdosargi was described from 3 specimens as *Aephnidiogenes rhabdosargi* by Prudhoe (1956) from *Rhabdosargus sarba* (Sparidae) from South Africa. Thomas (1960) placed it in *Holorchis*. Prudhoe noted the male and female complexes opening to the exterior by separate pores, and a cirrus sac containing an ejaculatory duct which was exceedingly muscular distally, a large mass of well developed prostate gland cells, and a small portion of the seminal vesicle. Through the courtesy of Dr. S. Prudhoe we were able to study one cotype in whole mount and one in serial sagittal section. Our study revealed that the terminal genitalia were almost exactly like that described by us for *H. legendrei*. In the whole mount specimen of *H. rhabdosargi* a very small, shallow, thin-walled genital atrium was present, the male and female pores opening into it; the sections did not show this portion of the worm. Dollfus (1946) originally noted separate male and female pores for *H. legendrei*, but (1948) corrected this observation in reporting a superficial genital atrium. It is our opinion that *H. rhabdosargi* is a valid species and that it belongs in the genus *Holorchis* as reassigned by Thomas (1960).

Holorchis pulcher was described by Manter (1954) from *Latridopsis ciliaris* from New Zealand. Yamaguti (1958) transferred this species to his newly created genus *Pseudoholorchis*. Manter noted that the internal seminal vesicle was small, ovoid, followed by a prostatic vesicle of about the same size; the cirrus was long, coiled when retracted, often protruded as a muscular tube. Examination of whole mounts of the type specimen and a paratype (USNM Helm. Coll. No. 49123) indicated that the internal seminal vesicle started at the proximal end of the cirrus sac as a thin-walled tube continuous with the external seminal vesicle and then enlarged into a relatively thicker-walled, muscular, ovoid chamber; an ovoid, cell lined prostatic vesicle followed the latter, slightly overlapping it ventrally; the cells lining the prostatic vesicle continued into the so-called cirrus a short distance (actually a continuation of the pars prostatica) before becoming the cell free cirrus. On the basis of the morphology of the terminal genitalia we agree with Yamaguti (1958) in his erecting the genus *Pseudoholorchis* for this species and consider it valid.

FROM FISCHTHAL AND KUNTZ, 1964

Proc. Helmin. Soc. Wash., 31 (1): 157

Holorchis pycnoporus Stossich

In the intestine of a Sargus salviani (Trieste, 9 March 1900)collected one example of a distome which belongs to a new species, representing the type of a new genus.

Length 4.5 mm
Width 0.5 mm

The elongate body has parallel margins, with the anterior part (neck) more slender and moveable and after death turned in an arc toward the ventral part; the extreme posterior more compressed and rounded. The cuticle is covered with small sharp spines very deciduous and disposed closely in the anterior part of the body while absent in the posterior part. Suckers robust, muscular; rather close together; the ventral sucker is situated principally in the widened part of the body, of circular form, and a little larger than oral sucker. The oral sucker is subterminal and leads directly into the robust pharynx which, through a long esophagus, communicates with two slender intestines extending to the posterior end of the body.

Genital pore median and situated anterior to ventral sucker. Testes very large, subelliptical and placed posteriorly one before the other with a little distance between them. Ovary spherical and smaller than ventral sucker and situated to the right side anterior to testes and separated from them by the coils of the uterus. Vitellaria strongly developed, filling all the free space of the body from the anterior margin of the ovary to the extreme posterior. The uterus extends in transverse coils from anterior testis to ventral sucker.

The description above results in this distome presenting a great analogy to the subfamily Omphalometrinae (Looss,..., 1898, p. 562) in which Looss includes two genera: Omphalometra Looss with one species, O. flexuosa Rud. (parasite of mole) and Cathaemasia Looss with one representative, C. hians Rud. (parasite of some long legged birds). The differences observed fully justify me in creating a new genus described so: ovary lateral and not median, testes smooth and not lobed, esophagus somewhat longer with pharynx which lacks the prepharynx.

from Stossich (1900)

STOSSICH, 1900

Holorchis pycnoporus Stossich.

Fig. 10.

Nell'intestino di un *Sargus salviani* (Trieste, 9 marzo 1900) raccolsi un esemplare di distoma, che ritengo non soltanto appartenente ad una nuova specie, ma rappresentante il tipo di un nuovo genere.

Lunghezza 4·5^{mm}.

Larghezza 0·5^{mm}.

Ha corpo lungo a margini paralleli, con la parte anteriore (collo) più sottile e movibilissima e dopo morte piegata ad arco verso la parte ventrale; l'estremità posteriore si presenta alquanto più ristretta e rotondata. La cute è coperta di piccolissimi aculei molto decidui e disposti fittamente nella parte anteriore del corpo, mentre mancano nella parte posteriore. Ventose robuste, muscolose, abbastanza vicine fra loro; la ventosa ventrale è situata al principio della parte allargata del corpo, di forma circolare e poco più grande della ventosa orale. Dalla ventosa orale subterminale diparte direttamente la robusta faringe, la quale per mezzo di un lungo esofago comunica con due esili intestini estesi fino all'estremo posteriore.

L'apertura genitale mediana è situata all'innanzi della ventosa ventrale. I testicoli sono molto grandi, subellittici e collocati posteriormente uno sopra l'altro a poca distanza fra loro. L'ovario sferico e più piccolo della ventosa ventrale è situato al lato destro anteposto ai testicoli e da questi diviso dalle pieghe dell'utero. Vitellogeni fortemente sviluppati riempiono tutto lo spazio libero del corpo dal margine superiore dell'ovario all'estremo posteriore. L'utero larghissimo si estende in pieghe trasversali dal testicolo anteriore alla ventosa ventrale.

Dalla descrizione suesposta risulta, che questo distoma presenta una grandissima analogia coi rappresentanti della sottofamiglia *Omphalometrinae* Looss (Looss: Weitere Beiträge zur Kenntniss der Trematoden-Fauna Aegyptens. 1898, pag. 562), alla quale secondo il Looss appartengono i due generi: *Omphalometra* Looss con l'unica specie *O. flexuosa* Rud. (parassita della talpa) e *Cathaemasia* Looss con l'unico rappresentante *C. hians* Rud. (parassita di alcuni trampolieri). Le differenze osservate e che secondo me giustificano pienamente la creazione di un nuovo genere pel distoma or descritto sono: ovario laterale e non mediano, testicoli a contorno intero e non lobato ed esofago piuttosto lungo con faringe mancante della prefaringe. Da ciò segue che il genere

FROM STOSSICH (1900)

Holorchis pycnoporus Stossich, 1901

II. L'adulte

Hôtes naturels. Diplodus vulgaris (syn. *Sargus salviani*): Stossich, 1901; Paggi et Orecchia, 1974.

Pagellus erythrinus L.: Orecchia et Paggi, 1974.

Hôtes expérimentaux. Diplodus vulgaris et *D. annularis* L.

Expérimentation. Nos recherches pour retrouver dans la nature *Holorchis pycnoporus* adulte chez de nombreux individus de différentes espèces de Sparidés n'ont jamais abouti. Par contre les contaminations expérimentales ont réussi, mais seulement chez deux *D. vulgaris* sur cinq et chez un seul *D. annularis* sur trois; elles ont échoué chez *Sparus auratus* L., chez *Boops boops* (L.) et chez diverses espèces de Serranidés et Blennidés.

Les premiers oeufs apparaissent vers le 15ème jour après la contamination artificielle.

Localisation dans l'hôte: intestin moyen.

Dimensions. Les dimensions correspondent à celles de 8 individus développés chez *D. vulgaris* et *D. annularis* autopsiés 15 jours après l'infestation expérimentale. Les vers ont été tués par la chaleur puis fixés, colorés et montés au baume.

longueur du corps: 1615–2380 (2023).
largeur du corps: 478–743 (605).
ventouse orale (VO): 160–213 (186) × 165–218 (186).
ventouse ventrale (VV): 154–202 (178) × 149–202 (177).
rapport ventousaire (VO/VV): 0,94–1,12 (1,04).
prépharynx: 0–11
pharynx (P): 72–108 (90) × 85–115 (99).
rapport VO/P: 1,72–2,80 (2,10).
longueur de l'espace préacétabulaire (A): 575–807 (706).
longueur de l'espace postacétabulaire (B): 783–1402 (1122).
rapport A/B: 0,56–0,73 (0,63).
oesophage: 87–152 (117).
testicule antérieur: 141–250 (208) × 184–293 (231).
testicule postérieur: 163–250 (208) × 185–304 (240).
distance intertesticulaire: 0–60
distance entre l'arrière de la ventouse ventrale et le bord antérieur du testicule antérieur: 186–400 (291).
distance entre l'arrière du testicule postérieur et l'extrémité du corps: 373–506 (435).
poche du cirre: 130–174 (159) × 87–115 (99).
réceptacle séminal: 85–152 (118) × 30–54 (42).
ovaire: 108–184 (151) × 152–217 (169).
oeufs: 57–67 (63) × 28–35 (30).
distance entre l'orifice génital et le bord antérieur de la ventouse ventrale: 26–108 (69).

Forme du corps (fig. 6). Le corps est très allongé; ses bords sont presque parallèles entre eux. La ventouse ventrale est située vers le début du tiers moyen.

Taches oculaires. Les granules pigmentaires sont très dispersés.

Appareil digestif. La ventouse orale est légèrement subterminale; elle est ornée d'une cannelure antérieure. Le prépharynx est court mais toujours présent; ses parois, relativement épaisses, sont semblables à celles de l'oesophage. Les glandes prépharyngiennes sont bien développées. La partie antérieure du pharynx est composée de 4 à 5 lobes musculeux. Les aecums digestifs naissent vers

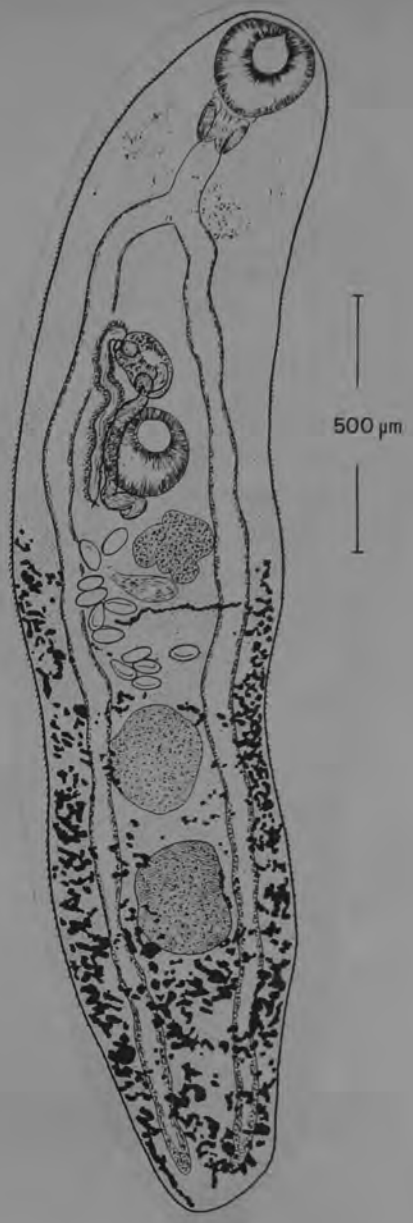


Fig. 6. *Holorchis pycnoporus* — *Diplodus annularis*. Adulte expérimental âgé de 15 jours. Vue dorsale

–OVER–

le milieu de l'espace interventousaire; ils sont très longs, parallèles aux bords du corps, terminaux.

Appareil génital mâle (fig. 6 et 7). Les deux testicules, intracaecaux, sont disposés l'un derrière l'autre; ils sont parfois accolés, parfois légèrement séparés. Ils sont arrondis; leurs bords sont entiers, plus rarement à peine indentés. La vésicule séminale externe, très contournée, s'étend généralement sur le côté droit de la ventouse ventrale, parfois sur sa gauche; elle la dépasse en avant et en arrière. Elle se prolonge, dans la poche du cirre, par une vésicule séminale interne contournée et se termine par un rétrécissement. Au delà de cette constriction commence la pars prostatica; les cellules prostatiques sont peu développées. Il n'y a pas de cellules prostatiques externes. Le cirre est séparé de la partie prostatique par un sphincter puissant. Le cirre est musculeux et plus ou moins contractile; il débouche dans l'atrium génital. La poche du cirre, ovoïde, a une paroi peu épaissie; le plus souvent, elle est située complètement en avant de la ventouse ventrale, parfois légèrement sur la droite ou sur la gauche de l'acétabulum.

Appareil génital femelle (fig. 6 à 8). L'ovaire est situé immédiatement en arrière de la ventouse ventrale, légèrement sur la droite du corps; il est composé par trois ou quatre lobes plus ou moins bien nettement individualisés. Les ovocytes convergent dans un espace en forme d'entonnoir. L'oviducte débute par un oocapte musculeux rempli de spermatozoïdes. Le réceptacle séminal et le canal de Laurer, confluent en un même point. Le réceptacle séminal est volumineux, ovoïde, parfois piriforme ou même tubulaire. Le canal de Laurer débouche sur la face dorsale du corps, sur la ligne médiane, tout de suite en arrière de la ventouse ventrale. La chambre de fécondation est ciliée. La direction de la ciliature est telle que les spermatozoïdes sont refoulés vers l'amont. Le vitelloducte impair débouche dans la chambre de fécondation. La glande de Mehlis et l'ootype sont peu apparents et difficiles à observer. Les follicules vitellins se répartissent dans la région postacétabulaire; ils occupent la totalité de l'espace post-testiculaire et s'immiscent parfois entre les deux testicules. Les vitelloductes transverses sont postovariens; ils confluent en un petit réservoir vitellin. Les anses utérines se déploient en avant du testicule antérieur. L'extrémité distale de l'utérus se transforme, au-delà d'un sphincter, en un métraterme musculeux et glandulaire, de longueur comparable au diamètre de la ventouse ventrale. Il débouche dans un petit atrium génital tubulaire. L'orifice génital, préacétabulaire, est parfois médian, parfois légèrement déjeté sur le côté gauche du corps.

Appareil excréteur. La vessie excrétrice est tubulaire; elle s'étale sur toute la longueur de l'espace postacétabulaire. Chez l'animal vivant, la paroi vésicale

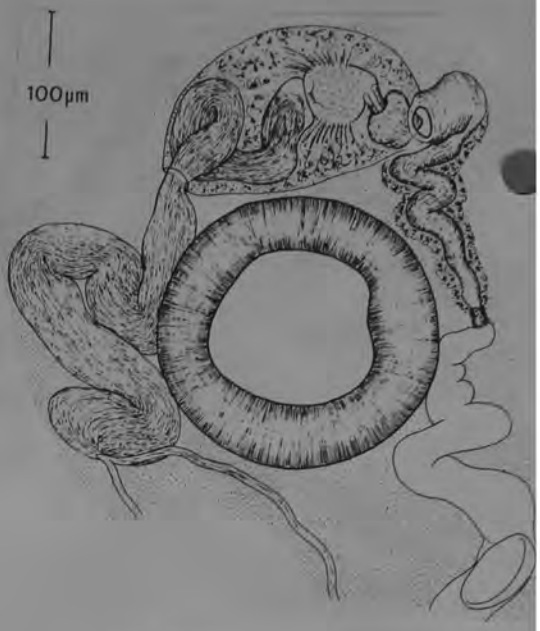


Fig. 7. *Holorchis pycnoporus — Diplodus annularis.* Adulte expérimental âgé de 15 jours. Région distale des appareils génitaux mâle et femelle; atrium génital. Vue ventrale

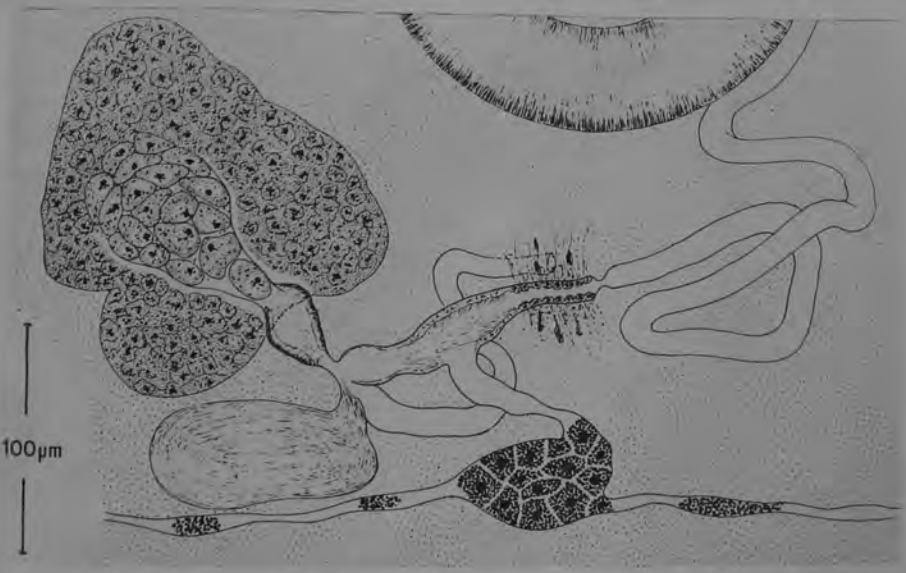


Fig. 8. *Holorchis pycnoporus — Diplodus annularis.* Adulte expérimental âgé de 15 jours. Région proximale de l'appareil génital femelle. Vue ventrale

CONTINUED ⟶

Holorchis pycnoporus Stossich, 1901 (continued)

est lobulée (fig. 9). Les lobules sont assez prononcés dans la moitié antérieure de la vessie, ils sont beaucoup plus discrets dans la moitié postérieure. La vessie, turgescente, passe entre les deux testicules; elle repousse le testicule antérieur sur la gauche du corps, le testicule postérieur sur la droite; la vessie apparaît ainsi presque rectiligne. Chez l'animal fixé, la vessie vidée est difficile à observer; les testicules sont alignés l'un en arrière de l'autre.

