1990

Binder 036, Cryptogonimidae H-O [Trematoda Taxon Notebooks]

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Cryptogonimidae

Subclassis DIGENEA (van Beneden, 1858) Carus, 1863
Superordo EPITHELIOCYSTIDIA LaRue, 1957
Ordo OPISTHORCHIIFORMES Caballero & Díaz Ungría, 1958
Subordo OPISTHORCHIATA LaRue, 1957
Superfamilia OPISTHORCHIOIDEA Faust, 1929
Familia CRYPTOGONIMIDAE Ciurea, 1933

Ivinaia ~~n.g.~~ Caballero et Bravo-Hollis, 1965

DIAGNOSIS: Trematodos de cuerpo ovoideo, relativamente pequeño; cutícula transparente y cubierta con espinas en toda su extensión. Ventosas subiguales; acetábulo mediano e inmediatamente por detrás de la bifurcación intestinal. Faringe ovoidea, esófago corto; ciegos intestinales angostos, tubulares y extendiéndose hasta por delante de los testículos. Gonotilo bien desarrollado, trifoliar e inmediatamente por delante del acetábulo y por detrás de la bifurcación intestinal, ligeramente desviado hacia el lado izquierdo; poro reproductor localizado entre el gonotilo y el borde lateral izquierdo del acetábulo; gonotilo y poro reproductor rodeados por una espesa glándula. Vesícula seminal muy grande, mediana e intercecal, extendiéndose desde por delante del ovario hasta por detrás del acetábulo, en su porción media se estrangula y, al final de la anterior, se angosta a nivel de la próstata posterior para constituir un tubo angosto y glandular, la próstata anterior, que se une a la porción terminal del metratermo para formar un conducto hermafrodita que termina en el poro reproductor; testículos sacciformes, en el tercio posterior del cuerpo, intercecales y laterales; conductos eferentes muy finos que se originan del extremo anterior de cada testículo, intercecales y que se abren independientemente en el borde posterior de la vesícula seminal. Ovario trilobulado, ligeramente desviado hacia la porción derecha del cuerpo; glándula de Mehlis bien desarrollada por el borde interno del lóbulo mayor del ovario; conducto de Laurer anterior, abriéndose en la parte media, a la altura del extremo posterior de la vesícula seminal; receptáculo seminal grande, postovárico, sacciforme; útero amplio, formando un asa sinuosa que ocupa el área derecha del cuerpo y otra que se extiende por el lado izquierdo, la cual en su parte anterior cruza el cuerpo hacia el lado derecho, para después hacerse paralela a la vesícula seminal, y forma el metratermo que al unirse a la porción anterior de la vesícula, originan el conducto hermafrodita. Huevecillos numerosos, pequeños y operculados. Glándulas vitelógenas situadas en las zonas extracecales, media y lateral del cuerpo, con seis o siete grupos en cada lado. Poro excretor subterminal-dorsal y vesícula excretora en forma de Y.

ESPECIE TIPO. *Irinata brenesi* n. g., n. sp.

HABITAT. Cavidad bucal? de Aves Ciconiiformes de América Central.

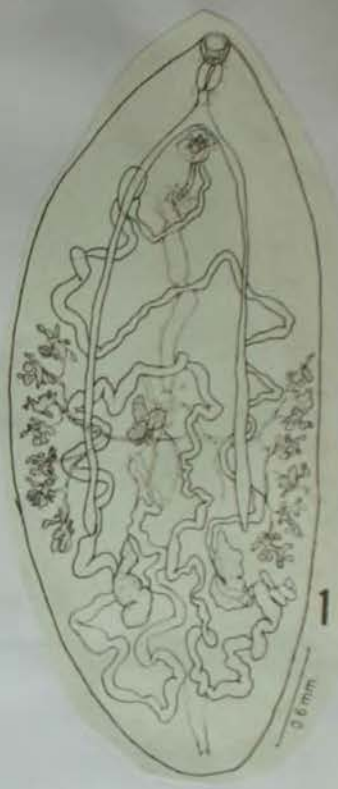
DISCUSIÓN. Por la forma y estructura de la vesícula seminal, este nuevo género es semejante a *Acetodextra* Pearse, 1924 de la familia Cryptogonimidae Ciurea, 1933, pero se diferencia por lo siguiente: 1°, el acetábulo está en la mitad anterior del cuerpo; 2°, la estructura del gonotilo es más compleja; 3°, el útero es más amplio; 4°, los ciegos intestinales son más cortos y 5° la forma de las glándulas vitelógenas. La consulta de las obras de BRAUN (1), BYCHOWSKAYA-PAVLOWSKAYA (2), PERKINS (3), PRICE (4), SKRJABIN y PETROV (5), y YAMAGUTI (6), nos permitieron situar este nuevo género dentro de la familia Cryptogonimidae Ciurea, 1933 y en la superfamilia Opisthorchioidea Faust, 1929.

Tenemos dudas de que realmente la localización del parásito sea la cavidad bucal de *Cochlearius cochlearius zeledoni* y de que esta ave sea su huésped definitivo. Además por tratarse de un Cryptogonimidae nos inclinamos a pensar que el ave sea ictiófaga y que el huésped definitivo corresponde a un pez de agua dúlce.

Los autores dedican, el nuevo género con todo respeto, a la eminente helmintóloga soviética, Irina Bychowkaya-Pavlowskaya, del Instituto de Zoologia de la Academia de Ciencias Soviéticas en Leningrado, como reconocimiento a sus múltiples investigaciones y contribuciones en el estudio de los tremátodos de peces y aves.

Cryptogonimidae

Irinaia brenesi ~~n. sp.~~ Caballero et Bravo-Hollis, 1965



Los parásitos son pequeños, de cuerpo ovoideo, cutícula degada, transparente y revestidos en toda su superficie por multitud de espinas; miden de 4,063 a 4,462 mm de largo por 1,798 a 1,931 mm de ancho. La ventosa anterior, a veces campanuliforme o en forma de olla, es subterminal, musculosa y mide de 0,071 a 0,147 mm de diámetro anteroposterior por 0,181 a 0,185 mm de diámetro transversal; el acetábulo es musculoso y casi del mismo tamaño que la ventosa oral, está situado inmediatamente por detrás de la bifurcación intestinal; mide de 0,147 a 0,160 mm de diámetro anteroposterior por 0,176 a 0,181 mm de diámetro transversal. La relación entre los diámetros de las dos ventosas es: 1:1 x 1:1 a 0.4:1 x 1:1. (Ventosa oral entre acetábulo).

No existe prefaringe; la faringe es ovoidea, casi tan grande como la ventosa oral, de paredes fuertemente musculosas y mide de 0,168 a 0,176 mm de diámetro anteroposterior por 0,134 a 0,139 mm de diámetro transversal; el esófago es corto y mide de 0,084 a 0,202 mm de diámetro anteroposterior por 0,042 a 0,189 mm de diámetro transversal. Los ciegos intestinales son tubulosos, angostos y se extienden dorsoventralmente hasta el nivel del último racimo de las vitelógenas; miden de 0,055 a 0,097 mm de ancho.

El poro reproductor oblongo y amplio está situado sobre el borde anterolateral izquierdo del acetábulo, con un esfínter musculoso y dista de 0,544 a 0,595 mm del borde anterior del cuerpo. En el espacio comprendido entre el arco bifurcal intestinal y el borde anterolateral izquierdo del acetábulo se encuentra un gonotilo bien desarrollado, rodeado por una espesa capa de células glandulares que contiene un órgano muy musculoso, plegado, en forma de trébol, cuyas fisuras convergen hacia el seno del poro reproductor y mide de 0,092 a 0,126 mm de diámetro anteroposterior por 0,210 a 0,260 mm de diámetro transversal. Los testículos se encuentran situados en la región caudal, a uno y otro lado, por detrás del final de los ciegos intestinales; son cuerpecitos sacciformes, alargados en sentido anteroposterior, de bordes irregulares y miden: el derecho de 0,425 a 0,561 mm de diámetro anteroposterior por 0,153 a 0,221 mm de diámetro transversal y el izquierdo de 0,357 a 0,459 mm de diámetro anteroposterior por 0,187 a 0,238 mm de diámetro transversal. De la parte anterior de cada testículo se origina un delicado conducto eferente que independientemente va a desembocar en el borde posterior de la vesícula seminal; órgano muy largo, tubuloso, con una estrangulación en su parte media y se extiende sobre el área media mesenquimatosa del cuerpo, desde por delante de la glándula de Mehlis hasta por detrás del acetábulo y mide de 1,241 a 1,496 mm de largo por 0,051 a 0,153 mm de ancho; el extremo anterior de la vesícula seminal es redondeado y está rodeado por multitud de células glandulares que corresponden a la próstata posterior, que envuelve al fino conducto que de ella sale para después penetrar a un órgano anterior, cilíndrico, de paredes gruesas, con células grandes, provisto de una cavidad y que indudablemente corresponde a la próstata anterior glandular, que termina en el poro reproductor y mide de 0,294 a 0,357 mm de largo por 0,059 a 0,063 mm de ancho.

El ovario es un cuerpo grande trilobulado que se encuentra situado en el área media del cuerpo, por detrás de la vesícula seminal, y mide de 0,290 a 0,319 mm de diámetro anteroposterior por 0,210 a 0,273 mm de diámetro transversal; a nivel y hacia adelante del lóbulo medio interno del ovario, se halla la glándula de Mehlis que se extiende hasta la base de la vesícula seminal; la región del ootipo también está situada a nivel del lóbulo interno del ovario; el conducto de Laurer es claramente visible, abandona el ootipo para dirigirse hacia la parte interna y media del mesénquima conjuntivo y después hacia adelante; existe un voluminoso receptáculo seminal sacciforme que está colocado en la zona media, por detrás del ovario y mide de 0,252 a 0,462 mm de largo por 0,113 a 0,189 mm de ancho.