III. Discussion

La description que nous venons de donner du ver adulte est assez conforme à celle de Stossich (1901) et à celle de Paggi et Orecchia (1974). Cependant, plusieurs remarques doivent être faites:

– les mensurations de nos exemplaires sont plus petites; le rapport ventousaire oscille entre 0,94 et 1,32 alors qu'il paraît inférieur à 1 chez les individus récoltés par Paggi et Orecchia. Ces divergences tiennent probablement au fait que nos adultes expérimentaux sont âgés de 15 jours seulement.

– les auteurs italiens ne mentionnent pas l'existence de granules pigmentaires. Ces granules sont très dispersés chez les adultes de 15 jours et il est vraisemblable qu'ils le sont encore davantage chez des exemplaires plus vieux; ils peuvent ainsi échapper à l'observation.

– Paggi et Orecchia soulignent la position médiane de l'atrium génital. Chez nos individus, l'atrium et l'orifice génital sont médians dans la moitié des cas, quelque peu déjetés sur la gauche du corps dans l'autre moitié des cas.

– Stossich puis Paggi et Orecchia font remarquer l'absence de prépharynx alors que sur nos exemplaires il est présent, bien que très court.

– chez nos individus, la vessie excrétrice est très longue, arrivant au contact même de la ventouse ventrale; Paggi et Orecchia précisent qu'elle s'arrête au niveau de la partie antérieure du testicule antérieur. Nous soulignons que la longueur de la vessie ne peut être appréciée que dans la mesure où l'animal est vivant et non comprimé entre lame et lamelle. Chez les exemplaires fixés, la partie antérieure de la vessie est invisible.

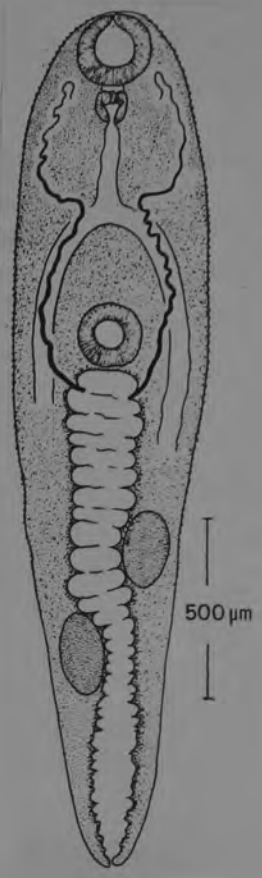


Fig. 9. *Holorchis pycnoporus* – *Diplodus annularis*. Adulte expérimental âgé de 15 jours. Vessie excrétrice chez l'animal vivant. Vue ventrale

From Bartoli and Prévôt, 1978
See also Life Cycle

Holorchis (gen.?) ioannoui Brinkmann, 1967

Holorchis (gen. ?) *ioannoui*[1] ~~n. sp.~~ BRINKMANN, 1967., Figs. 2 A–C. Three specimens (U.B.Z.M. No. 48229) were collected from the intestine of *Uranoscopus scaber* L.

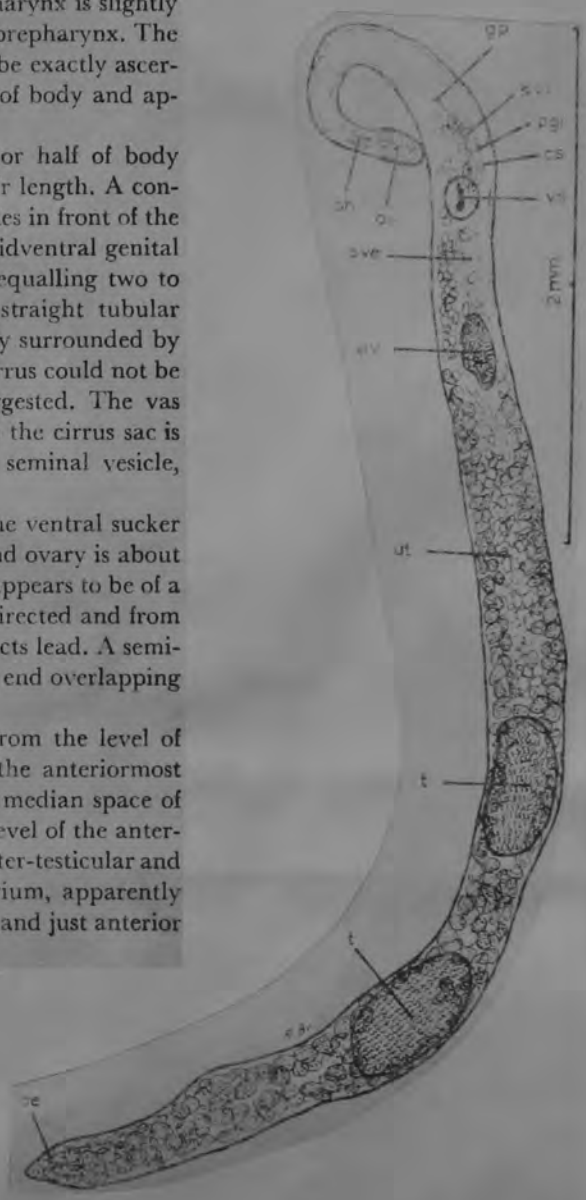
The body is elongate, somewhat flattened and ribbon-like with a wrinkled, but smooth cuticle without spines or any indications of that such may have been lost. The total length is about 6.5 mm and the width is almost equal between the ventral sucker and posteriormost testis at which it has its greatest width about 0.34 mm. The posterior end of body is broadly rounded or slightly tapering.

The oral sucker is somewhat longer (0.18–0.195 mm) than wide (0.1–0.135 mm). In one specimen (Fig. 2 B) the anteriormost part of body appears as funnel-like mouth-projection leading to the oral sucker. Midventrally at a level between the anterior fourth and posterior three-fourths of the body, the feeble (muscular weak) oval and sessile ventral sucker is situated. In size it equals the oral sucker being 0.185–0.195 mm long and 0.13–0.135 mm wide. The pharynx is slightly longer than wide and connected with the oral sucker by a short prepharynx. The oesophagus is longer than the pharynx, but how long could not be exactly ascertained. The intestinal caeca extend almost to the posterior end of body and apparently do not unite.

The testes are found intercaecaly anteriorly in the posterior half of body tandem arranged but well separated by a distance equal to their length. A conspicious sausage-shaped cirrus sac, four times longer than wide, lies in front of the ventral sucker its extreme posterior end overlapping this. The midventral genital pore lies in front of the ventral sucker at a distance from this equalling two to three times its diameter. The cirrus sac contains axially a straight tubular internal seminal vesicle, anteriorly somewhat widened and wholy surrounded by a conspicuous amount of prostate cells. The presence of a real cirrus could not be ascertained, wherefore an eversible ductus ejaculatorius is suggested. The vas deferens in the intercaecal field anterior to the ovary leading to the cirrus sac is very much coiled and distended and thus forms an external seminal vesicle, without surrounding glandular cells however.

The ovary lies intercaecal in the left side of body between the ventral sucker and anteriormost testis, so that the distance between this testis and ovary is about twice the distance between ovary and ventral sucker. The ovary appears to be of a somewhat low triangular shape with its lowest corner medially directed and from which the oviduct leaves and to which the vitelline collecting ducts lead. A seminal receptacle is found dorso-posteriorly to the ovary, its anterior end overlapping the ovary.

The vitelline follicles are not especially small and extend from the level of mid ovary to the extreme posterior end of body. Anterior to the anteriormost testis the follicles are circumcaecally arranged only, leaving the median space of body free for the winding uterus distended with eggs. From the level of the anterior testis and posteriorly the vitelline follicles continuous fills the inter-testicular and post-testicular space. The uterus joins the presumed genital atrium, apparently without any definite metraterm, just posterior to the genital pore and just anterior to the front end of the cirrus sac.



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The eggs are light yellow 0.65—0.67 mm long and 0.038—0.04 mm wide; the anopercular end is rounded without filament or point.

Unfortunately this material is limited to three specimens in a whole mount and accordingly I have not been able to elucidate some anatomical points. There can be no doubt whatsoever that these species belong to the *Allocreadiidae*/*Acanthocolpidae* group which appears anatomically to merge. It can, however, not be included in the family *Acanthocolpidae* Lühe, 1909, as this family is interpreted by Caballero (1952), and accordingly must be assigned to some of the newer systematic entities of the Allocreadiids, preferably the superfamily *Lepocreadioidea* Cable, 1956.

The elongate body, the blindly terminating intestinal caeca, the presence of a cirrus sac, the uterine loops between the anterior testis and the ventral sucker and tandem arranged testes, indicate the family *Lepocreadiidae* Nicoll, 1935.

The median genital pore anterior to the ventral sucker, the cirrus sac with internal vesicle and prostatic glands, the presence of an external seminal vesicle without surrounding glandular cells, the uterine loops being mainly concentrated between the ovary and the anterior testis, indicate the subfamily *Aephnidiogenetinae* Yamaguti, 1934, which comprises the genera *Aephnidiogenes* Nicoll, 1915, *Holorchis* Stossich, 1901, and *Pseudoholorchis* Yamaguti, 1958.

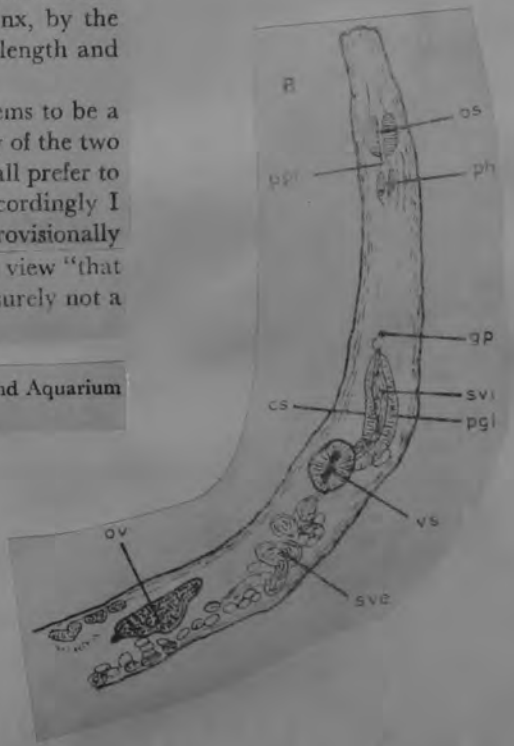
The present species does not fully agree with the diagnoses of any of these three genera, differing from all of them by apparently being unspined, but being more or less like them in every other respect. It appears to be very different from the genus *Pseudoholorchis* in which there is a lobed ovary and testes and a genital pore close to the pharynx.

It differs from the diagnosis of *Aephnidiogenes* Nicoll, 1915, as given by Yamaguti (1953, p. 95), as it is not equipped with cuticular spines, the external seminal vesicle is not surrounded by prostate cells, testes are well within posterior half of body, the eggs are larger, and a well developed cirrus sac is present. The presence of well separated testes is a characteristic which the new species shares with this genus.

Apart from being without spines the present species fulfills the generic diagnoses of *Holorchis* Stossich, 1901, as given by Yamaguti (1953, p. 97). It differs however, from *H. pycnoporus* Stossich, 1901, and *H.* (?) *legendrei* Dollfus, 1946, as these appear from the descriptions of Dollfus (1946 and 1948), as it is not equipped with cuticular spines, by the presence of a short prepharynx, by the tandem arranged testes being separated by a distance equal to their length and by the larger eggs.

As far as conclusions can be drawn from my scanty material it seems to be a matter of choice whether the present species should be included in any of the two established genera or whether a new genus should be established. I shall prefer to leave this matter to the future when more material is obtained. Accordingly I have chosen the same line as did Dollfus (1946 and 1948), and provisionally refer the species to the genus *Holorchis* (?), recalling Manter's (1954) view "that the testes are separated by a distance equal to their length but this is surely not a generic difference."

[1] Named in honour of Dr. M. Ioannou, Director Hydrobiological Institute and Aquarium at Rhodes.



and anterior part of two other specimens (A & B). Specimen B with funnel-like extension of body anterior to oral sucker. All drawings from actual specimens.

Holorchis legendrei Dollfus, 1946

Corps plat, peu épais, allongé longitudinalement, plus large et linguiforme dans sa moitié postérieure, s'atténuant lentement dans sa moitié antérieure. Cuticule couverte de petites écailles non caduques, très serrées sur la moitié antérieure du corps, se raréfiant postérieurement sans disparaître complètement. Ventouse orale subterminale, à ouverture ventrale, à contour circulaire. Ventouse ventrale à contour circulaire, un peu plus grande que l'orale et située vers l'union des deux premiers tiers de la longueur chez les individus en extension. Prépharynx nul. Pharynx longitudinalement allongé, moins long que le diamètre de la ventouse orale. Œsophage à paroi épaisse, atteignant en extension un peu plus de deux fois la longueur du pharynx, s'étendant jusqu'à la fin du premier cinquième de la longueur du corps. Chez les individus à extrémité antérieure du corps rétractée, l'œsophage se replie complètement et le pharynx arrive au contact de la bifurcation intestinale. Branches de l'intestin atteignant l'extrémité postérieure du corps, où leurs terminaisons se rapprochent l'une de l'autre, sans communiquer avec la vessie excrétrice.

Deux testicules globuleux, non lobés, en tandem sur la ligne médiane, occupant toute la largeur intercæcale, presque toute l'épaisseur du corps et un peu plus du quatrième cinquième de la longueur du corps chez les individus non contractés; ils se touchent, ou presque, et restent éloignés de l'ovaire par une distance supérieure à leur diamètre et de l'extrémité postérieure par une distance égale au moins à une fois et demi leur diamètre.

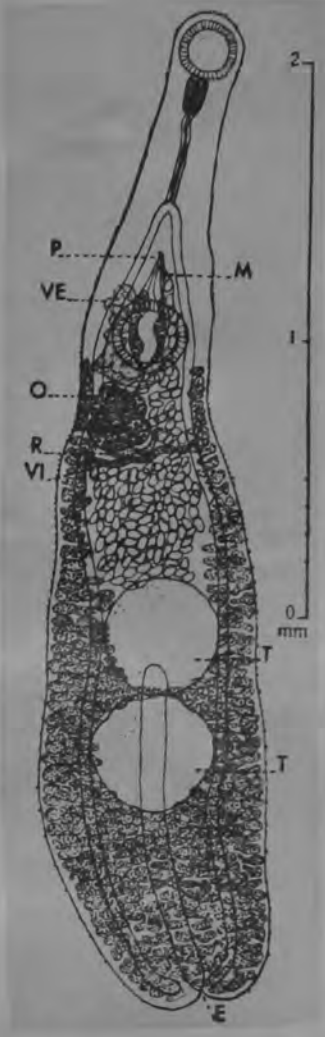
Vésicule séminale externe en forme de gros tube contourné, s'étendant dorsalement au côté droit de l'acetabulum, débutant un peu en arrière de l'acetabulum, pouvant antérieurement dépasser légèrement le niveau du bord antérieur de l'acetabulum et pouvant s'avancer dans l'espace entre l'acetabulum et la poche du cirre. Poche du cirre très volumineuse, plus ou moins piriforme, large, située dorsalement à l'acetabulum, qu'elle dépasse quelquefois postérieurement et dépasse toujours antérieurement pour aboutir au pore génital. Dans son intérieur il y a un gros tube un peu sinueux à paroi épaisse avec manchon musculaire; c'est le canal éjaculateur; il est environné de grosses glandes prostatiques, mais il n'y a pas de cirre.

L'ovaire est un massif lobé de forme irrégulière, situé à droite de la ligne médiane, en partie ventralement au cæcum droit, un peu en arrière de l'acetabulum, dont il est séparé par des sinuosités de la vésicule séminale; toutefois, chez les individus contractés, l'ovaire arrive au contact de l'acetabulum. Dans la masse de l'ovaire, on distingue une partie dorsale à contour circulaire ou elliptique, très bien délimitée, où les ooogonies sont polygonales.