El útero abandona el ootipo, se dirige por la región ventral del lóbulo medio del ovario hacia el lóbulo anterior, regresa luego hacia su lóbulo medio y abandona por su lado interno al ovario para dirigirse hacia adelante, alcanzando la rama anterior transversal uterina descendente y regresa sobre la línea media del cuerpo, extendiéndose hasta cerca del borde posterior del cuerpo, de ahí asciende mediante un asa sinuosa que cruza al testículo derecho, sube hasta por delante del ovario, cruza hacia el lado opuesto y paralelamente al borde interno del ciego intestinal izquierdo se dirige hacia la extremidad caudal, mediante un asa sinuosa y, de ahí, forma el asa ascendente uterina, que en su recorrido, atraviesa el testículo izquierdo, se hace sinuoso sobre el ciego intestinal izquierdo y como a la mitad de la longitud de la vesícula seminal, a nivel de su estrangulación, pasa al lado derecho del cuerpo, a la altura del primer racimo de glándulas vitelógenas y continúa ascendiendo lateralmente y después penetra al área media mesenquimatosa, se hace paralelo a la porción prostática anterior glandular y a nivel del acetábulo origina un corto metratermo, de 0,042 a 0,109 mm de largo por 0,050 a 0,084 mm de ancho, que al formar el conducto hermafrodita, desemboca en el poro reproductor. Los huevecillos son oblongos, de cáscara lisa, operculados, tipo opistorquídeo, miden 0,021 mm de largo por 0,013 mm de ancho.

Las glándulas vitelógenas están formadas por siete racimos foliculares, arborescentes, a cada lado del cuerpo, en la zona extracecal del segundo tercio del cuerpo, es decir el medio; de cada racimo parte un viteloducto primario, que se reúnen en dos secundarios, uno anterior y otro posterior y estos a su vez, forman el viteloducto transversal, a cada lado del cuerpo, que finalmente se dirigen al ootipo. Existe un abundante y espeso mesénquima conjuntivo que llena toda la cavidad del cuerpo y que por transparencia de los tegumentos, deja ver las fibras y los núcleos de las células. Por detrás de la faringe y sobre el esófago, existen dos masas anulares celulares, que representan al sistema nervioso. El aparato excretor está constituído por un amplio poro excretor que es subterminal, dorsal y que se abre en la vesícula excretora, de tallo corto, ancho y que se prolonga hasta el nivel de las dos asas uterinas caudales, sitio en donde se forman dos amplias ramas laterales, que se dirigen hacia adelante.

HUÉSPED: Guaco[illegible], *Cochlearius cochlearius zeledoni* (Ridgway) Aves Ciconiiformes.

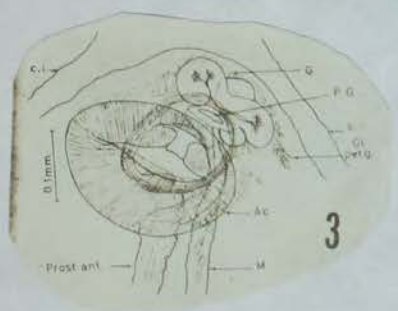
LOCALIZACIÓN: Cavidad bucal.

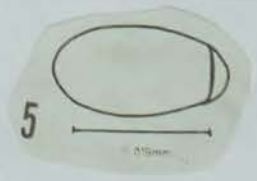
DISTRIBUCIÓN GEOGRÁFICA: Peñas Blancas, Rivas, República de Nicaragua, América Central.

EJEMPLARES: Colección Helmintológica de E. Caballero y Caballero Nº 487.

PARATIPO: Laboratorio de Helmintología de la Facultad de Microbiología de la Universidad de Costa Rica.

Esta especie ha sido dedicada al helmintólogo costarricense, Rodrigo Ramón Brenes Madrigal, como un reconocimiento a su fructífera labor en el terreno de la Helmintología Centroamericana.





IRINAIA

Cryptogonimidae

Mahrosa sargusi Nagaty & Aal, 1961 NOMEN NUDUM

[redacted]

Mahrosa sargusi gen.nov., sp.nov. (Fig. 2)

A single specimen found in the alimenary tract of *Sargus noct*, the local name of which is 'Abo-nogta', displays most of the morphological features, but the caeca cannot be seen. The body is elliptical, 1·1 mm. long and 0·5 mm. broad and numerous glandular cells occur in the forebody, being most numerous in the anterior region. Oral sucker subterminal, measuring 0·14 mm. × 0·17 mm., devoid of circumoral spines. Ventral sucker much smaller than the oral sucker, 0·08 mm. diameter, situated near the middle of the body 0·3 mm. behind the oral sucker. Prepharynx 0·03 mm. long, pharynx measuring 0·08 mm. × 0·09 mm. Testes ovoid diagonally arranged in the posterior region, almost reaching the lateral surfaces; left testis, more anterior, measuring 0·20 mm × 0·15 mm., right testis 0·23 mm. × 0·17 mm., respective gonads terminating 0·27 mm. and 0·11 mm. from the posterior end of the body. Ovary ovoid, situated anterior to the testes in the third quarter of the body, measuring 0·14 mm. × 0·17 mm. Receptaculum seminis in front and on right of the ovary, behind and to the right of the ventral sucker,

measuring 0·08 mm. × 0·09 mm. Vitellaria comprising numerous small follicles arranged laterally between the levels of pharynx and ovary, mainly in the second quarter and the first part of the third quarter of the body. Transverse vitelloduct situated at the level of the ovary. Uterus long and convoluted, its folds filling the body behind the ventral sucker, overlapping the margins of the testes. Eggs small and ovoid, measuring about 0·014 mm. × 0·007 mm. Other characters not ascertained.

Comparison. This form seems to be most closely allied to the genus *Siphoderoides* Manter, 1940, but (*a*) the ventral sucker is far removed from the oral sucker, (*b*) a gonotyle having a transverse aperture is apparently non-existent, (*c*) the testes are more diagonally arranged, (*d*) the ovary is smooth instead of lobed, (*e*) the vitellaria extend nearer to the pharynx, and (*f*) the uterus extends closer to the ventral sucker.

Generic diagnosis. Body oval to elliptical, devoid of circumoral spines, having numerous glandular cells in the anterior region. Oral sucker much larger than ventral sucker. Prepharynx short, pharynx broader than its length. Testes two, lateral, diagonal, post-equatorial. Cirrus pouch absent. Ovary median, entire. Receptaculum seminis antero-lateral to ovary. Vitellaria follicular, extending laterally from level of posterior border of pharynx to level of ovary. Uterine coils filling the hind-body behind the ventral sucker. Eggs small.

Fig. 2. *Mahrosa sargusi* gen.nov., sp.nov.

Nagaty and Abdel Aal (1961) named another new genus, *Mahrosa*, based on a single specimen, and considered to be in the family Cryptogonimidae. Neither the description nor the figure of *Mahrosa* are adequate for family allocation. The excretory vesicle, the ceca, and terminal genital organs were not observed. The rounded, unlobed ovary suggests this trematode is not in the family Cryptogonimidae. *Mahrosa* should be considered another nomen nudum.

FROM MANTER, 1963 (Fiji III)

MAHROSA

Acanthostomidae ?

~~Mech~~

MEHRACOLA Srivastava, 1937 syn. Mehrailla Srivastava, 1939

Body fusiform, spiny. Suckers spherical, oral sucker subterminal; acetabulum larger than oral sucker situated at about anterior third of body. Prepharynx long; pharynx and esophagus short; ceca stop a little in front of posterior end. Testes two, reniform with lobed outer margins, extracecal, about the end of middle third of body. Ovary pretesticular, follicular, follicles arranged in a median, spherical mass. Vesicula seminalis a broad coiled tube with constrictions extending from ovary to a little in front of acetabulum. Vitellaria profusely developed, pretesticular, from a little behind intestinal bifurcation to anterior end of testes., not meeting mesially. Uterus well developed, arranged in transverse ascending and descending coils in postovarian region; eggs numerous, with long polar filament at one end. Excretory bladder Y-shaped.

Type species: Mehracola ovocaudatum

In the topography of gonads, excretory bladder and configuration of uterus Meracola resembles Paracryptogonimus, but it differs in the absence of oral spines, shape of testes, anterior and internal extent of vitellaria, extent of seminal vesicle, absence of genito-acetabular depression and the presence of a polar filament in the egg.

Mehracola Srivastava, 1937

Mehrailla Srivastava, 1939

Generic diagnosis. — Cryptogonimidae, Cryptogoniminae: **Body** muscular, spinose, fusiform, with rounded extremities. **Oral sucker** subterminal, without circumoral crown of spines. Prepharynx and **pharynx** well developed, esophagus short; ceca simple, broad, nearly **reaching** posterior extremity. Acetabulum small, in genito-acetabular **depression** at about junction of anterior with middle third of body. Testes **reniform**, lobed, nearly symmetrical, overlapping ceca behind ovary. **Seminal** vesicle long, constricted and twisted, pars prostatica ill-defined, **ductus** ejaculatorius well developed, genital pore opening [illegible] in front of **acetabulum** in genito-acetabular depression. Ovary pretes[illegible]ar **median**, **multilobulate**; receptaculum seminis and Laurer's canal present. Vitelline **follicles** extending in lateral fields from behind intestinal bifurcation to **testes**. Uterine coils filling most of inter- and posttesticular regions; eggs **small**, approximately triangular, with a polar filament at antiopercular **pole**. Excretory vesicle Y-shaped. Intestinal parasites of marine fishes.

Genotype: *M. ovocaudata* (Srivastava, 1939) (Pl. 34, Fig. 437), in *Stromateus cinereus*; Karachi, Arabian Sea.

Heterophyidae
Acanthostomidae

MEHRACOLA SRIVASTAVA, 1937

syn MEHRAILLA Srivastava, 1939

Body medium-sized, muscular, fusiform and spinose. Oral sucker subterminal, larger than acetabulum which lies at about first third of body length. Prepharynx and pharynx well-developed, esophagus small; ceca simple, broad, nearly reaching the hind end. Testes two, reniform, lobed, nearly symmetrical, overlapping ceca, situated in front of posterior third of body length. Seminal vesicle long, constricted and twisted; pars prostatica ill-defined; ductus ejaculatorius well-developed; genital sinus small. Genital pore and acetabulum situated in a genito-acetabular depression on the ventral body wall. Ovary pretesticular, median and follicular; follicles aggregated into a mass. Seminal receptacle and Laurer's canal present. Vitellaria follicular, extending from anterior border of testes to first quarter of body length, without meeting in median line. Uterus well-developed, post-acetabular; eggs small, roughly triangular witha polar filament at the aopercular pole. Excretory bladder Y-shaped. Parasites of marine fishes.

Type species: M. ovocaudatum Srivastava, 1939

Reference: Indian Jour. Vet. Sci., 9:209-212.

Compared with Paracryptogonimus Yamaguti, 1934 but differing in absence of oral spines, presence of seminal receptacle; anterior extent of vitellaria; position of testes, etc. filament on egg. Not compared with Mehracola Srivastava, 1937.

Mehrailla ovocaudatum

4.94 by 1.36; oral sucker 0.3;
acetabulum 0.22, 1/3 from anterior end.
Pharynx 0.22 by 0.28; esophagus small.
Testes trilobed on outer border, symmetrical overlapping ceca, just behind midbody.
Eggs 15 to 23 by 7.6 to 10 μ, filamented
Excretory bladder Y-shaped.
Host: Stromateus cinereus Block
Locality: Arabian Sea

-OVER-

Mehracola

Mehrailla ovocaudatum, ~~Gen. et. sp. nov.~~ (H. D. Srivastava, 1939) Manter, 1947

—*Stromateus cinereus* Block.

—Intestine.

y.—Karachi, Arabian Sea.

two specimens of this interesting trematode were obtained from the of a fish examined at Karachi in June 1936. The parasite has a form, muscular body with broadly rounded anterior end and slightly ncated posterior extremity. It is studded with minute, backwardly direct- spines, which become sparse and smaller towards the hinder end. Numer- s, minute gland cells are present all over but they are specially well deve- ed in the anterior half of body. In permanent mount, the type specimen asures 4·94‡ in length and 1·36 in maximum breadth, which occurs at level of the ovary. The subterminal oral sucker measures 0·3 in diameter d is larger than the acetabulum. The latter measures 0·22 in diameter d is situated at the junction of the first and middle thirds of body length. e size ratio between the oral sucker and the acetabulum is as 3 : 2. Pos- iorly the oral sucker opens into an oval prepharynx, 0·18×0·16, which followed by a pharynx of 0·22×0·28 size. The small oesophagus, 0·08 length, bifurcates into two broad caeca which terminate blindly a little front of the hinder end.

The testes, two in number, are reniform with tri-lobed outer and regular inner margins. They are situated almost symmetrically in front of the posterior third of the body, overlapping the caeca. The right testis, 0·7×0·3, is slightly larger than the left which measures 0·58×0·36 in size. The vesicula seminalis lies to the right of the acetabulum and consists of a long, fairly broad tube with three or four constrictions and twists. It extends from a little behind the acetabulum to about one-third the distance between the acetabulum and intestinal bifurcation. Anteriorly it continues into a small, ill-defined, pars prostatica with a few prostate glands and a wide ductus ejaculatorius. The latter joins the terminal part of the uterus to form a small genital sinus which opens in the median line, close in front of the acetabulum. Both the genital pore and the acetabulum lie in a small depression on the ventral body surface to which are attached a few feebly developed retractor muscles.

The ovary measures 0·5×0·52 in size and consists of a large number of pear-shaped follicles, arranged radially in a spherical mass in the median line a little anterior to the testes. The receptaculum seminis, 0·22 in diameter, is a small, spherical, thin-walled sac, situated a little in front of the ovary. A small Laurer's canal is given off from the duct of the receptaculum seminis. The vitellaria consist of a large number of small, irregular follicles which extend from the anterior margin of the testes to the first quarter of the body length, without meeting in the median line. The shell gland complex lies in the space between the ovary, receptaculum seminis and the left body wall. The uterus extends, in transversely coiled descending and ascending arms, from the acetabulum to a little distance in front of the blind ends of the caeca. Laterally it extends up to the body wall. The eggs are roughly triangular in shape, operculate and measure 0·015—0·023×0·0076—0·01 in size. They possess a fairly long polar filament at the aoperculate end. The excretory bladder is Y-shaped.

Of all the genera of the family Acanthostomidae, *Mehrailla ovocaudatum* gen. et. sp. nov., in its affinities stands nearest to *Paracryptogonimus acanthostomatus* Yamaguti [1934]. It resembles the latter genus somewhat in the topography of the gonads, shape of ovary, extent of caeca, the presence of a genito-acetabular depression, presence of cutaneous gland cells and similar digestive and excretory systems. It, however, differs remarkably from the Japanese genus in the absence of oral spines, presence of receptaculum seminis, anterior extent of vitellaria, position of testes, vesicula seminalis and genital pore and the presence of a well-developed filament at the aoperculate end of the egg.

from Indian J. Vet. Sci. 9: 209-210

Mehrailla ovocaudatum Srivastava, 1939
(Fig. 22)

Host: *Lutianus lunulatus* (Mungo Park)

Location: Intestine

Locality: Fish Harbour, Karachi (Arabian Sea)

The description is based on two worms extracted from the intestine of *Lutianus lunul tus* (Mungo Park). In January, 1968, two fishes were examined at Fish Harbour, Karachi, one yielded, one mature and another immature worm.

Description

The body of the worm is fusiform with rounded anterior extremity and somewhat truncate posterior end. The maximum width is about the equator. The tegument is spinose, covered over with minute spines which are backwardly directed. The oral sucker is subterminal and is globular in outline. The prepharynx is either very small or absent. The pharynx is well developed, almost oval in shape. The oesophagus is very short. The caeca are simple and extend to near the posterior extremity. The ventral sucker lies in anterior half of the body. It is somewhat deeply embedded in parenchymatous tissue and is smaller than the oral sucker.

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The testes are placed a little behind the equator. They are symmetrical in position and somewhat kidney shaped. The left one is larger than the right. The cirrus pouch is absent. The common genital opening is immediately preacetabular. The ovary is lobed, its posterior border is at equator. It is median and pretesticular. The vitellaria are follicular and extend from a little behind the intestinal fork to the anterior region of testes. The follicles of the two sides merge with one another in the middle between ovary and intestinal fork, otherwise they are extracaecal. The uterus extends from the ventral sucker to a short distance infront of the posterior end of the body. The eggs are numerous, small, brownish in colour. The excretory vesicle is Y shaped, with a very short stem.

Measurements (In Mm.)

Body length 2.349-3.710, Body width 1.04-1.36, Oral sucker 0.316-0.344×0.349-0.351. Ventral sucker 0.216-0.246, Pharynx 0.128-0.187×0.147-0.216, Ovary 0.275-0.285×0.285-0.295, Right testis 0.384-0.689×0.216-0.285, Left testis 0.403-0.640×0.275-0.285, Eggs 0.015-0.029×0.010-0.019.

Discussion

The material under study resembles in all essential features with *Mehrailla ovocaudatum* Srivastava, 1939 and is, therefore, identified as such. However, it is reported from a new host from Pakistan.

From ZAIDI AND KHAN, 1977

Mehrailla ovocaudata Srivastava, 1939

(Fig. 8)

The following study is based on a single fluke recovered from the intestine of one specimen of *Lutianus johni* collected from the Arabian Sea near Karachi.

The body of the fluke is fusiform with broadly rounded extremities. Maximum breadth of the worm is at about the equator. The tegument is provided with numerous backwardly directed spines extending all over the body. The oral sucker is subterminal and subglobular. The ventral sucker lies in the anterior half of the body, at a distance of 1.090 mm from the anterior end. It is somewhat deeply embedded in the parenchymatous tissue and is smaller than the oral sucker. The sucker ratio is 1.26 : 1.00. The prepharynx is short. The pharynx is well-developed. The oesophagus is short. The intestinal fork lies at a distance of 0.636 mm from the anterior end and 0.362 mm from the anterior border of the ventral sucker. The caeca are broader than the oesophagus and extend to near the posterior extremity.

8

The gonads are in the middle third of the body. The anteroposteriorly oval testes are symmetrically placed a short distance behind the equator and have a smooth or slightly indented surface. The left testis is smaller than the right testis. The cirrus pouch is absent. The vesicula seminalis is long and winding. The prostatic complex is ill-defined. The ductus ejaculatorius is moderately developed. The common genital opening is immediately pre-acetabular. The ovary is lobed, just pre-equatorial, median and pretesticular. The vitellaria are follicular and extend from a little behind the intestinal fork to the anterior margin of the testes. The follicles are largely extracaecal but between the ovary and the intestinal fork the follicles of the two sides merge with one another in the middle. The uterus extends from the ventral sucker to a short distance in front of the posterior end of the body. Behind the ovary the uterine coils are tightly placed against one another and extend into the lateral fields. The eggs are numerous, small, yellowish brown, operculate and unembryonated. The excretory vesicle is Y-shaped with a short stem.

MEASUREMENTS

(All measurements in millimetres)

Body length	3.787
Body breadth	1.121
Oral sucker	0.294×0.235
Ventral sucker	0.235×0.235
Prepharynx	0.058
Pharynx	0.186×0.225
Oesophagus	0.058
Ovary	0.333×0.372
Left testis	0.247×0.156
Right testis	0.520×0.254
Eggs	0.017–0.020× 0.010–0.012

Host : *Lutianus johni*

Location: Intestine

Locality: Arabian Sea (Karachi)

DISCUSSION

The fluke under study resembles *Mehrailla ovocaudata* Srivastava, 1939, in all essential features and has been identified as such. However, this species is being reported from a new host.

From BHUTTA AND KHAN, 1975

MEHRACOLA
= MEHRAILLA

Metadena Linton, 1910

Syn. *Stegopa* Linton, 1910

Achoerus Vlasenko, 1931

Siphoderina Manter, 1934

Generic diagnosis. — Cryptogonimidae, Metadeninae: Body oval to elliptical, spinulate. Oral sucker terminal or subterminal, larger than acetabulum. Pharynx well developed; esophagus very short; ceca terminating at or near posterior extremity. Acetabulum small, enclosed in circular fold of body wall in anterior half of body. Testes symmetrical or diagonal, postequatorial, overlapping ceca. Vesicula seminalis extending back of acetabulum, may be partly pre-acetabular. Genital pore just in front of acetabulum. Prostatic complex and cirrus absent. Ovary usually multilobed, median or submedian, between vesicula seminalis and testes. Vitellaria extending in lateral and dorsal areas between pharynx, intestinal bifurcation or acetabulum and ovary or testes. Uterine coils extending as far as or nearly to posterior extremity, overreaching ceca laterally; eggs small, numerous. Excretory vesicle Y-shaped, arms reaching to level of pharynx. Intestinal parasites of marine fishes.

Genotype: *M. crassulata* Linton, 1910 (Pl. 19, Fig. 244), in *Lutianus analis L. vivanus;* Florida.