Dorsalement au bord postérieur de l'ovaire et le dépassant un peu postérieurement se trouve le *receptaculum seminis*, peu volumineux, il se continue par le canal de Laurer qui débouche dorsalement au niveau de l'ovaire. La glande de Mehlis est très faiblement développée. Les vitellogènes occupent tout l'espace entre l'extrémité postérieure du corps et les testicules, pouvant se rejoindre au niveau du contact entre les deux testicules ; ils viennent dorsalement et ventralement jusqu'au contact de la sous-cuticule ; en avant du testicule antérieur, les vitellogènes sont surtout extracæcaux : ils se terminent vers le niveau du bord postérieur de l'acetabulum. Le vitelloducte transverse est immédiatement postérieur au *receptaculum seminis* et au canal de Laurer.

L'utérus décrit de nombreuses sinuosités entre l'ovaire et le testicule antérieur, dans l'espace intercæcal ; il passe ensuite à gauche de l'ovaire et dorsalement au côté gauche de l'acetabulum, puis dorsalement à la poche du cirre pour gagner le pore génital ; il ne devient metraterme que peu avant sa terminaison, il est alors entouré par une forte musculature longitudinale.

Le pore génital est une légère fossette superficielle médiane, située entre l'acetabulum et le niveau de la bifurcation intestinale; l'orifice ♂ et l'orifice ♀ s'y trouvent séparément l'un au-devant de l'autre, le second immédiatement en avant du premier; il n'y a pas de sinus génital. Le pore génital avec les parties terminales du metraterme et de la poche du cirre sont environnés d'une forte musculature qui permet peut-être une légère protraction lors de la copulation.



(OVER)

Les œufs, ovoïdes avec petit opercule et rebord, sont dépourvus d'éperon et de filament; ils mesurent en moyenne 74 × 40 μ (les plus petits ont 65,7 × 37 μ, les plus grands 77 × 40 μ), quelques-uns atteignent 71,4 × 41 μ 4, 72 × 40 μ et 72,5 × 41 μ 5.

La vessie excrétrice est un gros tube subcylindrique, s'ouvrant à l'extrémité postérieure du corps et s'étendant antérieurement jusqu'à environ la limite entre les deux testicules. Le reste de l'appareil excréteur ne m'est pas encore connu.

Dimensions de trois individus montés *in toto* (en m. m.)

Longueur	3.55	2.8	2.3
Plus grande largeur	0.82	0.77	0.617
Ventouse orale	0.21	0.22	0.20
Ventouse ventrale	0.255	0.228	0.216
Pharynx	0.131 × 0.073	0.131 × 0.073	0.135 × 0.068
Œsophage	0.290	0.115	replié, non mesurable
Testicules, diamètre	0.39	0.37	0.27
Ovaire	0.21 × 0.16	0.184 × 0.157	0.163 × 0.184
Distance entre le testicule postérieur et l'extrémité postérieure du corps	0.70	0.529	0.511
Distance entre l'acetabulum et le testicule antérieur	0.71	0.44	0.456
Distance entre le pore génital et l'acetabulum	0.21	0.157	0.179

La poche du cirre mesure chez plusieurs individus 0,263 × 0.136. 12 exemplaires ont été récoltés dans l'intestin d'un ***Mullus surmuletus*** L. à Concarneau (Finistère), par mon ami René Legendre. (23-6-44).

Chez ce Téléostéen, l'on connaissait déjà ***Opeceloides furcatus*** (Bremser *in* Rudolphi 1819).

Mullidae
Atlantic Coast N.W. France

FROM DOLLFUS (1946)

Cet individu présente de petites différences avec la description du spécimen-type trouvé chez *Mullus surmuletus* L., à Concarneau (Finistère), par René LEGENDRE. Le *receptaculum seminis* est situé sur le côté gauche de l'ovaire. La poche du cirre est beaucoup plus volumineuse et la vésicule séminale externe est à peine visible. J'ai dit (1946, p. 2) qu'il n'y avait pas de sinus génital et que les orifices ♂ et ♀ s'ouvraient séparément à l'extérieur dans une fossette superficielle constituant le pore génital. D'après ce qui est observable chez le spécimen recolté à Castiglione, il y a bien un sinus génital, mais il est très superficiel et peut facilement passer inaperçu; les orifices ♂ et ♀ s'ouvrent dans ce sinus et le sinus s'ouvre à l'extérieur par un pore circulaire plus ventral.

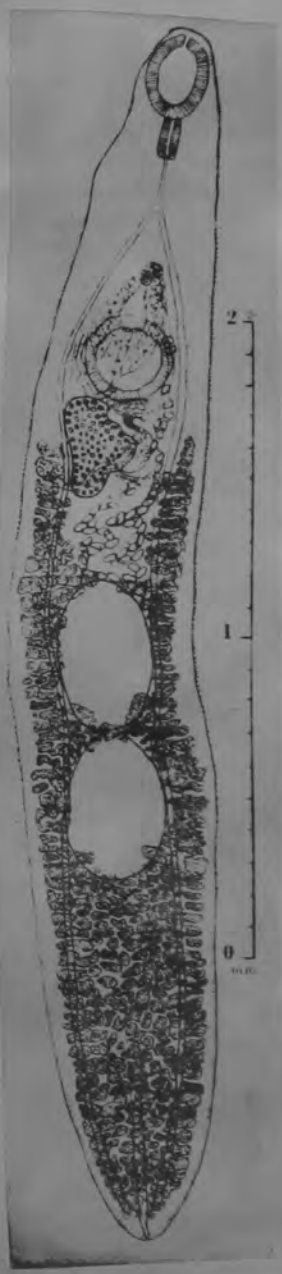
Le spécimen récolte à Castiglione présente les dimensions suivantes (en m.m.) d'après une preparation *in toto*.

Longueur, environ	3.85
Largeur maximum	0.585
Ventouse orale	0.260 × 0.272
Ventouse ventrale	0.280 × 0.230
Pharynx	0.136 × 0.084
Œsophage	0.15
Testicules	0.455 × 0.325
Poche du cirre	0.40 × 0.18
Distance entre l'extrémité antérieure et le pore genital	0.767
Distance entre l'extrémité antérieure et le bord antérieur de l'acetabulum	0.925
Distance entre l'acetabulum et le testicule antérieur	0.585
Distance entre l'acetabulum et le pore genital	0.120

Les œufs, pour la plupart collapsés, mesurent 60-72 × 36 μ.

Fig. 2. — *Holorchis* [gen. ?] *Legendrei* R. Ph. Dollfus 1946, intestin de *Mullus surmuletus* L., Castiglione (Algérie). Dr R. Dieuzeide leg. 13-4-1946.

FROM DOLLFUS (1948)



Holorchis legendrei DOLLFUS, 1946.

HOSTS : **Parakuhlia boulengeri* PELLEGRIN (Kuhliidae) ; **Diagramma mediterraneum* GUICHENOT (Pomadasyidae) ; **Smaris melanurus* VALENCIENNES (Maenidae).
SITE : Small intestine.
LOCALITY : Gorée, Senegal.
DATES : 26 June 1954 ; 24 February 1956.
SPECIMENS DEPOSITED : USNM Helm. Coll. No. 71890 (from *P. boulengeri*) ; No. 71891 (*D. mediterraneum*) ; No. 71892 (*S. melanurus*).

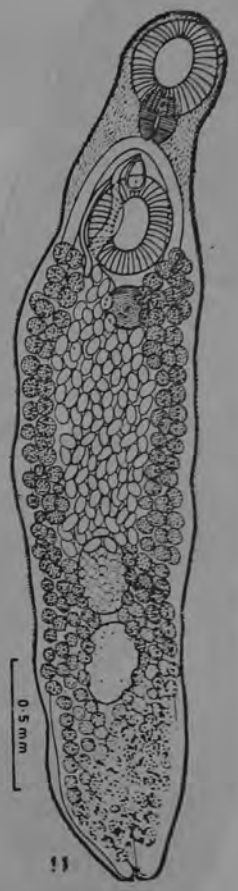
DISCUSSION : This species was described from mullid fishes from the French Atlantic and the Mediterranean ; the terminal genitalia were redescribed by FISCHTHAL and KUNTZ (1964) from some of DOLLFUS' syntype material. Our collection consists of three adult worms from *P. boulengeri* and one adult each from the other two hosts. Pigment granules of disintegrated eye spots are scattered from the oral sucker to the acetabulum only in worms from *P. boulengeri* ; these worms are smaller than from the other host species, the smallest measuring 1,400 by 530, and still have remnants of cercarial eye spots which probably would disappear as the worms aged.

From Fischtal & Thomas, 1972

Holorchis legendrei (Dollfus, 1946)
(Fig. 11)

Host: *Puntius sarana* (Hamilton Buchanan, 1822)
Location: Intestine
Locality: Taunsa Barrage

Twenty two specimens of *Puntius sarana* (Hamilton—Buchanan), were examined at Taunsa Barrage on River Indus in November, 1967. Only one fish yielded three worms from its intestine.



11

Description

The body of the worm is elongated, flattend and covered with spines. The maximum width is in the region just posterior to ovary, from this position the body gradually tapers towards both extermities but the extremities are blunt. The oral sucker is subterminal. A prepharynx is absent. The pharynx is longer than broad. The oesophagus is moderately long but sometimes contracts and thus intestinal bifurcation comes to lie against pharynx. The caeca are long ending blindly near posterior extremity. The ventral sucker is in the anterior third of the body.

The testes are oval in shape with entire margins. The anterior testis is slightly smaller than the posterior testis. The testes are tandem and are located at about two third of the body from the anterior end. The external seminal vesicle is in the form of a long tube situated slightly on the left of the ventral sucker and extends beyond its anterior level. The genital bursa is of medium size and lies at the anterior border of the ventral sucker. The ovary is spherical, submedian in position and lies just behind the ventral sucker. The vitellaria extend from posterior border of the acetabulum to the posterior end of the body and become confluent behind the testes. The uterus lies between the ovary and the anterior testis slightly over-reaching the later. The loops of uterus are almost entirely intercaecal. The metraterm is lacking. The genital pore lies between the acetabulum and intestinal bifurcation, nearer to the later. Male and female apertures are appoarate. The eggs are unfilamented, large and oval in shape. The excretory vesicle is tubular.

Measurements (In Mm.)

Body length 2.580-2.726, Body width 0.580-0.696, Oral sucker 0.315-0.315 × 0.246 0.262 Ventral sucker 0.344-0.364 × 0.265-0.301, Pharynx 0.177-0.177 × 0.118-0.127, Ovary, 0.167-0.167 × 0.157-0.177, Anterior testis 0.246-0.250 × 0.137-0.246, Posterior testis 0.265-0.250 × 0.187-0.197, Eggs 0.058-0.078 × 0.049-0.059.

Discussion

The specimens under study show the same structural features as *Holorchis legendrei* (Dollfus, 1946), except that the oral sucker, the pharynx and the ventral sucker are slightly larger than those of *H. legendrei* but the differences are not significant enough. Hence the specimens are identified as belonging to *H. legendrei*. This is however, a new record from Pakistan.

From ZAIDI AND KHAN, 1977

IX.—ON A NEW TREMATODE FROM SOUTH AFRICAN FISHES.

By Stephen Prudhoe,

Department of Zoology, British Museum (Natural History).

Sparidae

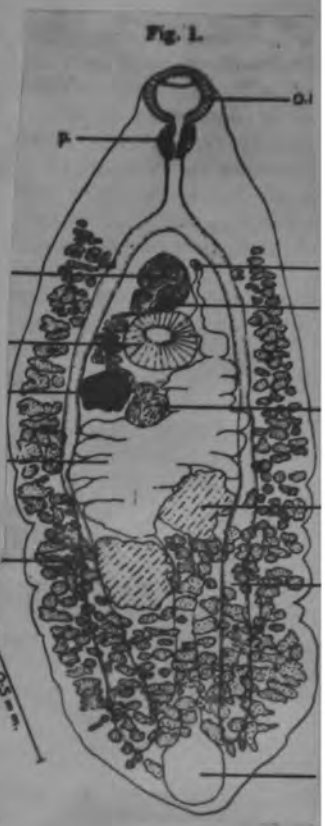
Through the kindness of Professor John Day and Mr. J. F. Croil-Morgans, of Cape Town University, the opportunity has been afforded to the writer of studying an interesting trematode from the stomach of two examples of the yellow-fin bream (*Rhabdosargus sarba*) caught in Durban Bay, South Africa. Only three specimens of the worm are available, of these one has been cut into serial sections, while the remaining specimens have been stained with Mayer's paracarmine and examined as whole mounts.

As will be seen from the description given below, the specimens appear to represent an undescribed species of the genus *Aephnidiogenes* Nicoll, 1915, the first of the family Lepocreadiidae to be recorded from South Africa. Lepocreadiids have a world-wide distribution, and their presence in this region is not unexpected. No doubt other forms belonging to this family will be found when the trematode-fauna of South African marine fishes is further explored.

Aephnidiogenes rabdosargi, sp. nov. Prudhoe, 1956

The outline of the body is more or less oval or somewhat pyriform, tapering slightly towards the anterior end. The length of the specimens varies between 1·6 mm. and 3·5 mm. and the maximum width between 1 mm. and 1·2 mm. The cuticle is relatively thick and armed with minute scale-like spines. Anteriorly, these spines are disposed in closely-set transverse rows, but towards the middle of the body the spines gradually become less numerous and disappear entirely in the posterior region.

The subterminal oral sucker is rounded or elliptical in outline and measures 0·18–0·25 mm. The ventral sucker, which is situated a little anteriorly to the middle of the body, is rounded and measures 0·22 mm. to 0·27 mm. in diameter. A very short prepharynx opens into a well-developed cup-like pharynx, measuring 0·12 mm. to 0·16 mm. in transverse diameter. The œsophagus is narrow and varies between 0·15 mm. and 0·22 mm. in length. It possesses a thin cuticular lining and is coated with a thick layer of circular muscle-fibres lying between two thin longitudinal layers. The intestinal bifurcation is situated about midway between the suckers, while the cæca extend far posteriorly, maintaining a position at some distance from the lateral margins of the body. These cæca are provided with a well-developed epithelial lining. In the anterior region of the body numerous large gland-cells have been detected in the parenchyma and appear to open into the pharynx. The excretory vesicle is tubular and extends anteriorly between the testes to the ovary, where it terminates. Owing to the pressure exerted by the growth of the vitelline follicles, the hinder region of the excretory vesicle in one specimen is much swollen.



The male and female genital complexes open to the exterior by separate pores, which lie ventrally between the intestinal bifurcation and the ventral sucker. The pores are closely approximate, the male occurring in the median line, while the female pore is sinistral and slightly anterior. A very thin-walled, globular cirrus-sac lies almost entirely on the anterior margin of the ventral sucker and measures 0·18 mm. to 0·20 mm. in diameter. It encloses an ejaculatory duct, surrounded by a large mass of well-developed prostatic gland-cells, and a small portion of the seminal vesicle. The ejaculatory duct is exceedingly muscular distally,

Prudhoe to Holorchis (see Thomas, 1960)

giving the male opening the appearance of possessing a sucker, but serial sections show no modification of the musculature of the body-wall in this region. From the cirrus-sac, the voluminous external portion of the seminal vesicle is thrown into a number of loops, which lie to the right of the ventral sucker and extend to the ovary. In each of the three specimens, the testes are disposed obliquely one behind the other, the left testis being the foremost and lying a little behind the middle region of the body. These are somewhat rounded, with strongly indented margins, and measure 0·18 mm. to 0·33 mm. in diameter. The ovary lies to the right of the median line, immediately behind the ventral sucker. It is rounded (0·13 mm. in diameter) or elliptical (0·15 mm. × 0·13–0·22 mm.). Laurer's canal is very short. Mehlis' gland and a small receptaculum seminis lie more or less dorsally to the ovary. The vitelline reservoir appears as a small discrete mass of yolk-cells lying to the left of the ovary. The vitellaria consist of numerous irregularly-shaped follicles, extending from the region of the intestinal bifurcation to the hinder end of the body. Anteriorly to the foremost testis the follicles are almost entirely disposed laterally to the intestinal cæca, but behind the testes they are confluent in the median line. From the ovary the uterus forms a number of loops between the intestinal cæca, and enters a narrow muscular metraterm. The operculate eggs are slightly thickened at the anopercular pole and measure 0·080–0·087 mm. × 0·045–0·047 mm.