Other species:

M. adglobosa Manter, 1947, in *Lutianus griseus;* Tortugas, Bermuda.

M. apharei (Yamaguti, 1942), syn. *Siphoderina a.* Y., in *Apharcus furcatus;* Naha, Okinawa.

M. brotulae (Manter, 1934), syn. *Siphoderina b.* M., in *Brotula barbata* and *Lophius piscatorius;* Florida.

M. globosa (Linton, 1910), syn. *Stegopa g.* L., in *Lutianus griseus;* Florida.

M. lutiani (Yamaguti, 1942), syn. *Siphoderina l.* Y., in *Lutianus vaigiensis;* Naha, Okinawa.

M. microvata Tubangui, 1928, in *Glossogobius giurus; G. biocellatus* and *Pristipoma hasta;* Philippines.

M. pagrosomi Yamaguti, 1938 (Pl. 18, Fig. 223), in *Pagrosomus unicolor;* Inland Sea of Japan.

M. pauli (Vlasenko, 1931), syn. *Achoerus p.* V. (Pl. 34, Ftg. 439), in *Sciaena umbra* and *Umbrina cirrosa;* Black Sea.

Genus Metadena Linton, 1910

Linton was correct in noting similarity between *Stegopa* and *Siphodera*. It is now well known, however, that the "genital sucker" described by Linton is an acetabulum and that his family Siphoderidae is unfounded. Following his description of *Stegopa globosa*, Linton named the genus *Metadena* with a single species, *M. crassulata*. He did not distinguish between the two genera. *M. crassulata* is considerably larger than *Stegopa* but the two agree in all important characters. Price (1940) concluded that the two genera were identical and listed *Stegopa* as a synonym of *Metadena*. Although *Stegopa* has page precedence over *Metadena*, Price's selection of *Metadena* does not violate the Rules of Nomenclature.

The genus *Siphoderina* Manter, 1934 was described as similar to *Siphodera* except that it possessed two rather than nine testes. It is thus very similar to *Metadena* and in particular to *M. crassulata*. The separation of vitelline follicles into two more or less lateral groups is certainly not generic since it appears in some specimens of *M. crassulata*. *Siphoderina* is here considered a synonym of *Metadena*.*

The following diagnosis for *Metadena* is proposed:

Generic Diagnosis of Metadena: Oral sucker much larger than acetabulum, often retractile into anterior end of body. Acetabulum small, embedded within a depression of the body wall often more or less clearly marked by a rim. Gonotyl absent. Intestinal ceca extending posterior to testes. Testes two, symmetrical, near midbody level; seminal vesicle tubular, free in parenchyma. Ovary deeply lobed, ventral, between testes or overlapping them ventrally; vitelline follicles preovarian, dorsal, forming or tending to form a band across the body in acetabular region. Seminal receptacle present. Excretory vesicle Y-shaped with arms reaching to pharyngeal region. Type species: *Metadena crassulata* Linton, 1910. Other species: *Metadena globosa* (Linton, 1910) n. comb., synonym: *Stegopa globosa* Linton, 1910** *Metadena pagrosomi* Yamaguti, 1938; *Metadena brotulae* (Manter, 1934) n. comb., synonym: *Siphoderina brotulae* Manter, 1934; *Metadena microvata* Tubangui, 1928.

Discussion: Yamaguti (1938) classified *Metadena* in the family Heterophyidae, but Price's conclusion to include it in the family Cryptogonimidae, subfamily Cryptogoniminae, is followed here. Price (1940) separated the Cryptogonimidae from the Heterophyidae primarily on the long crura of the excretory vesicle which reach only to the ovary in the Heterophyidae. Distinction between the various subfamilies is, as Price noted, much less certain. The subfamily Siphoderinae Manter, 1934 does not seem justified, and *Siphodera* can well be included in the Cryptogoniminae.

The status of the genus *Siphoderoides* Manter, 1940 must depend on reexamination of the type specimen to determine the anterior extent of the crura of the excretory vesicle.

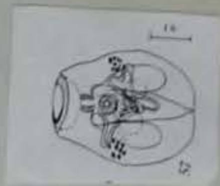
Srivastava (1937) named the genus *Mehracola* with type species *M. ovocaudatum* from an unnamed Indian, marine, food fish. The genus possessed several unusual features such as extracecal testes with lobed outer margins, and eggs with unipolar filament. In 1939, Srivastava named a genus *Mehrailla* with type species *M. ovocaudatum* and with the characteristics of *Mehracola*. In a footnote he stated, without comment, that *Mehracola* Sriv., 1937 was a synonym of *Mehrailla*. Since the earlier name was accompanied by a clear diagnosis and compared with related genera, it must hold priority over *Mehrailla*. *Mehrailla* is thus a synonym of *Mehracola*.* It might be pointed out that according to Article 32 of the International Rules of Zoological Nomenclature, "a generic or a specific name, once published, cannot be rejected, even by its author, because of inappropriateness." This genus was listed in the subfamily Cryptogoniminae by Price (1940:10).

138. Metadena crassulata Linton, 1910
Figs. 96, 97

Host: *Lutianus analis* (Cuv. & Val.), muttonfish; in 1 of 8 hosts examined.
Location: Intestine.

Discussion: These specimens of *M. crassulata* are those referred to by Manter (1934:327) as a species of *Siphoderina*.

Six specimens measured 0.960 to 1.719 mm in length. The acetabulum is embedded in the body and the genital pore opens into the acetabular depression (Fig. 97) as in *Siphodera*. Traces of eye-spot pigment are present but sparse. A cirrus sac is lacking; a seminal receptacle present. The vitelline follicles are often continuous across the body dorsally, but may not quite meet medianly. Eggs were 16 to 18 by 9 to 10 μ. The excretory vesicle is Y-shaped, forking just posterior to the testes with crura reaching to near the anterior end of the body.



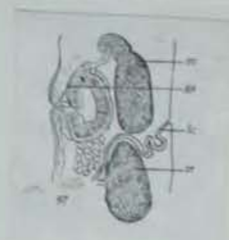
Metadena crassulata Linton, 1910
(Figure 57)

Host.—*Lutjanus analis* (Cuv. & Val.), muttonfish.

Location.—1/4 intestine.

Locality.—Lerner fish pens, N. Bimini, B.W.I. [new locality record].

Sogandares, 1959



Also at Bimini

Metadena crassulata Linton, 1910
Hosts: *Lutianus analis* (J); **L. aya* (C).
Site: intestine.

CURAÇAO + JAMAICA; FROM NAHHAS AND CABLE, 1964

140. Metadena adglobosa n. sp. Manter, 1947

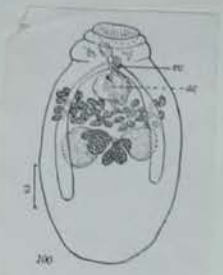
Fig. 100

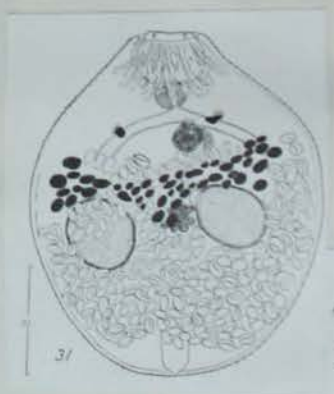
HOST: *Lutianus griseus* (Linn.), gray snapper; in 2 of 23 hosts examined.
LOCATION: Intestine and ceca.

Description (based on 5 specimens): Length 0.502 to 0.712 mm, width 0.315 to 0.502 mm. Body spined; granules of eye-spot pigment present to varying degrees. Oral sucker short and wide, retractile into anterior end of body; mouth anterior. Since the posterior end of the body is more or less truncate, the entire shape of the body resembles that of an urn with an anterior rim within which the oral sucker rests like a lid. Diameter of oral sucker 0.090 to 0.170 mm. Acetabulum very small and weak, withdrawn into a circular depression which opens on the ventral surface through a small, irregularly shaped opening. Acetabulum 0.029 to 0.034 mm in diameter. Sucker ratio variable, 1:0.15 to 0.40. Forebody 0.112 to 0.170 mm or about 1/4 body length. Short prepharynx present; pharynx 0.025 to 0.042 mm wide, slightly longer than wide. Ceca extending posterior to testes up to about halfway between testes and posterior end of body. Testes rounded, symmetrical, not far apart, about at midbody level; seminal vesicle coiled, extending both posterior and anterior to acetabulum, as far forward as pharynx. Ovary median, between testes and overlapping them ventrally, deeply lobed to form 3 to 7 lobes. Vitelline follicles forming a band across the body between acetabulum and gonads, dorsal to ceca; uterus filling most of body but not extending anterior to acetabulum. Genital pore within the acetabular depression. Eggs 17 to 20 by 9 to 12 μ. Excretory system not observed.

Discussion: This species is easily confused with *M. globosa* from the same host. Its body is more elongate; the oral sucker is considerably less than half body width; the ovary has fewer lobes; the uterus does not extend anterior to

the acetabulum; the seminal vesicle has coils anterior to the acetabulum; and the eggs are somewhat larger than those of *M. globosa*. Linton (1910:76) lists a specimen of *M. globosa* with eggs 20 by 13 μ. It might have been *M. adglobosa* but Linton did not mention the size of the oral sucker.





-OVER-

From Siddiqi & Cable, 1960:
Metadena adglobosa Manter, 1947 (Figures 31 to 33)
Hosts: Lutianus apodus, L. griseus
Site: intestine
Locality: Punta Arenas, P. R.
Deposited specimen: No. 39326
Life history: Cercaria caribbea XV Cable, 1956, developing in Cerithium variable; metacercariae in tissues of Gerres cinereus; no pigmentation response.

Metadena adglobosa Manter, 1947**
Host: **Paralichthys albigutta*
Site: ceca
Locality: Alligator Harbor
Two specimens, one mature but damaged, and one immature, were recovered along with a number of individuals of *Bucephaloides bennetti*. The egg size and that of the oral sucker relative to body width are characteristic of this species. This species has hitherto been known only from snappers of the genus *Lutjanus*.

Apalachee Bay, Gulf of Mexico
from Nahhas and Short (1965)

Metadena adglobosa Manter, 1947
Hosts: Lutianus apodus (C, J); **L. aya* (C); *L. griseus* (C, J); **L. jocu* (J); **L. synagris* (J).
Site: ceca and intestine.

Curaçao + Jamaica; From
Nahhas + Cable, 1964

Metadena adglobosa Manter, 1947
Hosts: Lutjanus apodus (2 of 3); *Lutjanus griseus* (2 of 3).
Site: Pyloric caeca. Overstreet, 1969

2. *Metadena adglobosa* Manter, 1947 (Cryptogonimidae): four adult worms from the small intestine of *Thalassophryne maculosa* Günther (Perciformes: Batrachoididae) at Los Roques Islands. Specimens deposited: No. 7288?

Venezuela; From
Fischthal + Nasir, 1974

Cryptogonimidae

Nahhas and Kripin-1977

Metadena caballeroi sp. nov.
(Fig. 1)

Site: intestine
Holotype: U.S.N.M. Num. 73709

Description based on 12 specimens; measurements on 10. Body ovoid, 1.18-1.67 long, 0.78-1.23 in greatest width at level of gonads. Cuticular spines extending along entire length of body. Eyespot pigment present. Cephalic glands in anterior fourth of body. Oral sucker 0.15-0.24 by 0.20-0.29; ventral sucker near junction of anterior and midbody third, 0.08-0.10 in diameter; sucker ratio 1:0.33-0.40. Prepharynx short; pharynx 0.11-0.13 in diameter; esophagus about same length as pharynx; intestinal bifurcation just above acetabulum, caeca extending to near posterior end of body.

Testes two, side by side, smooth, large, globular to elongated, 0.32-0.50 by 0.30-0.42; seminal vesicle elongated sac, occasionally bipartite as a result of bending over itself, chiefly dorsosinistral to ventral sucker, and its anterior fourth preacetabular; prostatic duct short. Ovary multilobed, ventral to and overlapping anterior margin of testes; seminal receptacle large, ovoid, filling almost all intertesticular space dorsal to ovary; uterus extensive, occupying practically all the hindbody and laterally to base of cepahlic glands; vitelline follicles large, extending from posterior margin of ventral sucker and overlapping anterior third of ovary and median parts of testes. Eggs 17-23 by 11-13 microns in mounted specimens. Genital pore immediately preacetabular and median. Excretory vesicle Y-shaped extending to near pharyngeal levels; pore terminal.

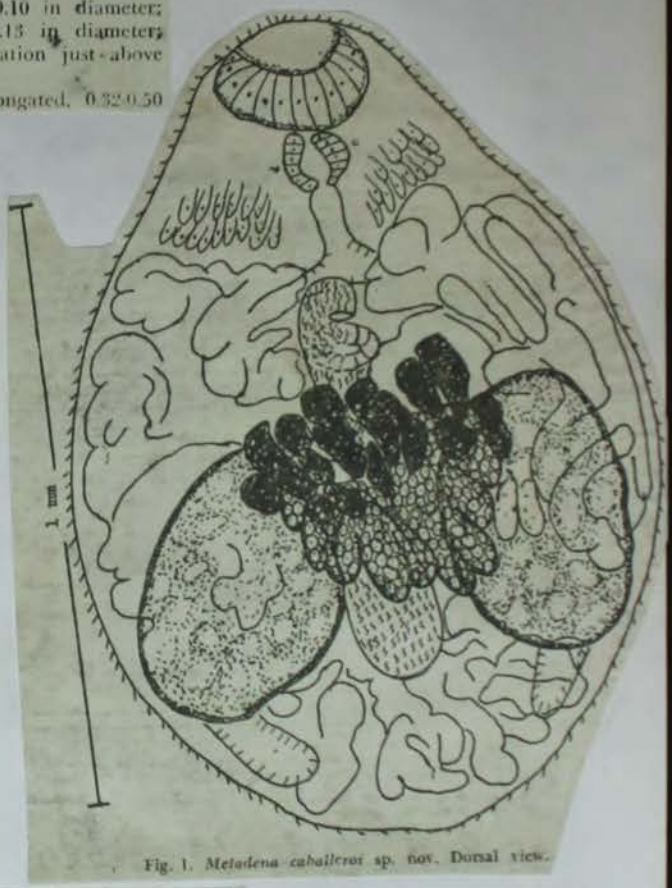


Fig. 1. *Metadena caballeroi* sp. nov. Dorsal view.

—over—

Nine to 16 species have been placed at one time or another in the genus *Metadena*. We recognize the following species: *M. crassulata* Linton, 1910, *M. globosa* (Linton, 1910) Manter, 1947, *M. adglobosa* Manter, 1947, *M. pagrosomi* Yamaguti, 1938, *M. pauli* (Vlasenko, 1931) Yamaguti, 1958, *M. eurystoma* Oshmarin, 1965, *M. magdalenae* Arai, 1962, *M. lopastoma* Winter, 1958 and *M. spectanda* Travassos, Freitas and Burheim, 1967. A combination of characteristics including relative size of the testes compared to body width and distribution and location of the vitellaria distinguish *M. caballeroi* from all species in the genus. *M. caballeroi* is also larger in size than *M. globosa*, *M. adglobosa*, and *M. pauli*.

This species is named in honor of the late Dr. Eduardo Caballero y Caballero in recognition of his contributions to helminthology.

Subfamily: Exorchinae Yamaguti 1938.

Metadena depressa (Stossich 1883). Janiszewska, 1953
Synonym: *Distomum depressum* Stoss. 1883.
Found in *Dentex dentex* (table I, fig. 7, 8)

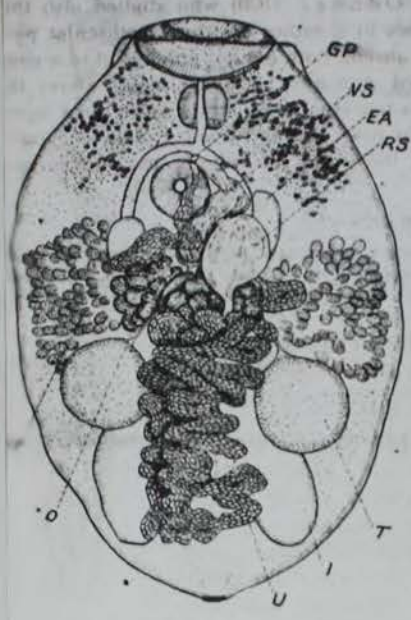


Fig. 7. *Metadena depressa* (Stossich); ventral view.

This is a very little known form, probably identic with *Distomum depressum*, described by Stossich in 1883. It was mentioned still twice by the same author in 1886 and 1898, and cited by Carus (following Stossich) in 1884. Stossich's diagnosis from the year 1883 runs as follows: „essa si presenta all'occhio dell'osservatore sotto forma di macchiette brunastre, le quali contrastano moltissimo col colore bianco giallognolo del muco inestinale. Il corpo e inerme, stiacciato, periforme e quasi discoidale. Anteriormente si trova il poro buccale, che e terminale, molto grande, con ampia apertura circolare circondato da un bordo muscolare elevata forma di anello. Piccolissimo invece e il poro ventrale, essenda esso le quatro volte minore del poro buccale:

sso e in oltre subgloboso, supero, prominente e la sua apertura si trova uasi sempre rivolta verso l'estremita anteriore del corpo. I testicoli ono due di forma quasi rotonda e simetricamente dispositi ai due lati osteriori del corpo. Le uova sono picolissime, ellitiche e di colore bruno curo: queste uova circolano in ovidotti piutosto ampi, i quali formano ella parte posteriore del corpo una quantita di ambagi, contrariando on qualunque osservazione anatomica. Lunghezza 2—2.5 mm. Larghezza —1.5 mm".

This description was supplemented in 1886 in the following way: „Corpus inerme depressum pyrifirme vel discoideum. Acetabulum sessile uperum, subglobosum, ore quadruplo minus, prominens, apertura antrorsum directa. Os terminale magnum orbiculare, imbo musculari elevato. Pharynx minuta ubglobosa, oesophagus nullus. Testes uo globosi laterales remoti. Ovula ellitia, minuta, numerosa, fusca. Apertura genitalis pone furcam intestinalem. Longitudo — 2.5 mm. Latitudo 1—1.5 mm".

Fig. 8. *Metadena depressa* (Stossich) anterior end after Stossich (1883).

A figure added to the description of 1883 (fig. 8) represented only the upper bodyhalf. Though the description and figure are incomplete, I have the impression that the description be referred only to the form found by me in *Dentex dentex*, the fact being highly improbable that any other species of similar characters could ever be found in *Dentex dentex*. I take the liberty to give here a complete description and a figure of this species (fig. 7).

Body oval, covered with a smooth cuticle. Body length 1,19—2.39 mm The greatest body width measured at the testes 0.95—1.5 mm. Oral sucker well developed disk-like terminal, surrounded by a collar-shaped fold of muscles, measuring 0.29—0.46×0.15—0.21 mm. Prepharynx very short passes into well developed pharynx measuring 0.10—0.19×0.10—0.16 mm. Oesophagus very short. The curved caeca reach the posterior part of the body, where they generally widen. Acetabulum small measuring 0.12—0.19×0.10—0.12 mm. Testes globular situated symmetrically in the posterior half of the body separated by the convolutions of the uterus. Vesicula seminalis posteriorly extending from fore edge of the ovary till the bifurcation of the intestine, where it opens into a very small atrium genitale lying before acetabulum. Cirrus and pars prostatica undeveloped. Testes measure 0.20—0.27×0.21—0.32 mm. Ovary divided into several small lobes is situated anterior to the testes behind acetabulum, in the middle of the body. Its measures are 0.21—0.43×0.32—0.54 mm. Receptaculum seminis large spherical or pear shaped is situated in the fore part of the ovary to the left generally close to the swollen area of vesicula seminalis. Vitellaria in form of grapes built up of numerous little globules are situated at the sides of the ovary. Vitelline reservoir is found at the height of mid-ovary. Uterus, well developed makes posteriorly many transversal convolutions between intestine and testes, above the ovary and under the acetabulum. Uterus in its beginning makes first descending coils towards the end of the body, which posteriorly pass into ascending coils running close to the descending ones as far as the hind edge of the ovary. Then the uterus makes a bent to the right between the ovary and the vitellaria. Then it runs towards the middle of the body, above the ovary turns to the left, making a large transversal coil behind acetabulum, from where taking again to the right and running close acetabulum it joins atrium genitale. Uterus is filled with dark brown eggs which posteriorly cover the excretory vesicle. Quite young eggs are nearly colourless, older ones have a slihtly yellowish shell and completely ripe eggs are dark brown. The eggs measure 0.010×0.023 mm. Excretory vesicle is Y-shaped.