The present form is readily distinguished from other members of the genus *Aephnidiogenes* Nicoll—*A. barbatus* Nicoll, 1915, and *A. major* Yamaguti, 1934—by the shape of the body, by the possession of separate male and female pores and by the distribution of the vitelline follicles. These characters might be regarded as sufficiently important to warrant the erection of a new genus, but the presence of a sucker-like termination of the male copulatory complex and the distribution of the uterine coils posteriorly to the ovary are characters which distinguish the genus *Aephnidiogenes* so readily from other genera of the family Lepocreadiidae Nicoll, 1935, *sensu* Cable and Hunninen, 1942. The inclusion of the above form in this genus necessitates some modification of the generic definition, which may now be given as follows :—

from Durio & Manter, 1968

~~Opecoelidae~~ Lepocreadiidae

***Holorchis plectorhynchi* sp. n.**
(Figs. 9–12 Durio & Manter

Hosts: *Plectorhynchus goldmani* (Bleeker), type host; Lutjanidae. *Lethrinus miniatus* (Forskål); Lethrinidae.

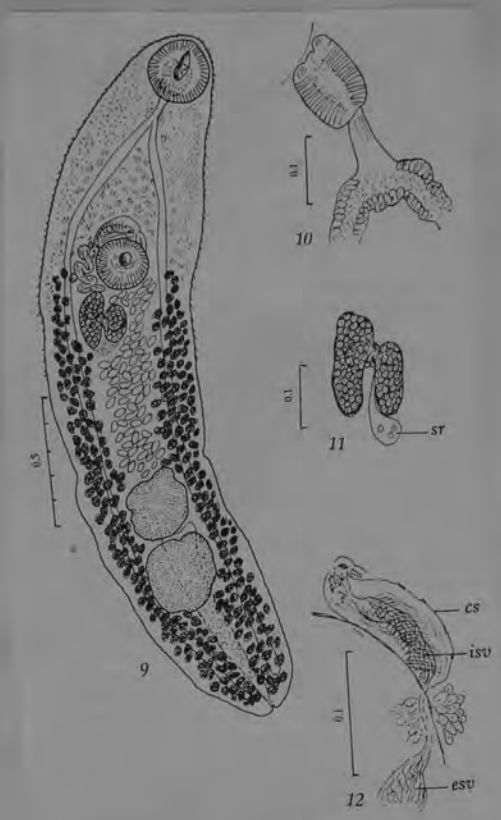
Location: Intestine.

Holotype: USNM Helm. Coll. No. 63313.

Number: 2 in *P. goldmani*; 1 not quite mature in *L. miniatus*.

Description: Body spined from anterior end to near midbody; length 2.679 to 5.358 mm; width 576 to 798; specimen 2.090 mm long not quite mature. Body almost uniformly wide, rather truncate at posterior end; anterior end tapering slightly. Oral sucker 228 to 268 wide, with longitudinal aperture. Acetabulum 193 to 301 wide, with small circular aperture. Sucker ratio 1:0.88 to 1.1. Forebody 193 to 301, or about ⅓ body length.

Pharynx (Fig. 10) longer than wide, with five or six short rounded lobes at anterior end but without anterior sphincter; projected into cavity of oral sucker in holotype; 173 long by 144 wide in 5.358-mm specimen. Esophagus about same length as pharynx; bifurcation about ⅓ distance from oral sucker to acetabulum; ceca rather narrow, ending near posterior end of body.



Testes tandem, in posterior third of body, close together or separated by very short distance, with irregular indentations or smooth (in largest specimen). Posttesticular space 0.281 to 1.339 mm. Genital pore submedian, slightly to left or to right, near anterior edge of acetabulum. Cirrus sac (Fig. 12) curving around right, or left, anterior edge of acetabulum, overlapping about ⅓ acetabulum dorsally; containing tubular internal seminal vesicle along most its length, short prostatic vesicle, very short cirrus, and few prostatic cells. Internal seminal vesicle surrounded by circular muscles. Outer wall of cirrus sac a thin, cellular membrane. External seminal vesicle a coiled tube extending short distance posterior to acetabulum, its narrowed anterior end surrounded by prostatic cells free in parenchyma.

Ovary deeply 4-lobed, or deeply 2-lobed with each lobe bent dorsoventrally; immediately postacetabular; seminal receptacle postovarian, inconspicuous. Vitellaria from level of posterior edge of acetabulum to posterior end of body; dorsal, ventral, and lateral to ceca; contiguous dorsally posterior to testes. Uterus with narrow coils between ovary and anterior testis. Metraterm short, thick-walled. Eggs 56 to 67 by 29 to 34. Excretory pore terminal. Excretory vesicle I-shaped, extending to level between testes.

Remarks

This species seems most similar to *H. legendrei* Dollfus, 1946, from a species of *Mullus* in the Atlantic and Mediterranean. It agrees in such characters as extent of vitellaria, tandem testes, extent of excretory vesicle, and egg size. *Holorchis plectorhynchi* differs in having lobes at anterior end of pharynx, shorter esophagus, deeply lobed ovary, genital pore more distant from bifurcation, subequal suckers, and external prostatic cells. *Holorchis ioannoui* Brinkman, 1966 is very different in its elongate body, longer esophagus, unlobed ovary, and extent of vitellaria.

The genus *Aephnidiogenes* Nicoll, 1915, is a closely related genus. It seems to us there is still some question of its being a synonym of *Holorchis*, but this question will not be considered here.

HOLORCHIS

Hypocreadium Ozaki, 1936 [1])

Generic diagnosis. — Allocreadiidae, Lepocreadiinae: Body round to oval, strongly flattened dorsoventrally, usually with thin, more or less frilled edges turned over ventrally. Oral sucker subterminal, followed by short prepharynx. Pharynx moderately developed; esophagus short; ceca arcuate, terminating near posterior extremity. Acetabulum relatively small, equatorial or just pre-equatorial. Testes one on each side of median line behind acetabulum. Vesicula seminalis externa present. Cirrus pouch claviform, pre-acetabular, containing seminal vesicle, distinct pars prostatica and protrusible cirrus. Prostate cells surrounding cirrus pouch at its base. Genital pore left of intestinal bifurcation, esophagus or pharynx. Ovary median or only slightly to one side of median line, between two testes at varying levels. Receptaculum seminis and Laurer's canal present. Uterus passing between two testes, may or may not extend further backward to near posterior extremity. Vitellaria profusely developed along ceca, extending from near pharynx or esophagus to cecal ends, leaving peripheral area free or not, may or may not be confluent between cecal ends. Excretory vesicle tubular, reaching to acetabulum or not; pore dorsal or terminal. Parasitic in intestine of marine fishes.

Genotype: *H. symmetrorchis* Ozaki, 1936 (Pl. 8, Fig. 90) in *Monacanthus cirrhifer;* Japan.

Other species:

H. amandrum (Manter, 1947) (syn. *Pseudocreadium a.* M.) in *Calamus calamus;* Florida.

[1]) Despite Manter's opinion (1940) to the contrary, I prefer to retain this genus for the reason indicated in the key.

H. dampieriae Yamaguti, 1942 in *Dampieria hellmuthi;* Naha, Okinawa.

H. patellare Yamaguti, 1938 in *Monacanthus cirrhifer;* Inland Sea of Japan.

H. scaphosomum (Manter, 1940) (syn. *Pseudocreadium s.* M.) in *Balistes polylepis* and *B. verres;* Mexico, Galapagos, Panama.

H. spinosum (Manter, 1940) (syn. *Pseudocreadium s.* M.) in *Caulolatilus* sp.; Galapagos.

Allocreadiidae

Hypocreadium n. g. OZAKI, 1936

Body small, relatively thick, broad oval-shaped with pointed cephalic and rounded caudal end. Cuticle smooth. Acetabular aperture median, equatorial or pre-equatorial, nearly the same size as oral sucker. Oral sucker subterminal, pharynx small, prepharynx very short, oesophagus short. Caeca undulating, extending to caudal end. Testes symmetrical or diagonal, intercaecal, in the caudal end of body. Genital pore, lateral, anterior to intestinal bifurcation. Cirrus pouch muscular, cirrus protrusile. Vesicula seminis externa present. Ovary round or ovoid, anterior to testes. Receptaculum seminis and LAURER'S canal present. Uterus with descending and ascending coils, intercaecal, posteriorly more or less beyond the testes. Vitellaria lateral, extracaecal, somewhat invading intercaecal areas, post-pharyngeal.

Type species—*Hypocreadium symmetrorchis.*

Allocreadiidae

Bravo & Manter, 1957

GENUS *Hypocreadium* Ozaki, 1936

It seems best to recognize the genus *Hypocreadium* as distinct from *Pseudocreadium* Layman, 1930 on the basis of an intertesticular ovary and the uterus usually extending posterior to the ovary. In two species, *H. spinosum* (Manter, 1940), and *H. dampieriae* Yamaguti, 1942, the uterus does not extend posterior to the testes, and such may be the case in young specimens of any species. Trematodes of this genus are very common in *Balistes* and other plectognath fishes, a group very favorable for Lepocreadid trematodes in general. The genus *Hypocreadium* is a difficult one because of close similarity of species described and individual variations observed. Range of egg size and shape is great within a species. Other variable characters are smooth or irregular contour of gonads, and lateral extent of vitellaria. Details of the cirrus sac are probably more constant but these are somewhat affected by protrusion of the cirrus.

One species was considered to be *H. scaphosomum* (Manter, 1940), although the external seminal vesicle was usually not sinuous as it was in all of the original (1940) specimens. A constant character of *H. scaphosomum* is the absence of vitellaria over the ceca, both dorsally and ventrally. In view of great variation of egg size, *H. scaphosomum* should perhaps be considered a synonym of *H. patellare* Yamaguti, 1938, which, however, appears to have a shorter prostatic vesicle.

The collection contained very numerous specimens closely resembling *H. lamelliforme* (Linton, 1907), known from *Balistes* in Bermuda and Tortugas, Florida. Some or all these specimens might well be *H. lamelliforme,* but a decision was finally made to describe them as new. These specimens agree with *H. lamelliforme* in that the vitellaria overlap the ceca ventrally, usually only in separated spots or areas, sometimes very generally along the length of the ceca. In living material these areas are sometimes seen to be elevated above the body surface, a character also occurring in *H. lamelliforme.* The new species differs from *H. lamelliforme* chiefly in possessing a long slender, muscular pars prostatica between the prostatic vesicle and the cirrus.

It is of some interest that one of the two species of *Hypocreadium* of the Mexican Pacific is extremely similar or identical to a Japanese species, the other is practically identical to a species of the tropical Atlantic.

Allocreadiidae

Pseudocreadium Layman, 1930.

Syn. (?) Hypocreadium Ozaki, 1936

Body small, relatively thick, broad oval-shaped with pointed cephalic and rounded caudal end. Cuticle smooth. Acetabular aperture median, equatorial or pre-equatorial or pre-equatorial, nearly the same size as oral sucker. Oral sucker subterminal, pharynx small, prepharynx very short, oesophagus short. Caeca undulating, extending to caudal end. Testes symmetrical or diagonal, intercaecal, in the caudal end of body. Genital pore, lateral, anterior to intestinal bifurcation. Cirrus pouch muscular, cirrus protrusile. Vesicula seminis externa present. Ovary round or ovoid, anterior to testes. Receptaculum seminis and Laurer's canal present. Uterus with descending and ascending coils, intercaecal, posteriorly more or less beyond the testes. Vitellaria lateral, extracaecal, somewhat invading intercaecal areas, post-pharyngeal.

Type species: Hypocreadium symmetrorchis

~~Host~~:

Other species: H. patellare Yamaguti, 1938

H. scaphosomum n. sp.

Allocreadiidae

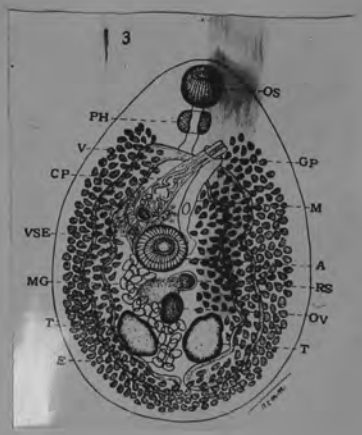
Hypocreadium symmetrorchis Ozaki, 1936

Body unarmed, rather broad and thick, tapering toward each end, widest and thickest at about midbody, more pointed anteriorly, 3.2mm long by 2.2mm in maximum breadth. Acetabulum at the centre of body, approximately the same size as oral sucker, 0.45mm in diameter. Oral aperture ventro-subterminal; oral sucker 0.37mm in diameter. Pharynx measures about 0.18mm in vertical and 0.26mm in transverse diameter; prepharynx very short; oesophagus about 0.2mm long; intestinal caeca undulating, terminate close to caudal margin, the ends approaching each other.

Testes slightly lobed, about 0.4mm in diameter, symmetrical, intercaecal, in the posterior end of body. Genital pore just anterior to intestinal bifurcation, slightly to the left side. Cirrus pouch muscular, long, straight, strongly developed, leading diagonally backward from genital pore to antero-lateral side of acetabulum gradually increasing to a greatest diameter near its base, containing a small simple vesicula seminis interna, globular pars prostatica, and long convoluted ejaculatory duct. Prostate gland cels outside of cirrus pouch. Cirrus usually exserted to some extent. Vesicula seminis externa conspicuous, sac-shaped or slightly curved, on the right side of acetabulum, connected with cirrus pouch by a narrow tubular region.

Ovary round or ovoid, small, about 0.15 - 0.2 x 0.2 -0.3mm, median, in front of testes. Receptaculum seminis anterior to ovary. Laurer's canal present, Shell gland anterior to ovary. Uterus emerging from shell gland, passes caudad between two testes and soon turns anteriad ascending to genital pore. Vitellaria not profusely developed, in sides of body from behind pharynx to extreme posterior tip of body. Eggs comparatively few, light yellow 0.06 to 0.072mm by 0.04 to 0.043mm.

Habitat: Intestine of marine fish Monacanthus cirrhifer Temminck & Schlegel.



Hypocreadium symmetrorchis n. sp. Ozaki, 1936

Body unarmed, rather broad and thick, tapering toward each end, widest and thickest at about midbody, more pointed anteriorly, 3.2 mm long by 2.2 mm in maximum breadth. Acetabulum at the centre of body, approximately the same size as oral sucker, 0.45 mm in diameter. Oral aperture ventro-subterminal; oral sucker 0.37 mm in diameter. Pharynx measures about 0.18 mm in vertical and 0.26 mm in transverse diameter; prepharynx very short; oesophagus about 0.2 mm long; intestinal caeca undulating, terminate close to caudal margin, the ends approaching each other.

Testes slightly lobed, about 0.4 mm in diameter, symmetrical, intercaecal, in the posterior end of body. Genital pore just anterior to intestinal bifurcation, slightly to the left side.

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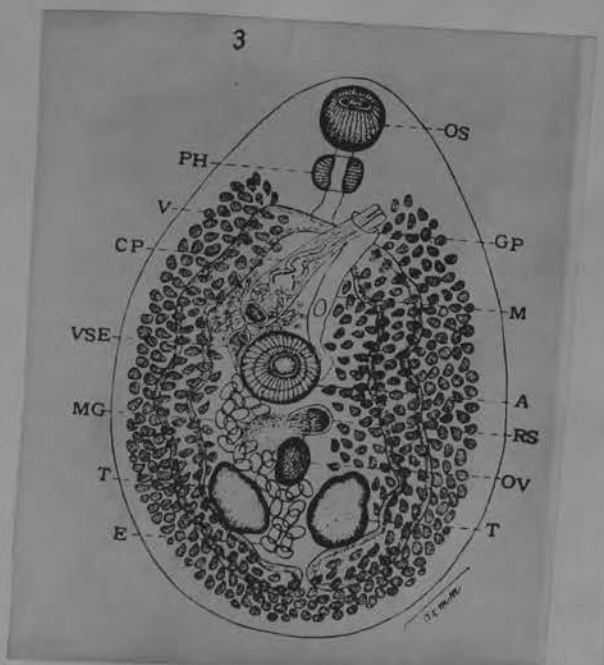

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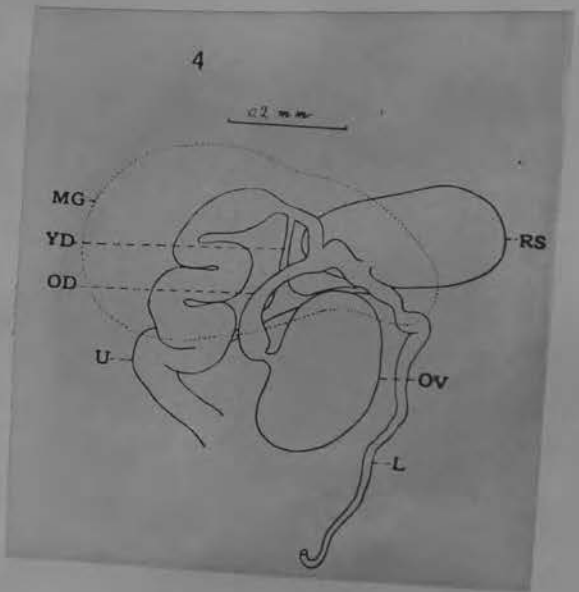


Hypocreadium

Hypocreadium

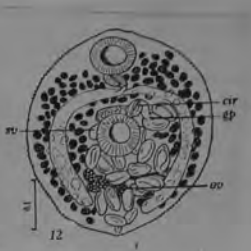
27. Pseudocreadium anandrum n. sp.