The features of this form being characteristic to the genus *Metadena* Linton 1910 I propose this name instead of *Distomum depressum* Stossich 1883. From the other species of the genus such as *M. pagrosomi* Yamaguti 1938 and *M. crassulata* Linton 1910 — the form described here differs mostly in the structure of the oral sucher, the surrounding fold, the position of the uterus etc.

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from Janiszewska 1953

139. METADENA GLOBOSA (Linton, 1910) Manter, 1947
Figs. 98, 99

HOST: *Lutianus griseus* (Linn.), gray snapper; 2 specimens in 1 of 23 hosts examined.
LOCATION: Intestine.

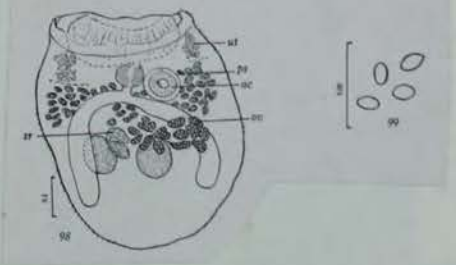
Description: This species was incompletely described by Linton. The following description is based on two specimens considered to be the species named by Linton.

Length 0.600 mm, width 0.465 to 0.487 mm; body spined, little tapering and very broadly rounded or truncated at each end. Traces of eye-spot pigment very sparse. Oral sucker short but very wide, 0.277 to 0.300 mm in diameter or well over 1/2 body width, withdrawn into anterior end of body which is thrown into rim-like circular folds; mouth directed anteriorly. Acetabulum 0.068 mm in diameter, embedded within a muscular depression with circular

* New synonym

rim. Sucker ratio 1:0.227 to 0.245. Forebody 0.153 to 0.262 mm. Short prepharynx, pharynx 0.088 to 0.099 mm wide by 0.065 to 0.073 mm long; very short esophagus; wide ceca extend slightly beyond testes. Testes rounded; two; symmetrical, not far apart; seminal vesicle inconspicuous, not extending appreciably anterior to acetabulum. Genital pore within the acetabular depression. Ovary multilobed, lobes often appear separated, about 13 lobes in one specimen but only 7 in the other; ovary overlapping testes ventrally. Seminal receptacle between testes, sharply bent C-shaped. Vitelline follicles in a band across the body dorsally just anterior to gonads, about at acetabular level. Uterus filling most of body and extending well anterior to acetabulum on each side, lying ventral to vitellaria; eggs 14 to 15 by 8 to 9 μ.

Discussion: I have concluded that two species of *Metadena* occur in the gray snapper at Tortugas, and that Linton probably had both in his collection. One cannot be certain which of these species should be considered *M. globosa* but Linton's first measurements and his figures seem to be the species described above, while his second measurements with much larger egg size may have been the second species described below. Distinguishing characters of *M. globosa* are: diameter of oral sucker more than half body width; uterus extending anterior to acetabulum; egg size; and relatively large pharynx.



from Ocyurus chrysurus at Bimini (Sogandares, 1959)

Metadena globosa (Linton, 1910) Price, 1940

Host.—*Ocyurus chrysurus* (Bloch), yellowtail [new host record].

Location.—Pyloric ceca and 1/4 intestine.

Locality.—Close to Cat Cay, B.W.I. [new locality record].

Sogandares, 1959

Metadena globosa (Linton, 1910)
Manter, 1947
Synonym: Stegopa globosa Linton, 1910.
Hosts: **Lutianus apodus* (J); *L. aya* (C); *Ocyurus chrysurus* (J).
Site: intestine.

CURAÇAO + JAMAICA: FROM NAHHAS AND CABLE, 1964

Metadena globosa (Linton, 1910)
Manter, 1947

Stegopa globosa Linton, 1910.

Hosts: *Lutjanus griseus* (1 of 3); *Lutjanus mahogoni* (1 of 2)*; *Lutjanus synagris* (3 of 7)*; *Ocyurus chrysurus* (4 of 5).
Site: Intestine.
Discussion: Manter (1947:333-335) and Hanson (1950:84) used several characters to distinguish *Metadena globosa* from *M. adglobosa*. After studying 27 specimens of *M. globosa* and 12 specimens of *M. adglobosa*, I believe the two may be distinguished best by uterine coils extending anterior to the acetabulum in *M. globosa* but not in *M. adglobosa*. The eggs are smaller in my specimens of *M. globosa*: 10 to 13 by 7 to 10 compared to 16 to 23 by 8 to 11 microns, although Manter (1947:334) reported 14 to 15 by 8 to 9 microns for *M. globosa*, and Hanson (1950:84) 10 to 27 by 7 to 12 microns for eggs of *M. adglobosa*. The body is usually more elongate in *M. adglobosa*. The diameter of the oral sucker in *M. globosa* is not always more than half the body width. The percentage is 34 to 55% compared to 35 to 45% in *M. adglobosa*. The sucker ratios are 1:0.20 to 0.51 compared to 1:0.27 to 0.32 in *M. adglobosa*. The seminal vesicle may also occasionally have coils anterior to the acetabulum in *M. globosa;* and even though the pharynx is relatively larger in *M. globosa,* it is approximately the size of the acetabulum in both species. The caeca may extend to the posterior end in both species. Several specimens of *M. globosa* have small, narrow, nondescript, cuticular appendage-like structures on the lateral and posterior margins of the body which contain cytoplasm. These processes were present on the trematodes when removed from the host and are not artifacts. Overstreet, 1969

Metadena lopastoma Winter, 1958

Host. Haplogagrus guntheri Gill (Lutjanidae)

Locality: West Coast of Mexico (Isla Maria Cleofas)
Holotype: Coll. Helminthol. Inst. Biol. Univ. Nac. México No. 216.2

Distinguished from other members of the genus primarily by the large size of its oral sucker (6.5 times acetabulum) and by extension of the ceca to near the posterior end of body.

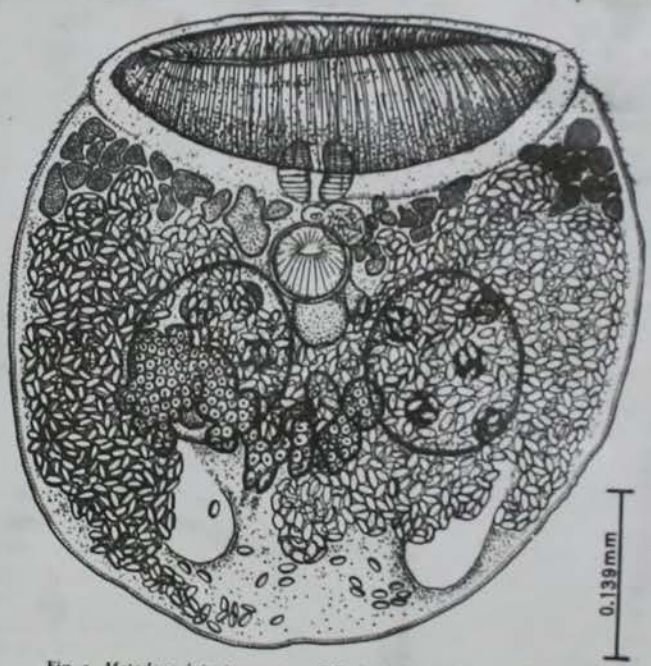


Fig. 5. *Metadena lopastoma* n. sp. Dibujo del holotipo, vista dorsal.

Descripción (basada en seis ejemplares grávidos): Cuerpo pequeño y casi esférico, a pesar de medir sólo 0.451 a 0.540 mm. de diámetro longitudinal por 0.527 a 0.681 mm. de diámetro transversal. La cutícula, en la parte anterior del cuerpo, tiene espinas muy pequeñas. Ventosa oral terminal, poco profunda pero muy ancha, mide de 0.196 a 0.428 mm. de diámetro transversal y está rodeada por un borde muscular. La relación entre el diámetro de la ventosa oral y el del cuerpo es de 1:1.41 a 1:1.92, con un promedio de 1:1.71. El acetábulo ocupa el área media pre-ecuatorial, está situado de 0.103 a 0.191 mm. del borde anterior del cuerpo y mide de 0.049 a 0.056 mm. de diámetro longitudinal por 0.056 a 0.068 mm. de diámetro transversal, se encuentra hundida en un repliegue de la pared del cuerpo; el poro genital se halla en esa misma depresión

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acetabular. La relación entre el diámetro de la ventosa oral y el del acetábulo es de 1:0.129 a 1:0.197, con un promedio de 1:0.156; la ventosa oral es 6.5 veces mayor del acetábulo.

La boca mide 0.083 mm. de diámetro transversal y está dirigida hacia adelante. No se observó la prefaringe. Faringe, de 0.049 a 0.056 mm. de largo por 0.052 a 0.068 mm. de ancho. Esófago corto. Los ciegos intestinales llegan casi hasta el borde posterior del cuerpo donde tienen una anchura de 0.053 a 0.060 mm.

Los testículos son casi esféricos, simétricos, cubren en parte a los ciegos intestinales y están situados de 0.069 a 0.173 mm. de la extremidad posterior del cuerpo y miden de 0.112 a 0.189 mm. de largo por 0.069 a 0.172 mm. de ancho; se encuentran separados por un espacio intertesticular de 0.069 a 0.121 mm. Vesícula seminal colocada entre la faringe y el acetábulo, es dorsal al acetábulo. El complejo prostático y el cirro no existen. Poro genital mediano y dentro del pliegue cuticular del cuerpo que rodea al acetábulo.

El ovario es multilobulado y muchos de los lóbulos están separados entre sí, son en número de 13 a 19 y ocupan una posición mediana y submediana del espacio intertesticular; las prolongaciones lobulares sobrepasan porciones de los testículos. Receptáculo seminal entre los testículos. Folículos vitelinos situados anteriormente a los testículos y además a nivel del acetábulo. Las asas uterinas llenan gran parte del cuerpo y se extienden en los campos laterales hasta por delante del acetábulo. Los huevos maduros ocupan el lado izquierdo del cuerpo y miden de 0.014 a 0.017 mm. de largo por 0.008 a 0.009 mm. de ancho.

No se observó el sistema excretor.

Discusión: Actualmente el género *Metadena* Linton, 1910 comprende las siguientes ocho especies válidas: *Metadena crassulata* Linton, 1910 del intestino de *Lutjanus analis* (Cuvier & Valenciennes) (Pisc., Lutjanidae) en Tortugas, Florida; *M. adglobosa* Manter 1947 del intestino y ciegos intestinales de *Lutjanus griseus* (Linnaeus) (Pisc., Lutjanidae) en Tortugas, Florida; *M. apharei* (Yamaguti, 1942) Yamaguti, 1953 del intestino de *Aphareus furcatus* (Lacépède) (Pisc., Lutjanidae) en Naha, Okinawa, Islas Ryuku, Japón. *M. brotulae* (Manter, 1934) Manter, 1947 del intestino de *Brotula barbata* (Bloch & Schneider) (Pisc., Brotulidae) y de *Lophius piscatorius* Linnaeus (Pisc., Lophiidae) en Tortugas, Florida; *M. globosa* (Linton, 1910) Manter, 1947 del intestino de *Lutjanus griseus* (Linnaeus) (Pisc., Lutjanidae) en Tortugas, Florida; *M. leilae* Nagaty, 1937 de *Lethrinus miniatus* (Schneider) (=*L. rostratus*) (Pisc., Lethrinidae) del Mar Rojo en Hurghada (Ghardaqa), Egipto; *M. lutiani* (Yamaguti, 1942) Yamaguti, 1953 del intestino de *Lutjanus vaigiensis* (Quoy & Gaimard) (Pisc., Lutjanidae) en Naha, Okinawa, Islas Ryuku, Japón; y, *M. pagrosomi* Yamaguti, 1938 del intestino de *Pagrosomus unicolor* (Quoy & Gaimard) (Pisc., Sparidae) del Mar del Japón.

A la enumeración anterior debe agregarse la especie *Metadena lopastoma* n. sp., que fué encontrado en el intestino del pez "pargo rayado", *Hoplopagrus guntheri* Gill, procedente de la Isla María Cleofas, Nayarit, México.

Es de interés hacer notar que los peces huespedes de cinco de las ocho especies de *Metadena*, así como el de la nueva especie del Pacífico mexicano, pertenecen a la familia Lutjanidae. Debemos mencionar aquí también, que Margarita Bravo Hollis (hallazgo aún no publicado) ha colectado una especie semejante a *M. globosa* en intestino de *Haemulon scudderi* Gill (Pisc., Pomadasyidae), en Puerto Vallarta, Bahía de Banderas, Jalisco; el estudio comparado de *Metadena lopastoma*, n. sp., con ocho de estos ejemplares existentes en la Colección Helmintológica del Instituto de Biología de la Universidad Nacional de México, No. 214-23, demostró claramente que nuestros ejemplares constituyen una especie nueva.

Metadena lopastoma n. sp., se reconoce fácilmente por la gran amplitud de su ventosa oral, que la distingue de todas las demás especies del género; únicamente *M. globosa* se parece a este respecto. En *M. globosa* la ventosa oral es 4.3 veces más ancha que el acetábulo, mientras que, en la especie nueva la ventosa oral es 6.5 veces más ancha que el acetábulo. Caracteres adicionales que diferencian a *M. lopastoma* de *M. globosa* son: Extensión de los ciegos intestinales hasta casi el borde posterior del cuerpo, el mayor número de lóbulos en el ovario, y el menor tamaño de la faringe.

El nombre *lopastoma* es de *lopas*, vasija aplanada o plato, y *stoma*, boca, y se refiere a la ventosa oral característica, que es poco profunda y ancha.

? Paracryptogonimus
Metadena

~~Siphoderina~~ lutiani (Yamaguti, 1942) Yam., 1954.

Length 1.; width 0.42 mm.
Oral sucker 0.126 wide
Acetabulum 81 u wide; sucker ratio:
No circumoral spines
Prepharynx 40 u long; esophagus short.
Testes globular, smooth, symmetrical, at junction of middle with posterior third of body.
Genital pore immediately in front of acetabulum.
Ovary irregularly indented, median, just postequatorial.
Eggs 16 to 18 by 9 to 10 u.

Host: Lutianus vaigiensis (Quoy & Gaimard)
Japan; Naha

Compared with Siphoderina brotulae differing in shape of testes, position of branching of ex. stem; shape and size of eggs.

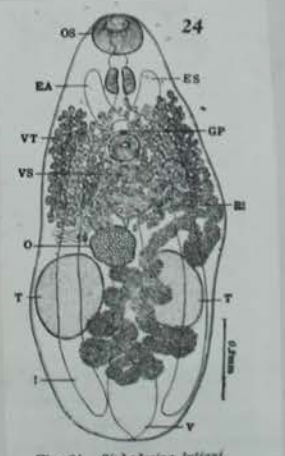


Fig. 24. *Siphoderina lutiani*, ventral view.

16. *Metadena magdalenae* n. sp. Arai, 1962

Hospedador: *Paralichthys californicus* (Ayres), (hospedador típico).

Localización: intestino.

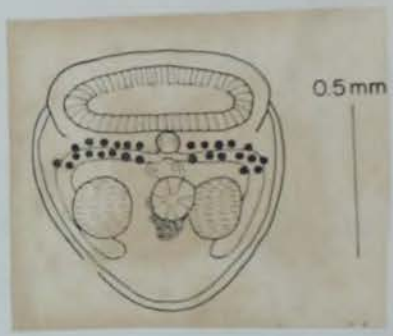
Distribución geográfica: Bahía Magdalena, Baja California, México (localidad típica).

Holotipo: En la colección Helmintológica, Museo Nacional, Estados Unidos.

Paratipos: Colección Helmintológica, Museo Nacional, Estados Unidos y Colección Helmintológica, Universidad de California, Los Angeles, Departamento de Zoología.

Descripción basada en cuatro ejemplares. Cuerpo casi esférico, sin espinas, con cutícula muy gruesa, 0.917-2.45 (1.17) de largo, por 0.870-2.57 (1.11) de ancho. Ventosa oral terminal, está dirigida hacia adelante, poco profunda, de 0.733-0.992 (0.992) de ancho. No se observó la prefaringe.

Faringe poco notable en todos los ejemplares a excepción del tipo, (0.114) de diámetro transversal. No hay esófago. Los ciegos intestinales no están bien definidos pero se extienden hasta el borde posterior de los testículos. Acetábulo ecuatorial en medio de la longitud del cuerpo, redondeado en sección óptica, de 0.150-0.212 (0.212) de diámetro. El poro genital no conspicuo pero presumiblemente enfrente del acetábulo. La vesícula seminal grande, media, poco sinuosa, se extiende desde el nivel del borde posterior del ovario hasta el borde anterior del acetábulo. La bolsa del cirro, el cirro y la próstata no conspicuas. Testículos grandes, redondeados, simétricos, usualmente al lado de la ventosa ventral, de 0.202-0.291 (0.282) en su dimensión más grande. Ovario con muchas lobulaciones, de apariencia casi folicular, intertesticular, dorsal y posterior al acetábulo. Vitelógenas foliculares, distribuidas en banda (de dos a tres folículos de ancho) que se extienden desde el borde posterior de la ventosa oral, en toda la anchura del cuerpo. Utero lleno de huevecillos, obscurecen la zona de las gónadas con lazos longitudinales. Huevos de 0.021-0.022 (0.022) de largo por 0.010-0.011 (0.011) de ancho.



Vesícula excretora en forma de "Y", con brazos anchos que se extienden hasta el borde anterior de los testículos, tallo de la vesícula corto (con vesícula casi en forma de "V").

Discusión. La mayor diferencia que existe entre *Metadena magdalenae* y seis de las ocho especies incluidas en este género, está en el tamaño relativo de las ventosas orales. En esta especie, la ventosa oral es casi tan ancha como el cuerpo. *Metadena globosa* (Linton, 1910) y *M. lopastoma* Winter, 1957, son las especies en que la proporción de la ventosa oral y el ancho del cuerpo es similar a la de *M. magdalenae*. La especie descrita aquí es diferente de *M. globosa* por la posición de la ventosa oral, el tamaño más grande del cuerpo, la localización y número de lobulaciones del ovario, por el número de las vitelógenas y el tamaño de la vesícula seminal. *Metadena lopastoma* y *M. magdalenae* son similares en apariencia general, pero se diferencian mucho en el tamaño del cuerpo. Las especies en la presente colección están en estado grávido y miden aproximadamente cuatro veces más la dimensión máxima del cuerpo de *M. lopastoma*, además la relación del tamaño de las ventosas en esta especie es 1-5:1 mientras que en *M. lopastoma*, la relación de las ventosas es 6.5:1. Otras diferencias son: el tamaño de los huevos, el largo de los ciegos intestinales y la localización y dispersión de las vitelógenas.

El nombre es debido a la localidad en donde estos ejemplares fueron colectados.

Heterophyidae

Metadena pagrosomi Yamaguti, 1938

Length: 2.15-2.9 mm.

Width: 1.8-2.7 mm broad in flattened mounts.

Oral sucker: 0.14-0.3 X 0.25-0.35 mm.

Acetabulum: (size:) 0.16-0.22 X 0.18-0.24 mm.
(position): At junction of anterior with middle third of body.
Sucker ratio: Oral sucker somewhat larger.

Esophagus: Short, narrow at its beginning but wider posteriorly.
Pharynx: Well developed, 0.14-0.15 X 0.17-0.2 mm.

Genital pore (location): In front of acetabulum.

Testes, shape: Ovoid, symmetrical.

location: Just behind middle of body, posterolateral and dorsal to ovary.
Cirrus sac (extent): Lacking
Ovary, shape: Divided into numerous small lobes.

location: Median, ventral, at about middle of body.

Vitellaria: Forming about a dozen (?) grape-like bunches, extending transversely from side to side at level of vesicula seminalis near the dorsal cuticle.
Eggs: Elliptical, light-brown, thick-shelled, 25-28 X 11-13μ in life, containing embryos.
Other features:

Host: Pagrosomus unicolor (Quoy et Gaimard)

Locality: Inland Sea, Japan.