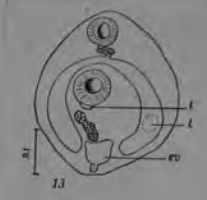
Figs. 12, 13

HOST: *Calamus calamus* (Cuv. & Val.), saucer-eye porgy; many specimens in 1 of 14 hosts examined.

LOCATION: Ceca.

Description (measurements on 10 specimens): Small, spiny distomes, almost circular in outline, rounded at each end; length 0.330 to 0.427 mm, width 0.300 to 0.382 mm, widest at midbody. Oral sucker subterminal, usually somewhat wider than long, 0.070 to 0.090 mm in transverse diameter. Acetabulum round, near or slightly anterior to midbody, size subequal with oral sucker, 0.068 to 0.090 mm in diameter; sucker ratio 1:0.83 to 1.1; in three specimens the ratio was 1:1. Prepharynx short; pharynx lying diagonally, 0.037 to 0.053 mm long by 0.031 to 0.042 mm wide; esophagus short; ceca rather wide, bowing outward then backward, ending blindly. Genital pore slightly to the left, opposite anterior portion of acetabulum. Testes apparently lacking in all except one specimen where rudimentary traces of testes were believed observed (Fig. 13); one was partly dorsal to the acetabulum, the other, slightly more posterior, was dorsal to the left cecum. Cirrus sac lying diagonally or almost horizontally along anterior border of acetabulum which it overlaps dorsally, about same length as diameter of acetabulum, containing a muscular cirrus, a large pars prostatica, and a rudimentary, empty seminal vesicle. External seminal vesicle small, empty; no sperm cells observed in any specimen. Ovary with few large lobes, about midway between acetabulum and posterior end, submedian or slightly to the right. Seminal receptacle not observed but probably obscured by eggs or vitellaria, perhaps greatly reduced because of lack of sperm cells. Vitellaria profusely developed, extending from oral sucker to near posterior end of body, dorsal to other organs, meeting medianly anterior and posterior to acetabulum, sometimes forming a continuous layer dorsal to all organs including the acetabulum, usually leaving a central space in acetabular region. Uterus extending posterior to ovary, sometimes almost to posterior end of body; metraterm very weakly developed, not seen in all specimens; eggs relatively large, 53 to 59 by 28 to 33μ. Excretory pore dorsal but close to posterior end of body; excretory vesicle with muscular terminal region, consisting of a broad sac extending to the ovary.





Discussion: This odd, minute, spiny trematode differs from all other species of *Pseudocreadium* in its small size, in the location of the genital pore as far posterior as the acetabulum itself, and in the degeneration of the male gonads. It might be considered a new genus but the atrophy of the male organs is perhaps an abnormality, and the character of the cirrus sac, the extent of the uterus, the lobed ovary, and other characters agree with *Pseudocreadium*. It is perhaps most similar to *P. symmetrorchis* (Ozaki, 1936) but differs, in addition to the points mentioned above, in distribution of vitellaria and in its lobed ovary.

The atrophy of male organs had caused all ten specimens of this trematode to become functionally females. The empty and rudimentary seminal vesicles suggests that sperm cells had never been produced, yet all eggs seemed normal and well developed. Such a lack of male organs has been noted in *Helicometra execta* Linton, 1910 (Manter, 1933) in which about half the individuals lack testes.

The genus *Pseudocreadium* was recently revised by the author (Manter, 1946). Since then, I have noted that the genus *Trigonotrema* Goto & Ozaki, 1929 is almost certainly a related genus. It is like *Pseudocreadium* in location of genital pore, character of cirrus sac and external seminal vesicle, symmetrical testes, intertesticular multilobed ovary, and other characters. *Trigonotrema* is described as without spines but these may have been lost. It is certainly not related to the Heterophyidae or Reniferidae as was suggested. It is distinguished from *Pseudocreadium* by body shape and lack of vitellaria in the anterior half of the body.

The name *anandrum* is from *an* = without; and *andro* = male and refers to the reduction of the testes.

Pseudocreadium anandrum Manter, 1947
Hosts: **Calamus arctifrons* (J); **C. ha-*
ado (J). JAMAICA
Site: intestine.
FROM NAHHAS AND CABLE (1964)

Hypocreadium

Pseudocreadium balistes Nagaty, 1942

Length 0.66 to 1.651 mm; width 0.73 to 1.785 mm; body unspined/
Oral sucker slightly smaller than ventral.
Oral sucker 0.072 to 0.141 mm.
Acetabulum 0.086 to 0.176 mm.
Pharynx 0.05 to 0.1 mm in diameter
Esophagus short; ceca wavy, curved inwards, end near post.end.
Testes symmetrical, smooth, in middle third, ovoid, longer than wide.
Cirrus sac elongated, obliquely anterior to acetabulum
Seminal vesicle divided into 3 to 4 portions the anteriormost in the cirrus sac the others outside.
Cirrus well developed, papillated, often protrudes from g.p.
Genital pore to left, at level of esophagus, anterior to cecum
Ovary smooth, elongated, between testes, clser to left testis.
Seminal receptacle large between left testis and acetabulum.
Vitellaria occupying a C-shaped area with the break anterior. both lateral and median to ceca; space between the externalmost follicles and the lateral and posterior edges of trematode equal in breadth to the extracecal band of vitellaria.
Eggs 68 to 86 by 45 to 59 u.
Excretory system not observed.
Host: Balistes aculeatus
Locality: Red Sea

move to Clavovarium n. gen. Manter in press

Hypocreadium dampieriae Yamaguti, 1942

Size 0.85 to 1. by 0.72 to 0.75 mm; lateral edges not curled
Small spines.
Oral sucker 0.090 wide; acetabulum 0.11 wide.
Prepharynx distinct; esophagus 45 to 55 u long, bifurcating at about middle of anterior third.
Ceca bowed ending at about middle of posterior third
Testes smooth, globular, symmetrical, just behind acetabulum, continguous to ceca
External sem.ves. twisted, reaching, in the type, to a point just posterior to acetabulum, surrounded anteriorly by prostate cells.
Pars prostatic well developed, strongly constricted off from internal seminal ves.
Cirrus sac gently curved, crossing commencement of left cecum ventrally, not overlapping acetabulum.
Genital pore on the left of pharynx
Ovary divided into four elongate lobes directed backward, between two testes
Seminal receptacle club-shaped.
Uterus entirely preovarian.
Vitellaria in lateral fields from level of esophagus to posterior end.
Eggs 60 to 70 by 38 to 40 u in balsam
Excretory vesicle ending at dextrodorsal side of acetabulum
Host: Dampieria hellmuthi (Bleeker)
Japan; Naha

Chief points of distinction: cirrus shorter than pars prostatica, anterior position of genital pore, peculiar lobes of ovary, profuse vitellaria.

Yamaguti believes Pseudocreadium scaphostomum and P. spinosum should be in Hypocreadium because of the intertesticular ovary. He prefers to keep H. patellare in Hypocreadium.

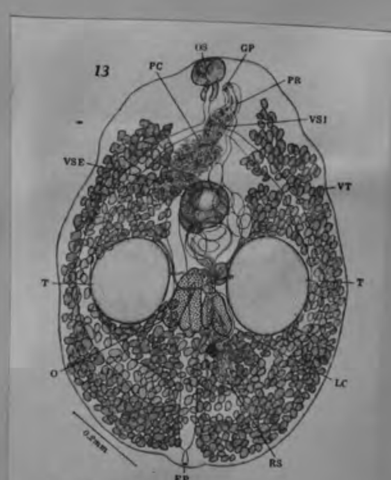


Fig. 13. *Hypocreadium dampieriae*, ventral view.

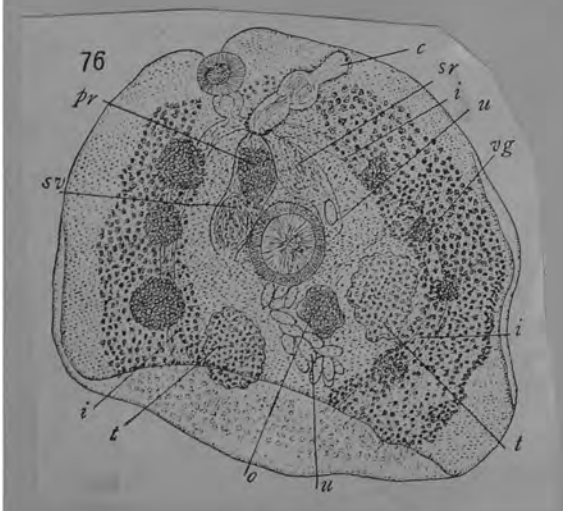
Hypocreadium

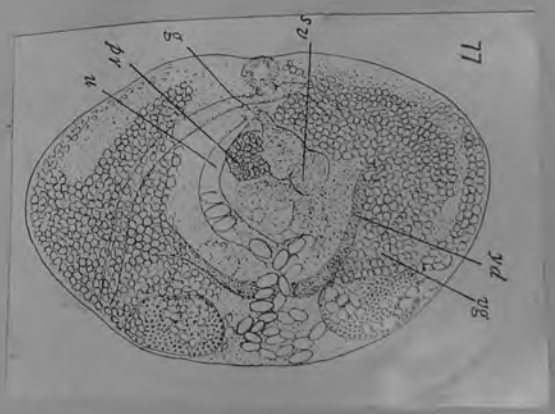
Pseudocreadium lamelliforme (Linton, 1907), n. comb.

In 1907, Linton named *Distomum lamelliforme* from *Balistes capriscus* Gmelin (= *Balistes carolinensis* Gmelin), the triggerfish, and from *Lactophrys tricornis* (Linn.) and *L. trigonus* (Linn.) trunkfishes, at Bermuda. It is clear from Linton's description and figures and from study of type and other specimens from *Balistes*, the type host, that *Distomum lamelliforme* belongs in the genus *Pseudocreadium*, and that the specimens from trunkfishes are *Dermadena lactophrysi*. Linton did not describe or figure the ventral glands of the latter but the arrangement and size of the structures he termed vitellaria in the specimens from trunkfishes make it clear that these were actually groups of vitellaria at the bases of the glands. The following measurements of *P. lamelliforme* are from three specimens on the slide of type specimens and six specimens from the "turbot" (*Balistes*, probably *B. capriscus*) at Bermuda. Length 0.999 to 1.952 mm, width 0.931 to 2.133 mm; oral sucker 0.082 to 0.142 mm in diameter; acetabulum 0.122 to 0.210 mm in diameter; sucker ratio 1 : 1.23 to 1.62; eggs 63 to 68 by 34 to 44 μ.

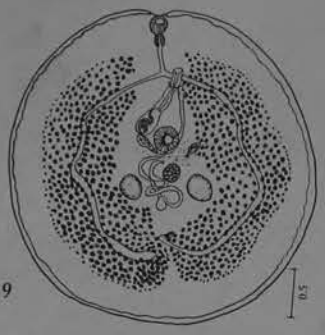
P. lamelliforme is so similar to *P. scaphosomum* Manter, 1940, that they should perhaps be considered the same. Sizes and sucker ratios agree. Eggs of *P. lamelliforme* average larger, with both upper and lower limits larger, although there is overlapping. The only detail observed which seemed to be constantly different is the shape of the external seminal vesicle. In all 47 specimens of *P. lamelliforme*, the external seminal vesicle is straight and sac-like, whereas in all of 31 specimens of *S. scaphosomum* the vesicle is tubular and sinuous, curved at least once and commonly S-shaped. Like *P. scaphosomum*, *P. lamelliforme* has a bipartite prostatic vesicle and when retracted the cirrus is somewhat folded or curved within the sac. *P. balistes* Nagaty, 1942, seems to differ chiefly in its bipartite external seminal vesicle and somewhat larger eggs.

From Manter 1946
J.P.





Also at Bimini
see Togaudares (over)



Pseudocreadium lamelliforme (Linton, 1907) Manter, 1946

Host.—*Balistes vetula* Linn., queen triggerfish [new host record].

Location.—1/4 intestine and 1/2 intestine.

Locality.—Lerner fish pens, and N. shore, N. Bimini, B.W.I.

From Sogandares 1959

Pseudocreadium lamelliforme (Linton, 1907) Manter, 1946

Synonym: Distomum lamelliforme Linton, 1907.

Host: Balistes vetula (J). Jamaica

Site: intestine.

From Nahhas and Cable (1964)

Pseudocreadium lamelliforme (Linton, 1907) Manter, 1946

Distomum lamelliforme Linton, 1907 (in part).

Host: *Balistes capriscus* (2 of 4).

Site: Intestine.

Discussion: The excretory sphincter in my species of *Pseudocreadium*, especially *P. lamelliforme*, gives a false impression of 5 to 10 large, radial spines.

Nahhas and Cable (1964:193-194) described *P. lactophrysi* and pointed out that Linton (1907:108-109) probably considered that species, *Dermadena lactophrysi*, and *P. lamelliforme* as a single species.

Overstreet, 1969

From Manter, 1946

Hypocreadium myohelicatum, n. sp. (Figs. 3-5)

Bravo & Manter, 1957

HOSTS: *Balistes capistratus* (Shaw), "botas."

LOCATION: Intestine.

LOCALITY: Puerto Vallarta, Jalisco.

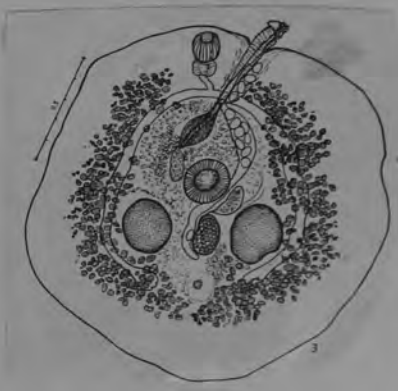
NUMBER: Numerous.

HOLOTYPE: U. S. Nat. Mus. Helm. Coll. No. 38184.

DESCRIPTION (measurements on 4 specimens selected for range): Body broadly rounded, wider than long, length 1.3 to 1.66, greatest width 1.4 to 1.9. Oral sucker 0.116 to 0.13 long by 0.121 to 0.13 wide. Acetabulum just anterior to midbody, 0.133 to 0.22 long by 0.138 to 0.207 wide. Sucker ratio 1:1 to 1.6. Pharynx globoid, 0.066 to 0.078 long by 0.084 to 0.109 wide; esophagus 1 to 1½ times length of pharynx; intestinal bifurcation ½ distance between anterior end of body and acetabulum; ceca bowed, slightly undulate, ending at level of excretory pore. Genital pore to left near level of intestinal bifurcation, ventral to left cecum or slightly anterior or posterior to cecum. Testes more or less spherical, symmetrical, immediately postacetabular, separated by ovary and uterus. Cirrus sac elongate clavate, diagonal from genital pore to right anterior edge or acetabulum or overlapping right edge to about ¼ acetabulum length. Wall of cirrus sac with conspicuous diagonal or spirally arranged muscles. Internal seminal vesicle sac-lake; prostatic vesicle tapering anteriorly, straight, single or inconspicuously bipartite; pars prostatica a narrow tube with circular muscles, often irregularly constricted, as long as prostatic vesicle or longer; cirrus with prominent papillae, often protruded with swollen, bulb-like tip. External seminal vesicle an elongate, straight sac, lying along right side of acetabulum. Numerous gland cells around cirrus sac and external seminal vesicle. Ovary ovoid, often elongate, smooth, between testes. Seminal receptacle elongate between ovary and acetabulum, to the left. Vitellaria not reaching sides of body; some follicles, usually in scattered groups, ventral to ceca. Uterus extends posterior to ovary. Metraterm very muscular, extending to about mid-acetabular level. Eggs 0.064 to 0.077 long by 0.04 to 0.05 wide. Excretory pore dorsal, between ends of ceca, muscular, with 8 or 9 radially arranged spine-like projections.

The name *myohelicatum* is from *myo*, muscle and *helikos*, spiral. It refers to the muscles of the cirrus sac.

DISCUSSION: This species is very similar to *D. lamelliforme*. It was at first thought to be distinct because of the very conspicuous diagonal muscles of the cirrus sac. Restudy of specimens of *H. lamelliforme* from Bermuda and Florida shows such muscles occur in that species, also, although they are not conspicuous. The degree of conspicuousness probably varies. *H. myohelicatum* is distinguished by the slender, long and very muscular prostatic duct. It differs from *H. scaphosomum* in the occurrence of at least some vitellaria ventral to the ceca.



Sogandares (1959) considers this species a synonym of Pseudocreadium scaphosomum) and reported it from Balistes naufragium and B. verres at Bimini

Pseudocreadium scaphosomum, ~~new species~~ MANTER, 1940
(Plate 35, figs. 28, 29)

Hosts: *Balistes polylepis* Steindachner (type host)
B. verres Gilbert and Starks

Location: Intestine

Localities: Socorro and Clarion islands, Mexico, (type locality)—in *B. polylepis*
Charles Island, Galapagos
Isabel Island, Mexico,—in *B. verres*

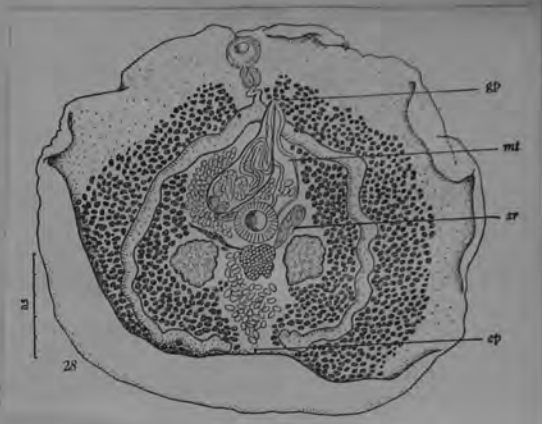
Number: Few to many present in 2 specimens of each host

Allocreadiidae

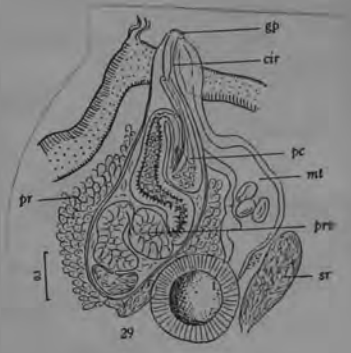
Hypocreadium

SPECIFIC DIAGNOSIS OF PSEUDOCREADIUM SCAPHOSOMUM

Body flat and thin, subcircular, with very thin inrolled edges giving it a bowllike appearance; edges (when flattened by pressure) more or less frilled; cuticula smooth except for a few spines seen near the anterior end of some specimens. Probably a few easily lost spines are normally present. The body may be somewhat longer than wide or wider than long; length 1.552 to 2.268; width (at midbody level) 1.620 to 2.078 (specimens from *B. verres* somewhat smaller). Oral sucker subterminal, subcircular, 0.112 to 0.165 in diameter; acetabulum just anterior to midbody, only slightly larger than oral sucker, 0.165 to 0.195 in diameter. Forebody 0.675 to 0.937. Pharynx 0.068 to 0.102 long by 0.058 to 0.097 wide; esophagus long and narrow, almost as long as pharynx; ceca conspicuous, undulating, diagonally diverging backward, then bowed, some distance from edges of body, tips converging and almost meeting before ending blindly well anterior to posterior end of body. The ceca thus arch around a central area containing most of the reproductive organs. Excretory pore dorsal, median, between tips of ceca; excretory vesicle extending, dorsal to uterus, to near acetabulum where it gives off an anterior and a posterior pair of tubules.



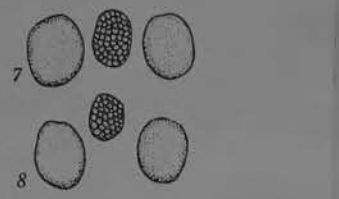
Genital pore slightly to the left, opposite posterior end of esophagus. Testes symmetrical, immediately posterior to acetabulum, smooth or slightly irregular in outline, intercecal, separated by ovary. Cirrus sac (fig. 29) large, claviform, extending from genital pore diagonally backward, overlapping anterior half of acetabulum. In its base is a small, transversely extended, ovoid seminal vesicle followed by a large bipartite prostatic vesicle. Posterior portion of prostatic vesicle larger and more elongate, connected by a posteriorly directed, narrow duct with the more spherical anterior portion. Basal portion of cirrus papillated, filling most of the anterior half of the sac, making one backward loop, anterior portion smooth, muscular. Genital atrium short. External seminal vesicle present, short, tubular, little coiled. Prostate gland large, entirely external, surrounding most of cirrus sac. Ovary more or less lobed, median, intertesticular, immediately postacetabular. Vitellaria of small follicles copiously distributed on both sides of ceca but not covering them dorsally or ventrally, not extending to edges of body by some distance. Seminal receptacle elongate, along left side of acetabulum. Uterus extending backward in narrow, median coils to level of excretory pore, then forward to metraterm; metraterm large, muscular, overlapping acetabulum. Eggs thin shelled, usually 51 to 56 by 32 to 44 μ, but in one specimen up to 66 μ in length, and in another as narrow as 26 μ.



The name *scaphosomum* is from scapho (=bowl) and *somum* (=body), and refers to the shape of the body.

P. scaphosomum is most similar to *P. patellare*. In *P. patellare*, however, the eggs are larger (63 to 81 by 33 to 43 μ), the ovary smooth, the ceca less undulating, and the prostatic vesicle is undivided and the cirrus straight. *P. symmetrorchis* is different in body shape, sucker ratio, more posterior testes, and unlobed ovary. *P. monocanthi* has a more lobed ovary, more anterior uterus, and smoother testes.

FROM: ALLAN HANCOCK PACIFIC EXPEDITIONS, Vol. 2, No. 14.



from Sogandares 1959

Pseudocreadium scaphosomum Manter, 1940

Host.—*Balistes naufragium* Jordan & Starks, cochino [new host records]; *Balistes verres* Gilbert & Starks, pez puerco.

Location.—Intestine, near pyloric junction.

Locality.—Taboga Island, Panama Pacific.

Discussion.—Caballero et al (1953) reported *P. scaphosomum* from *Balistes polylepis* (type host) in Panama. Bravo and Manter (1957) named *Hypocreadium myohelicatum* from the intestine of *Balistes capistratus* (=*Balistes verres*). They differentiated *H. myohelicatum* from *H. scaphosomum* (=*Pseudocreadium scaphosomum*) on the basis of vitellaria overlapping the ceca in the former but not the latter species. I examined the paratype series of *P. scaphosomum* and found that at least a few vitellaria always overlap the ceca. *H. myohelicatum* is here considered a synonym of *Pseudocreadium scaphosomum.*

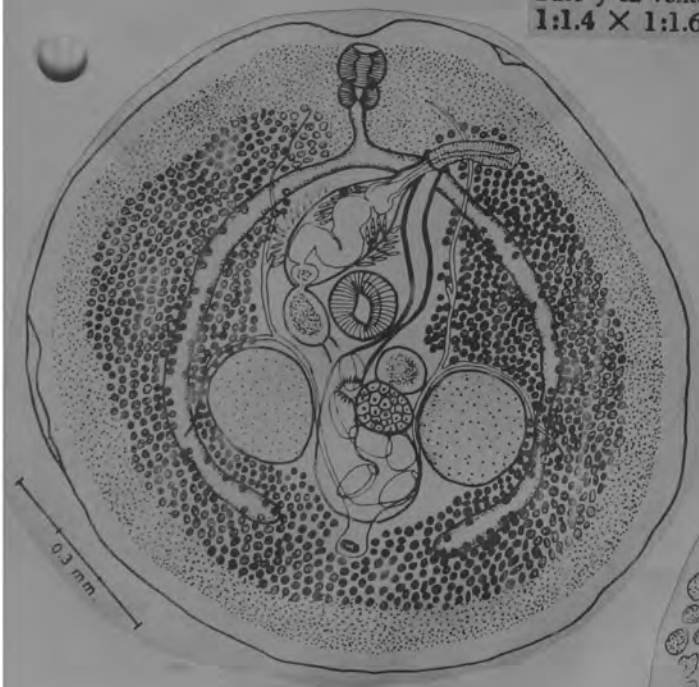
Pseudocreadium scaphosomum Manter, 1940
(Figs. 4-5)

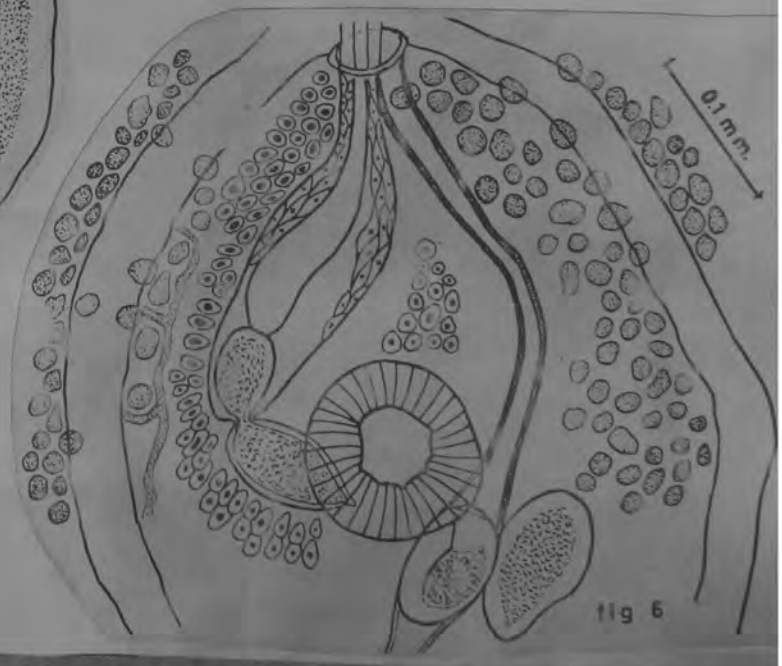
Huésped: *Verrunculus polylepis* (Steindachner) Syn.: *Lalistes polylepis* Steindachner 1876.
Habitat: Intestino delgado.
Localidad: Bahía Kino, Son., Golfo de California, México.
Número de ejemplares: 20.
Ejemplares depositados en la Colección Helmintológica del Instituto de Biología con el N° 218-22.

La presente redescripción está basada en el estudio de 10 ejemplares de preparaciones totales, teñidas con paracarmín de Mayer unas y con hematoxilina de Delafield otras, de las cuales dos eran formas inmaduras. Las medidas fueron tomadas de 3 ejemplares.

DESCRIPCIÓN. Son parásitos pequeños, de cuerpo plano semicircular, más ancho que largo, de contorno liso, no festonado, que no presenta espinas. Mide de 0.926 a 1.711 mm. de largo por 0.944 a 1.663 mm. de ancho. La ventosa oral simple es subterminal y se encuentra muy cercana al borde anterior del cuerpo que en esa región presenta una pequeña escotadura, de contorno más o menos esférico, es musculosa y mide de 0.064 a 0.086 mm. de largo por 0.076 a 0.101 mm. de ancho. El acetábulo, ligeramente preecuatorial es un poco más grande que la ventosa oral, esférico, musculoso, de abertura longitudinal, mide 0.123 a 0.150 mm. de largo por 0.123 a 0.146 mm. de ancho. La relación que existe entre el acetábulo y la ventosa oral es la siguiente: 1:1.7 × 1:1.9 de largo por 1:1.4 × 1:1.6 de ancho.

(over)





La boca que es terminal no se pudo medir, ésta se abre en medio de la ventosa oral, existe una pequeña prefaringe; la faringe un poco menor que la ventosa oral, es musculosa y más o menos globoide, mide de 0.048 a 0.067 mm. de largo por 0.070 a 0.082 mm. de ancho. El esófago corto no musculoso mide de 0.072 a 0.108 mm. de largo por 0.020 a 0.022 mm. de ancho; la bifurcación intestinal se encuentra a la mitad de la distancia entre el borde anterior del cuerpo y el acetábulo, los ciegos intestinales, son amplios y en las formas inmaduras presentan constricciones, miden de 0.037 a 0.062 mm. de ancho, son más o menos ondulados y ligeramente sinuosos, que abrazando a los órganos reproductores, terminan hacia la línea media, al nivel del poro excretor y dejando un espacio libre que se encuentra ocupado anteriormente por el útero y posteriormente por la vesícula excretora. El poro genital se abre en el lado izquierdo del cuerpo y cerca del nivel de la bifurcación intestinal quedando ventral y ligeramente anterior al ciego izquierdo. El poro genital se encuentra a una distancia de la extremidad anterior que varía de 0.185 a 0.318 mm.

Los testículos son grandes ovoideos, más o menos simétricos, inmediatamente postacetabulares e intercecales separados entre sí por el ovario y el útero; mide el derecho de 0.176 a 0.285 mm. de largo por 0.160 a 0.266 mm. de ancho; y el izquierdo de 0.188 a 0.307 mm. de largo por 0.172 a 0.266 mm. de ancho. La bolsa del cirro es larga, claviforme y se encuentra situada oblicuamente desde el poro genital hasta el borde derecho del acetábulo, quedando su borde posterior a nivel del tercio anterior de la longitud total del acetábulo. La vesícula seminal está formada por dos porciones, la interna es ovoidea muy pequeña y ocupa la porción más posterior de la bolsa del cirro, mide de 0.030 a 0.052 mm. de largo por 0.033 a 0.086 mm. de ancho. La externa mucho más grande que la interna es ovoide, se encuentra situada entre la bolsa del cirro, el borde derecho del acetábulo y el polo superior del testículo derecho y mide de 0.078 a 0.120 mm. de largo por 0.063 a 0.1 mm. de ancho; a su extremidad posterior desembocan separadamente los conductos eferentes que salen de los bordes internos de cada uno de los testículos y que se cruzan sin unirse al nivel de ovario. La pars prostática ocupa la parte media y anterior de la bolsa del cirro, es grande y se encuentra rodeada por células prostáticas externas alargadas; el cirro es cilíndrico y con papilas prominentes que le dan un aspecto estriado transversalmente, mide de 0.142 a 0.311 mm. de largo por 0.030 a 0.120 mm. de ancho. Algunas células glandulares se encuentran rodeando a la bolsa del cirro sobre todo en su porción media y anterior.

El ovario es ovoideo, a veces un poco esférico, más largo que ancho, de borde liso, intertesticular, casi siempre cargado sobre el lado interno del testículo izquierdo, mide de 0.090 a 0.172 mm. de largo por 0.088 a 0.176 mm. de ancho.

El receptáculo seminal es grande casi del mismo tamaño que el ovario, esférico y algunas veces ovoideo de contornos lisos, se encuentra a la izquierda situado entre el testículo derecho, el borde inferior del acetábulo y el borde superior del ovario, tocándolo por sus bordes en algunos ejemplares; mide de 0.080 a 0.136 mm. de largo por 0.048 a 0.064 mm. de ancho. La glándula de Mehlis es pequeña y se encuentra por debajo del ovario, no se observó el canal de Laurer. El útero es pequeño, ocupa el área intertesticular y se extiende por debajo del borde posterior de los testículos, el metra-

(continued)

Pseudocreadium scaphosomum Manter, 1940

(continued)

terno de paredes musculosas se extiende desde el borde inferior del acetábulo y sigue por su lado izquierdo corriendo paralelamente con la bolsa del cirro hasta que desemboca en el poro genital, mide de 0.341 a 0.434 mm. de largo. Los huevecillos poco numerosos, son grandes, oblongos, lisos, de cáscara amarilla y delgada miden de 0.060 a 0.093 mm. de largo por 0.033 a 0.064 mm. de ancho.

Las glándulas vitelógenas están formadas por numerosos folículos pequeños casi esféricos que se encuentran desde el borde posterior de la faringe hasta la terminación de los ciegos intestinales, ocupan una área más o menos central, pero que no llega a los bordes del cuerpo, y se encuentran rodeando dorsal y lateralmente a los ciegos, muy pocos folículos vitelógenos se encuentran ventralmente sobre los ciegos intestinales. El poro excretor es dorsal y medio se encuentra al mismo nivel de la terminación de los ciegos intestinales, es muscular y presenta de 8 a 10 proyecciones radiales en forma de espinas, la vesícula excretora es alargada y sacciforme dorsal al útero, ocupa el área comprendida entre los ciegos intestinales llegando muy cerca de la extremidad posterior de la vesícula seminal externa, pero antes da dos vasos colectores que se bifurcan a su vez al nivel del polo superior de los testículos, dando uno anterior y otro posterior.

DISCUSIÓN. He considerado a este parásito como *Pseudocreadium scaphosomum* Manter, 1940, por coincidir la gran mayoría de sus rasgos anatómicos con la de los ejemplares descritos por el Dr. Manter. Aunque existen pequeñas diferencias, estas son: el ejemplar redescrito en este trabajo es más pequeño, el ovario no es lobado sino ovoide y de bordes lisos y los huevecillos son mayores, ya que miden de 0.060 a 0.093 mm. de largo por 0.033 a 0.064 mm. de ancho.

Se considera también en este trabajo al género *Hypocreadium* como sinónimo de *Pseudocreadium*, ya que me parece que los caracteres dados por Yamaguti, en 1953 para la diagnosis genérica del género *Hypocreadium*, no son lo suficientemente constantes para la creación de este nuevo género. Considero que el Dr. F. Sogandares-Bernal (1959) Loc. cit., tiene razón al respecto, puesto que existe gran variación entre la posición del ovario, que puede ser intertesticular, o pretesticular y la extención del útero que también es muy variable.

Skrjabin (1960) considera dentro del género *Pseudocreadium* a *Pseudocreadium balistes* Nagaty, 1942; a *P. myohelicatum* (Bravo-Hollis y Manter, 1957); a *P. sohali* Nagaty, 1942; y a *P. vitellosum* (Ozaki, 1936).

Manter (1945) pasa del género *Pseudocreadium* al género *Lepocreadium* a *P. balistes* Nagaty, 1942; a *P. elongatum* Nagaty, 1942; a *P. sohali* Nagaty, 1942; y a *P. vitellosum* (Ozaki, 1936) Manter, 1940. (Syn.: *Leptocreadium vitellosum* Ozaki, 1936).

De acuerdo con el Dr. F. Sogandares Bernal las especies del género *Pseudocreadium* a la fecha son: *P. anandrum* Manter, 1947 (Syn.: *H. anandrum* (Manter, 1947) Yamaguti, 1953; *P. biminensis* Sogandares-Bernal, 1959; *P. dampieri* (Yamaguti, 1942) (Syn.: *H. dampieri* Yamaguti, 1942) *P. galapagoensis* Manter, 1945; *P. lamelliforme* (Linton, 1907) Manter, 1945; *P. monacanthi* Layman, 1930 (Syn.: *Leptocreadium skrjabini* Ozaki, 1936); *P. ovale* Yamaguti, 1942; *P. patellare* (Yamaguti, 1938) Manter, 1940; *P. scaphosomum* Manter, 1940 (Syn.: *P. myohelicatum* Bravo-Hollis y Manter, 1947); *P. spinosum* Manter, 1940; *P. symentrorchis* (Ozaki, 1936) Manter, 1940.

The second species correspond to the described specimens by Dr. H. W. Manter in 1940; found in the *Verrunculus polylepis* fish, for me from Kino Bay in Sonora State, Baja California Gulf, Mexico, but it is different from this, for the smaller size of the body, for the not lobed ovary, but ovoide and the eggs are bigger the dimension are 0.060 to 0.093 mm. long by 0.033 to 0.064 mm. wide; this are considered only specific variations.

LAMOTHE A, 1963

Pseudocreadium scaphosomum
Manter, 1940

Hypocreadium scaphosomum (Manter, 1940) Yamaguti, 1942.

Host: *Monacanthus hispidus* (3 of 6)*.
Site: Intestine.

Discussion: Opinion differs as to synonymy between *Hypocreadium* Ozaki, 1936, and *Pseudocreadium* Layman, 1930, and also among the various species assigned to those genera. Sogandares-Bernal (1959:75) and Nahhas and Cable (1964:193) considered *Hypocreadium* a synonym of *Pseudocreadium*, and Manter (1946:414) questioned whether the same may be true of *P. scaphosomum* Manter, 1940, and *P. lamelliforme* (Linton, 1907). Also Bravo-Hollis and Manter (1957:38) were hesitant as to whether *P. scaphosomum* was a synonym of *P. patellare* (Yamaguti, 1938). *Pseudocreadium lamelliforme* (Linton, 1907) and *P. myohelicatum* (Bravo-Hollis and Manter, 1957) are usually separated from *P. patellare* and *P. scaphosomum* by possessing some vitelline follicles which overlap the caeca ventrally. However, Sogandares-Bernal (1959:76) found at least a few such follicles in a series of paratypes of *P. scaphosomum* and considered *P. myohelicatum* its synonym.

My specimens can be placed in three groups: one of 5 individuals 1.0 to 1.3 long with eggs 51 to 80 by 35 to 47 microns are from 2 specimens of *M. hispidus* 9 cm long; another of 7 individuals 1.5 to 1.7 long with eggs 56 to 71 by 39 to 43 microns are from 1 specimen of *M. hispidus* 26 cm long; and a third of 17 individuals 0.9 to 1.6 long with eggs 56 to 75 by 32 to 43 microns are from 3 specimens of *Balistes capriscus*. The three groups are alike in most respects: they have smooth to lobed gonads; long, sinuous, divided prostatic vesicle; sinuous cirrus when inverted; variable extent of caecal undulations; genital pore ventral or slightly anterior to caeca; and extremely muscular distal portion of the metraterm. I place these specimens in two species, primarily on the basis of their vitelline arrangement; that is: *P. scaphosomum* from *M. hispidus* and *P. lamelliforme* from *B. capriscus*. Although vitellaria in a few specimens of *P. scaphosomum* are partially ventral to the caeca, the worms from *M. hispidus* are distinct from *P. lamelliforme* and five paratypes of *P. myohelicatum* on a slide lent by Dr. H. W. Manter. The vitellaria in *P. myohelicatum* are not intensive or in clusters and neither *P. lamelliforme* nor *P. myohelicatum* have vitellaria restricted from the caecal zone as in *P. scaphosomum*. For this reason, I consider *P. myohelicatum* a valid species, rather similar to *P. balistis* Nagaty, 1942 (originally *P. balistes*), which also has a short, reasonably straight prostatic vesicle, but a distinctly-partitioned external seminal vesicle. The internal seminal vesicle is extremely muscular, especially in *P. scaphosomum*, and may be spherical, bipartite, or teardrop in shape, depending on contraction. Width of muscular constriction of the prostatic vesicle varies, and the external seminal vesicle may be sinuous, tubular, or saccate.

Additional observations may reveal that *P. patellare* is conspecific with *P. scaphosomum*, and *P. lamelliforme* with *P. myohelicatum*, or possibly that all four are the same species. Illustrations of *P. scaphosomum* from *B. polylepis* by Lamothe (1963:102-108) and Caballero *et al.* (1953:117–121) indicate variability of that trematode.

Overstreet, 1969

Also Heron Island, Queensland (Y4(5d)

13. *Pseudocreadium scaphosomum* Manter, 1940.

Hospedador: *Balistes polylepis* Steindachner.
Localización: intestino.
Distribución geográfica: Isla Angel de la Guarda, Bahía Santa Inés, Bahía San Francisquito, Baja California, México.

Yamaguti (1958) colocó esta especie en el género *Hypocreadium* Ozaki, que Manter (1940) consideró sinónimo de *Pseudocreadium* Layman. Los caracteres previamente usados para diferenciar en apariencia a los miembros de los géneros, fueron la cutícula lisa, el ovario no lobulado, y el útero que no se extiende más allá del testículo, en *Hypocreadium*. Manter (loc. cit.) indicó la naturaleza variable de estos caracteres en especímenes de *P. scaphosomum* de su colección. En la presente colección de sesenta y uno especímenes, fue notada una variabilidad similar de los caracteres. A causa de estas observaciones, este investigador está de acuerdo con la opinión de Manter. Las especies que figuran en el género *Pseudocreadium* son: *P. anandrum* Manter, 1947; *P. dampieriae* Yamaguti (1942); n. comb; *P. galapagoense* Manter, 1946; *P. lamelliforme* (Linton, 1907); *P. monacanthi* Layman, 1930; *P. patellare* (Yamaguti, 1938) n. comb.; *P. ovale* Yamaguti, 1942; *P. scaphosomum* Manter, 1940; *P. sohali* Nagaty, 1942; *P. spinosum* Manter, 1940; *P. symmetrorchis* (Ozaki, 1936) n. comb. y *P. vitellosum* (Ozaki, 1936).

From: Arai, H.P., 1962

Pseudocreadium spinosum, new species MANTER, 1940

Host: Caulolatilus sp. (whitefish)

Location: Intestine

Locality: James Island, Galapagos

Number: Large numbers were collected from a single host. In the same fish were *Lecithochirium microstomum* and *Choanodera caulolatili*.

Hypocreadium

Allocreadiidae

SPECIFIC DIAGNOSIS OF PSEUDOCREADIUM SPINOSUM

Sides of the thin, flattened body are curled over ventrally especially along the lateral edges and sometimes to a lesser degree along the posterior edge. If flattened out, the body would be as wide as long or even wider, but this condition is rarely seen. Length 0.592 to 1.053. A specimen 0.510 long contained no eggs. Body width measurements (0.562 to 1.053) are usually not precise because of the ventral folding of the lateral edges. Both ends are broadly rounded; anterior end likely to be more truncate. Spines conspicuous in anterior half of body and extend posteriorly almost to the end of the body. Suckers weakly muscular. Oral sucker circular, subterminal, a short distance from anterior end, 0.071 to 0.116 in diameter; acetabulum near middle of body or slightly anterior to middle, circular or subcircular, 0.107 to 0.168. Sucker ratio approximately 3:4. Forebody slightly more than ⅓ body length. Prepharynx wide; pharynx globular (0.042 to 0.068 in diameter); esophagus short. Ceca unbranched, not undulating, curving backward distant from sides of body, passing closely outside testes and curving a short distance medianly just posterior to testes, ending blindly. Ceca very inconspicuous and partly covered by vitellaria. Genital pore to left of midline about midway between suckers, opposite or just median to left cecum. Testes symmetrical, just posterior to acetabulum, intercecal, separated by ovary and uterus, longer than wide with the long axis extending diagonally backward, outline smooth to definitely lobed. Cirrus sac elongate, clavate, large, extending from genital pore diagonally backward to overlap the right half of acetabulum. In a 1.012 specimen the cirrus sac was 0.310 by 0.088. It contains a subtriangular seminal vesicle, a bipartite prostatic vesicle the posterior ⅔ of which is usually recurved, the anterior ⅓ globular; cirrus large, straight, wide, inflated, filling approximately ½ cirrus sac, with papillated inner surface, tapering to a short smooth muscular portion near genital pore. The few prostatic cells are external to cirrus sac near its base. Tubular external seminal vesicle extends to left of base of cirrus sac usually overlapping the acetabulum.

31

30

Ovary variable in shape, usually irregularly lobed and elongate; it may be smooth and almost globular. A roughly triangular form is not uncommon. Seminal receptacle an elongate tube extending anterior to ovary along left side of acetabulum. The uterus may extend as far posterior as the posterior edge of the testes. Eggs few, yellow, thin shelled, 60 to 75 by 32 to 41 μ, usually 60 to 65 by 34 to 37 μ. Metraterm strongly muscular, slender, slightly curved, overlapping acetabulum. Vitelline follicles profuse, filling most of body from pharynx to posterior end, contiguous anteriorly and dorsally at level of esophagus and, if body is contracted, as far forward as the oral sucker. They are dorsal to the ceca as well as inter- and extracecal. They usually are not contiguous posteriorly but separated by a region around the excretory pore. They do not extend to the lateral edges of the body. Excretory pore conspicuous, dorsal, some distance anterior to posterior end, between the tips of the ceca; excretory vesicle extending straight forward to the ovary.

Comparisons. *P. monocanthi* and *P. vitellosum* differ from *P. spinosum* in larger size, in multilobed ovaries, and in smooth rounded testes. *P. monocanthi* also differs in that its suckers are of equal size and the vitelline lobes are separated anteriorly. *P. vitellosum* has more profuse vitellaria, diagonal testes close together and postovarian, suckers of equal size, and smaller eggs. *P. scaphosomum* has the vitellaria interrupted anteriorly, more undulating ceca, and a curved or coiled cirrus. *P. symmetrorchis* is larger, has more rounded seminal receptacle, vitellaria interrupted anteriorly, and more posterior extent of the uterus. *P. patellare* has a different distribution of the vitellaria, more anterior genital pore, longer cirrus, and more posterior extent of the uterus.

FROM - ALLAN HANCOCK PACIFIC EXPEDITIONS, VOL. 2, NO. 14

HYPOCREADIUM

INTUSATRIUM Durio & Manter, 1968

Body elongate, spined. Prepharynx, pharynx, and esophagus all well developed; pharynx with circular muscles in anterior half. Testes tandem; external seminal vesicle tubular, without prostatic cells; cirrus sac present; cirrus very short, sucker like, at tip of cellular bulb; prostatic cells few.

Ovary pretesticular; seminal receptacle present. Laurer's canal present; vitellaria follicular; mostly postacetabular; uterus preovarian; eggs fairly large, often present in an atrial sac within the cirrus sac; metraterm present, not entering cirrus sac. Excretory vesicle I-shaped.

Type species: I.robustum

INTUSATRIUM Durio & Manter, 1968

Diagnosis of Intusatrium: Body elongate, spined. Prepharynx, pharynx, and esophagus all well developed; pharynx with circular muscles in anterior half. Testes tandem; external seminal vesicle tubular, without prostatic cells; cirrus sac present; cirrus very short, suckerlike, at tip of cellular bulb; prostatic cells few. Ovary pretesticular; seminal receptacle present; Laurer's canal present; vitellaria follicular, mostly postacetabular; uterus preovarian; eggs fairly large, often present in an atrial sac within cirrus sac; metraterm present, not entering cirrus sac. Excretory vesicle I-shaped.

Type species: I. robustum.

The name *Intusatrium* is from *intus* = within; and *atrium*, referring to the atrial sac within the cirrus sac. The name *robustum* = strong, refers to the thick body.

Discussion

This genus is related to *Neocreadium* Howell, 1966 from *Geniagnus monopterygius* in New Zealand. Similarities include the glandless external seminal vesicle, the male tube within the cirrus sac, and short knoblike cirrus. It differs in lacking the branched lymphatic vessels and in possessing the peculiar, internal atrial sac. Another related genus is *Neolepocreadium* Thomas, 1960 from *Trachinotus* sp. in Ghana. *Neolepocreadium* seems to be like *Neocreadium* except that it lacks a lymphatic system. Thus, it differs from *Intusatrium* in lacking the atrial sac; in the size, shape, and location of the pharynx; and in the median genital pore. The atrial sac may be easily overlooked unless its possible position is known, but these three genera seem to be valid.

Nagaty (1948) has described a "metraterm pouch" for his genus *Hairana* (with two species) from *Acanthurus* sp. in the Red Sea. A specimen identified as *Hairana magnus* Nagaty, 1948, was collected from *Acanthurus mata* (Cuv.) at Heron Island, Australia. The so-called "metraterm sac" is filled with eggs but seems to be within a terminal expansion of the cirrus sac, while the metraterm is closely outside the cirrus sac. A pair of convoluted lymphatic vessels occurs in each side of the forebody of the Australian specimen and the elongate testis is crenated. *Hairana* appears to be nearer the Haploporidae than to the Lepocreadiidae since it lacks a seminal receptacle and may have lymphatic vessels.

Additional similarities of *Intusatrium* to the Haploporidae will be discussed in connection with the following species.

Intusatrium robustum Durio & Manter, 1968

Intusatrium robustum **gen. et sp. n.**
(Figs. 15–16)

Host: *Lepidaplois perditio* (Quoy and Gaimard); Labridae.

Location: Intestine.
Number: 10; present in both of 2 hosts examined.
Holotype: USNM Helm. Coll. No. 63315.
Description (measurements on 5 specimens): Body rather thick; spined (anterior ¾); broadly rounded at each end; widest at acetabular level; length 2.508 to 3.439 mm; width 0.836 to 1.102 mm. Forebody 0.855 to 1.197 mm or about ⅓ body length; no pigment granules visible. Oral sucker 288 to 395 wide; acetabulum 489 to 636 wide. Sucker ratio 1:1.52 to 1.8. Prepharynx 192 to 268 long by 150 to 234 wide; with four longitudinal grooves with elevated sides; pharynx strong, 192 to 268 long by 150 to 234 wide, anterior half with circular muscles; esophagus muscular, 96 to 134 long; bifurcation midway between acetabulum and pharynx; ceca fairly wide, extending to near posterior end of body.

Genital pore to left of midline at level of posterior half of pharynx. Testes large, tandem, contiguous, intercecal, smooth or (usually) slightly crenated, longer than wide. Posttesticular space 275 to 670, about ⅕ body length or less. Cirrus sac (Fig. 16) 256 to 435 long by 80 to 167 wide, extending diagonally across left cecum, ending just anterior to acetabulum; containing in its posterior half a cellular-walled tube (= prostatic vesicle ?), straight or sinuous, followed by a prostatic tube of about same length lined with microvilli, and terminally a thin-walled expansion followed by very short, thick-walled cirrus. Prostatic cells few, near middle of cirrus sac; darker staining cells in posterior part of sac. External seminal vesicle tubular, sinuous, extending almost to ovary. Genital atrium short, with ovoid outpocketing (atrial sac) extending within cirrus sac alongside prostatic tube almost to middle of cirrus sac, often containing eggs.

Ovary ovoid, wider than long, immediately pretesticular. Seminal receptacle large, dorsal to ovary. Laurer's canal present. Vitellaria from posterior edge of acetabulum to posterior end of body; dorsal, ventral, and lateral to ceca; confluent posterior to testes. Uterus preovarian, intercecal; metraterm a narrow, muscular tube, entering near end of atrial sac. Eggs 48 to 54 by 21 to 30. Excretory vesicle I-shaped, ending at posterior edge of posterior testis. Lymphatic vessels not distinct but possibly present in forebody.

Remarks

The chief distinguishing feature of the genus *Intusatrium* is the atrial sac, usually containing several eggs, in the cirrus sac. The result is to give the appearance of a haploporidlike hermaphroditic sac. Yet the metraterm is definitely outside the cirrus sac. Other characters combine those of Lepocreadiidae and Haploporidae.

Diagnosis of Intusatrium: Body elongate, spined. Prepharynx, pharynx, and esophagus all well developed; pharynx with circular muscles in anterior half. Testes tandem; external seminal vesicle tubular, without prostatic cells; cirrus sac present; cirrus very short, suckerlike, at tip of cellular bulb; prostatic cells few. Ovary pretesticular; seminal receptacle present; Laurer's canal present; vitellaria follicular, mostly postacetabular; uterus preovarian; eggs fairly large, often present in an atrial sac within cirrus sac; metraterm present, not entering cirrus sac. Excretory vesicle I-shaped.

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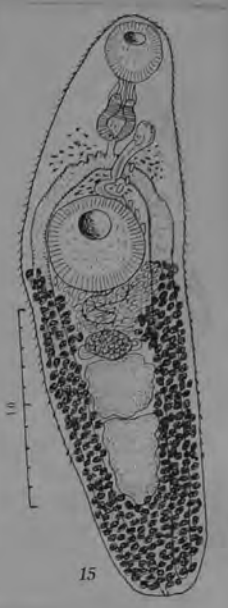
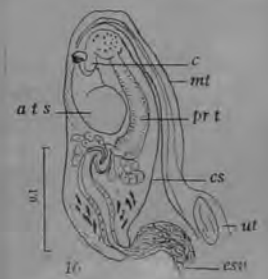
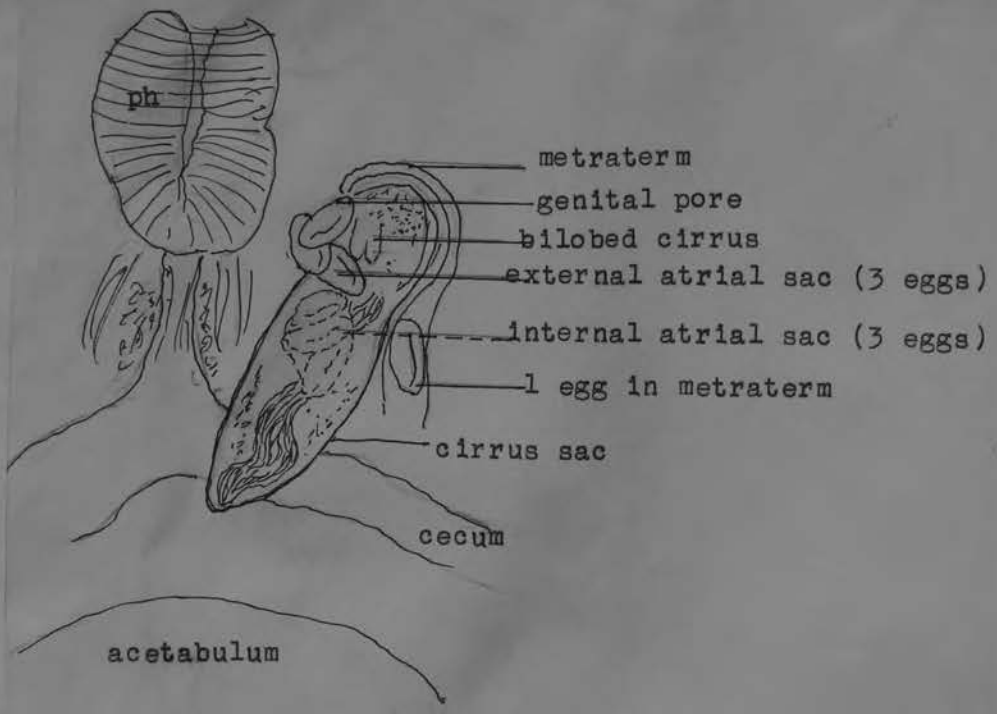




Not mentioned in the description of this species is an external atrial pouch as well as an internal atrial pouch. The following diagram is of a paratype now deposited in the USNMHelm.Coll. No. T1404.

Intusatrium robustum Durio & Manter, 1968



Paratype (3) NC73a

Lepocreadiidae

Durio & Manter, 1968

New Caledonia

***Intusatrium robustum* gen. et sp. n.**
(Figs. 15–16)

Host: *Lepidaplois perditio* (Quoy and Gaimard); Labridae.

Location: Intestine.

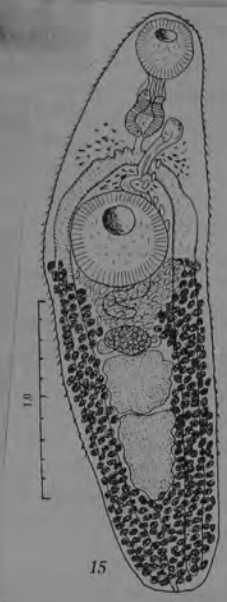
Number: 10; present in both of 2 hosts examined.

Holotype: USNM Helm. Coll. No. 63315.

Description (measurements on 5 specimens): Body rather thick; spined (anterior ¾); broadly rounded at each end; widest at acetabular level; length 2.508 to 3.439 mm; width 0.836 to 1.102 mm. Forebody 0.855 to 1.197 mm or about ⅓ body length; no pigment granules visible. Oral sucker 288 to 395 wide; acetabulum 489 to 636 wide. Sucker ratio 1:1.52 to 1.8. Prepharynx 192 to 268 long by 150 to 234 wide; with four longitudinal grooves with elevated sides; pharynx strong, 192 to 268 long by 150 to 234 wide, anterior half with circular muscles; esophagus muscular, 96 to 134 long; bifurcation midway between acetabulum and pharynx; ceca fairly wide, extending to near posterior end of body.

Genital pore to left of midline at level of posterior half of pharynx. Testes large, tandem, contiguous, intercecal, smooth or (usually) slightly crenated, longer than wide. Posttesticular space 275 to 670, about ⅕ body length or less. Cirrus sac (Fig. 16) 256 to 435 long by 80 to 167 wide, extending diagonally across left cecum, ending just anterior to acetabulum; containing in its posterior half a cellular-walled tube (= prostatic vesicle ?), straight or sinuous, followed by a prostatic tube of about same length lined with microvilli, and terminally a thin-walled expansion followed by very short, thick-walled cirrus. Prostatic cells few, near middle of cirrus sac; darker staining cells in posterior part of sac. External seminal vesicle tubular, sinuous, extending almost to ovary. Genital atrium short, with ovoid outpocketing (atrial sac) extending within cirrus sac alongside prostatic tube almost to middle of cirrus sac, often containing eggs.

Ovary ovoid, wider than long, immediately pretesticular. Seminal receptacle large, dorsal to ovary. Laurer's canal present. Vitellaria from posterior edge of acetabulum to posterior end of body; dorsal, ventral, and lateral to ceca; confluent posterior to testes. Uterus preovarian, intercecal; metraterm a narrow, muscular tube, entering near end of atrial sac. Eggs 48 to 54 by 21 to 30. Excretory vesicle I-shaped, ending at posterior edge of posterior testis. Lymphatic vessels not distinct but possibly present in forebody.



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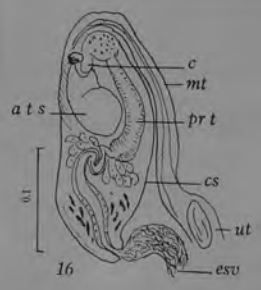

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Remarks

The chief distinguishing feature of the genus *Intusatrium* is the atrial sac, usually containing several eggs, in the cirrus sac. The result is to give the appearance of a haploporidlike hermaphroditic sac. Yet the metraterm is definitely outside the cirrus sac. Other characters combine those of Lepocreadiidae and Haploporidae.

LEPOCREADIIDAE

Durio & Manter, 1968

***Intusatrium secundum* sp. n.**
(Figs. 17–19)

Host: Unidentified, brown-blotched parrot fish.
Location: Intestine.
Number: 3 in 1 host.
Holotype: USNM Helm. Coll. No. 63316.
Description: Body spined (anterior ¾); eyespot pigment not evident; length 1.672 to 1.843 mm; width 415 to 636. Forebody 409 to 516 or about ¼ to ⅓ body length. Acetabulum slightly protuberant. Oral sucker 128 to 166 wide; acetabulum 256 to 352 wide; sucker ratio 1:1.88 to 2.1. Prepharynx 58 to 86 long; pharynx 109 to 144 long by 96 to 128 wide, with circular muscles in anterior half; esophagus muscular, 144 to 208 long, or more than twice length of pharynx; bifurcation dorsal to acetabulum; ceca fairly wide, ending blindly near posterior end of body.

Testes large, smooth, wider than long, tandem, close together, immediately posterior to ovary. Posttesticular space 456 to 603, slightly more or less than length of forebody. Genital pore submedian, opposite posterior edge of pharynx. Cirrus sac (Figs. 18–19) thin-walled, elongate–ovoid, narrowed at posterior end overlapping acetabulum, 160 to 240 long by 74 to 96 greatest width; containing a tubular seminal vesicle bent once or twice, spherical cellular bulb (protrusible) small, suckerlike cirrus with radial muscles, and inconspicuous atrial sac about half as long as cirrus sac. External seminal vesicle tubular, coiled, extending to near midbody (almost to ovary), without prostatic cells.

Ovary just anterior to middle of hindbody, immediately pretesticular, smooth, wider than long or roughly subtriangular; seminal receptacle dorsal to ovary; vitelline follicles beginning between ovary and acetabulum, extending to posterior end of body, dorsal and ventral to ceca, confluent posterior to testes. Uterus preovarian, with few coils, becoming straight dorsal to acetabulum; metraterm weakly developed. Eggs 51 to 56 by 26 to 29.

Excretory vesicle I-shaped, ending at posterior edge of posterior testis. Lymphatic vessels absent.

The name *secundum* indicates the species is the second to be named in the genus.

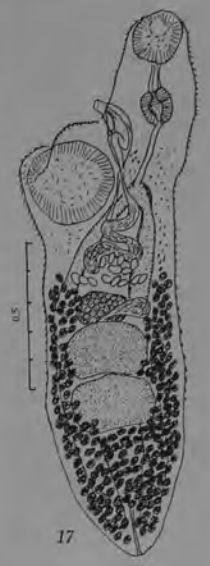
Remarks

This species differs from *I. robustum* in its long esophagus bifurcating posterior to the acetabulum, the anterior extent of the vitellaria not reaching the acetabulum, smaller size, internal seminal vesicle, and testes wider than long.

The long esophagus increases the resemblance of *Intusatrium* to the Haploporidae, especially the Megasoleninae. We are placing *Intusatrium* in the Lepocreadiidae chiefly on the basis of the clear presence of a seminal receptacle.

The haploporid genus *Allomegasolena* Siddiqi and Cable, 1960 should be considered a synonym of *Vitellibaculum* Montgomery, 1957. A few corrections, based on examination of specimens of *A. spinosa* Siddiqi and Cable, 1960 and of *V. girellae* Montgomery, 1957, should be made. The "seminal receptacle" reported for *V. girellae* is a uterine swelling so that a true seminal receptacle is lacking. The vitelline follicles of *A. spinosa* are lateral bands ventral and lateral to the ceca as in *Vitellibaculum*. The two outstanding features of the genus are the suckerlike structure near the genital pore and the tandem bands of vitellaria around the ceca. Lymphatic vessels occur and the excretory system is I-shaped.

New combinations are *Vitellibaculum spinosum* (Siddiqi and Cable, 1960) and *V. attenuatum* (Siddiqi and Cable, 1960). The three species are closely similar and all may not be valid.



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New Caledonia

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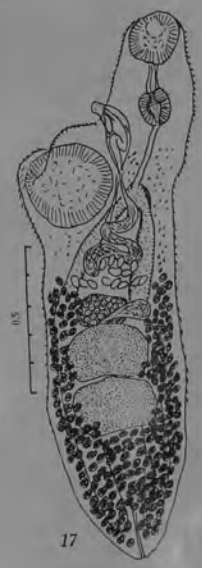

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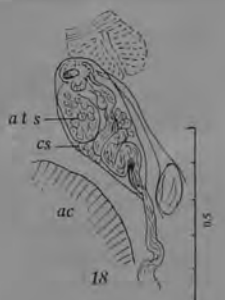

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INTUSATRIUM

1972

Род KRUSADAITREMA Zhukov, ~~gen. n.~~

Сем. *Allocreadiidae* (подсем. *Allocreadiinae*). Мелкие черви овальной формы. Покрывающие тело шипики постепенно исчезают в задней части червя. На переднем конце значительное скопление пигментных включений коричневато-бурого цвета. Ротовая присоска терминальная, брюшная расположена в центральной зоне. Глотка мускулистая, пищевод значительной длины. Бифуркация кишечника — на уровне переднего края брюшной присоски. Стволы кишечника слепо заканчиваются на уровне середины семенников. Последние овальной формы и расположены симметрично в задней половине тела. Половое отверстие щелевидное, открывается медианно над брюшной присоской. Сумка цирруса не заходит за нижний край брюшной присоски. Семенной пузырек состоит из двух отделов, размеры наружного незначительны. Яичник округлой формы, занимает центральное положение между двумя семенниками. Желточные фолликулы заполняют все тело червя, прерываясь лишь на уровне семенников. Желточный резервуар крупный, треугольной формы, лежит между семенниками. Матка расположена между семенниками и содержит ограниченное число крупных яиц. Паразит морских рыб. Типичный и пока единственный вид — *Krusadaitrema chanosi* Zhukov gen. et sp. n.

Описываемый род отличается от известных в настоящее время (Yamaguti, 1958) представителей подсем. *Allocreadiinae* Looss, 1902 тем, что сочетает в себе признаки, известные лишь порознь у других форм. К таким признакам относятся наличие наружного семенного пузырька, симметричное расположение семенников, прохождение петель матки между семенниками. Отличительной особенностью нового рода также является положение яичника между семенниками. У остальных представителей подсем. *Allocreadiinae* он лежит перед семенниками или противостоит переднему.

Krusadaitrema chanosi ~~gen. et sp. n.~~ Zhukov, 1972

1972

Krusadaitrema chanosi Zhukov ~~gen. et sp. n.~~ (рис. 1). Паразит кишечника *Chanos chanos* (Forsk.). Длина червей (по 7 экз.) 0.37—0.51 мм, ширина 0.21—0.32 мм. Тело на значительном протяжении покрыто шипиками, на переднем конце скопление пигментных включений. Передняя присоска терминальная, 0.062—0.071 мм. Глотка 0.041—0.058×0.033—0.046 мм. Пищевод имеется. Кишечные стволы тянутся до уровня середины семенников. Брюшная присоска, 0.075—0.11×0.079—0.104 мм, расположена в центральной зоне. Половое отверстие щелевидной формы, лежит медианно на уровне переднего края брюшной присоски. Сумка цирруса имеется, ее задний конец не заходит за нижний край брюшной присоски. Семенной пузырек состоит из двух частей, наружная часть короткая. Семенники овальные, 0.100—0.167×0.041—0.083 мм, лежат симметрично по бокам тела в его задней половине. Яичник лежит между семенниками в непосредственной близости от брюшной присоски. Желточные фолликулы заполняют все тело червя, особенно густо они лежат в задней части. Крупный желточный резервуар имеет треугольную форму, помещается между семенниками. В матке имеется 3—6 крупных яйца (0.071—0.079×0.041—0.046 мм), ее петля проходит между семенниками и достигает заднего конца тела.

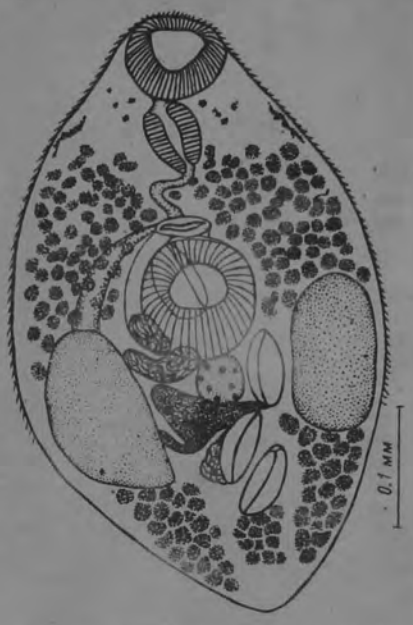

Рис. 1. *Krusadairtema chanosi* Zhukov gen. et sp. n.

Хозяин: *Chanos chanos* (Forsk.). Локализация: кишечник. Место обнаружения: о. Крузадай, Южная Индия. Материал: 50 экз.

KRUSADA ITREMA