Reference: Studies on the Helminth Fauna of Japan, Part 21. Kyoto, Japan. Revised edition.
Comparisons: Metadena crassulata Linton, 1910
differ "in size & eggs & oral sucker

Life cycle:

Cryptogonimidae

Metadena pauli (Wlassenka, 1931) Yamaguti, 1958

Syn: Achoerus pauli Wlassenko, 1931

Very small, thick trematodes of round-oval form. Size 0.5 to 0.7 by 0.4 to 0.6 ,,. Cuticula spined. Oral sucker 0.18 in diameter; acetabulum 0.07 to 0.08 mm. Pharynx not large, about same size as acetabulum; esophagus very short. Excretory vesicle Y-shaped, almost V-shaped. Testes round, symmetrical about at midbody. Genital pore between the acetabulum and the intestinal bifurcation. Cirrus sac large, its hind end usually between the testes. Ovary multilobed, wider than long, between testes. Vitellaria of two groups of follicles in fore part of body; uterus fills most of body and eggs mask most of organs; metraterm undeveloped; eggs 21 by 8 μ.

Numerous in Sciaena umbra and Umbrina cirrosa , Black Sea

Рис. 14 *Achoerus pauli* [illegible] из кишечника Sciaena [illegible] окрашен под покровным стеклом

Рис. 15 *Achoerus pauli*

? Paracryptogonimus

Travassos, Teixeira de Freitas and Bührnheim, 1967

Cryptogonimidae

Metadena spectanda sp. n.

(Est. 14, figs. 47.54)

Trematódeos de contôrno elítico, com cutícula espinhosa e extremidades arredondadas; medem 0,73 a 2,00 mm de comprimento por 0,37 a 0,83 mm de largura. Ventosa oral subterminal, com 0,13 a 0,20 mm de comprimento por 0,14 a 0,25 mm de largura. Acetábulo pré-equatorial, incluído no átrio genital, com 0,07 a 0,09 mm de comprimento por 0,07 a 0,11 mm de largura. Relação entre a ventosa oral e o acetábulo varia de 1:0,42 a 1:0,55. Pré-faringe presente, curto. Faringe musculosa, com 0,080 a 0,133 mm de comprimento por 0,086 a 0,149 mm de largura. Esôfago muito curto. Cecos intestinais largos, mais ou menos retilíneos, estendendo-se até a extremidade posterior do corpo. Poro genital mediano, pós-bifurcal, na área acetabular. Átrio genital acetabular. Bôlsa do cirro mais ou menos alongada, pré-ovariana, ultrapassando posteriormente a zona do acetábulo; encerra vesícula seminal bem desenvolvida, lobada, com 0,13 a 0,33 mm de comprimento por 0,05 a 0,13 mm de largura; região prostática e cirro inaparentes. Testículos pós-equatoriais, pós-ovarianos, com zonas quase totalmente coincidentes e campos um pouco afastados; ocupam as áreas intercecal, cecais e extracecais e têm contôrno lobado ou não. Testículo correspondente ao lado da espermateca mede 0,17 a 0,40 mm de comprimento por 0,13 a 0,32 mm de largura; testículo oposto mede 0,13 a 0,35 mm por 0,13 a 0,32 mm. Ovário aproximadamente equatorial, intercecal, pré-testicular e pós-bursal; é mais ou menos profundamente lobado e mede 0,08 a 0,23 mm de comprimento por 0,13 a 0,33 mm de largura. Glândula de Mehlis e canal de Laurer não observados. Espermateca presente, bem desenvolvida, pré-ovariana, intercecal, na zona da vesícula seminal; mede 0,05 a 0,23 mm de comprimento por 0,05 a 0,18 mm de largura. Útero com alças que enchem tôda a porção pós-testicular do corpo, passam entre os testículos e entre essas gônadas e o ovário, entre êsse órgão e a espermateca e a bôlsa do cirro e atingem o átrio genital por uma vagina pouco diferenciada. Ovos de coloração marrom, atenuados no pólo opercular; medem 0,019 a 0,022 mm de comprimento por 0,009 a 0,012 mm de largura. Vitelinos constituídos por folículos arredondados ou elíticos, estendendo-se da zona bifurcal ou da zona faringeana até a zona ovariana; são extracecais, cecais e intercecais, confluindo ou não na linha média, na área ovariana. Poro excretor terminal. Vesícula excretora não observada.

Habitat — Intestino de **Lutjanus jocu** (Bloch & Schneider) (hospedador tipo) e divertículos pilóricos de **Paralichthys brasiliensis** (Ranzani).

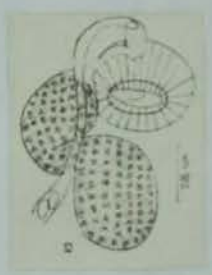
Proveniência — Ilha N. S. da Conceição baia de Vitória (Oceano Atlântico), Estado do Espírito Santo, Brasil.

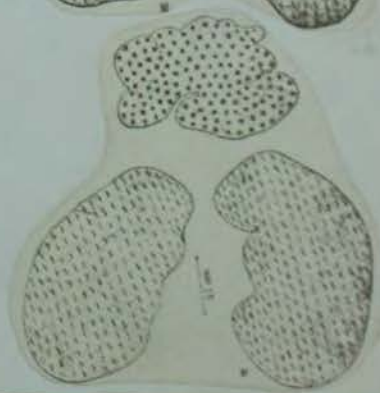
Tipo n.º 30 152 a e parátipos n.ºs 30 152 b.c e 30 153 a.s depositados na Coleção Helmintológica do Instituto Oswaldo Cruz.

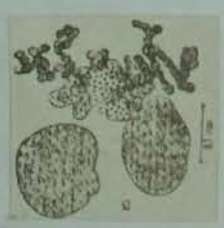
No Quadro VI damos as principais medidas de alguns espécimes.

Discussão — No gênero **Metadena** Linton, 1910 (sin.: **Stegopa** Linton, 1910, **Achoerus** Vlasenko, 1931, **Siphoderina** Manter, 1934) são incluídas as seguintes espécies: **M. crassulata** Linton, 1910 (espécie tipo), **M. globosa** (Linton, 1910), **M. pauloi** (Vlasenko, 1931), **M. brotulae** (Manter, 1934), **M. pagrosomi** Yamaguti, 1938, **M. lutiani** (Yamaguti, 1942), cuja descrição original não obtivemos, **M. adglobosa** Manter, 1947, **M. lopastoma** Winter, 1957 e **M. magdalenae** Arai, 1962.

Pela ventosa oral menor **M. spectanda** sp. n. distingue-se de **M. crassulata, M. brotulae, M. lopastoma** e **M. magdalenae;** de **M. pagrosomi** se diferencia pelo acetábulo menor e de **M. adglobosa** por ter êsse órgão com dimensões maiores. **M. spectanda** sp. n. é, assim, mais próxima de **M. globosa** e **M. pauloi,** das quais se distingue pelo tamanho dos ovos.







From: Overstreet 1971

***Metadena spectanda* Travassos, Freitas, and Bührnheim, 1967**

HOSTS: *Micropogon undulatus* (Linnaeus), Atlantic croaker, *Bairdiella chrysura* Lacépède), silver perch.

SITES: Intestine and pyloric ceca.

LOCALITIES: Mississippi and Louisiana waters along coast of Gulf of Mexico.

SPECIMEN DEPOSITED: USNM Helm. Coll. No. 71765.

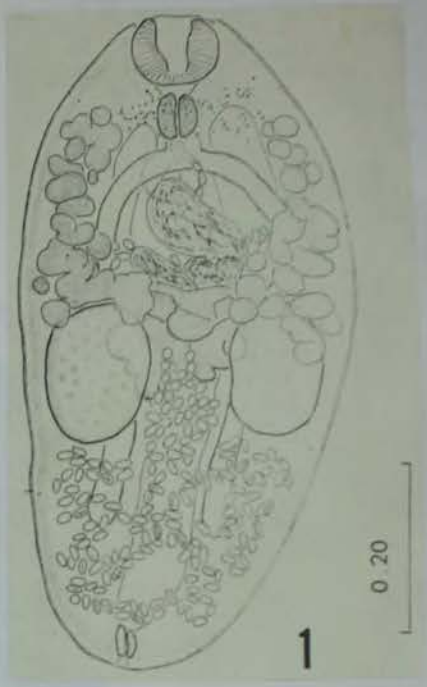
DESCRIPTION (based on 21 mature specimens from *Micropogon undulatus*): Length 320–1,216; width 209–612 or 43–68% of body length; covered with minute spines. Eyespot pigment usually dispersed, near pharyngeal level. Cephalic glandular cells conspicuous in forebody (not illustrated). Oral sucker retractile into anterior end of body, without trace of oral spines, 70–133 long by 79–149 wide. Acetabulum conspicuous, 35–77 by 37–91. Sucker width ratio 1:0.34–0.69, range wide primarily because of variation in acetabular width. Forebody 84–226 long, 19–32% of body length. Prepharynx usually less than ½ length of pharynx or occasionally longer. Intestinal bifurcation at or near acetabular level; ceca usually ventral to but occasionally immediately medial to testes, terminating about halfway between testes and posterior end of body.

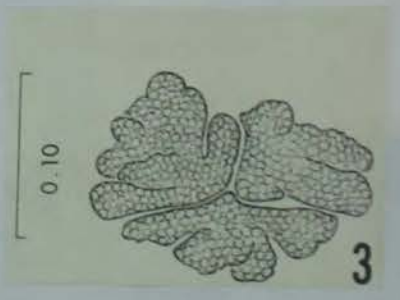
Testes longer than wide, symmetrical, well separated; left testis 56–219 long by 38–128 wide; right testis 74–222 by 49–119. Postesticular space 74–468 long, 20–43% of body length. Seminal vesicle elongate, bipartite but not always discernable in fixed specimens, either dorsal, lateral, or posterior to acetabulum. Genital atrium either longer or shorter than depth of acetabulum; genital pore median and immediately anterior or ventral to acetabulum.

Ovary at midbody, ventral to and between anterior borders of testes, occasionally not reaching one of testes; multilobed, some individuals with 3 primary lobes, each lobe with 3–6 secondary lobes, other individuals with numerous lobes but no discernable primary lobes; occupying space 77–198 long by 95–285 wide. Vitelline follicles in lateral fields between levels of oral sucker or pharynx and testes, confluent dorsal to anterior portion of ovary. Seminal receptacle near and often larger than seminal vesicle. Laurer's canal not observed. Uterus filling most of body posterior to gonads and also that between testes and level of posterior border of acetabulum. Eggs 19–28 long by 10–16 wide in mounted specimens, 23–30 by 12–15 in living ones; operculated shell having granular appearance.

Excretory vesicle bifurcating at or near ovarian level; arms extending to pharyngeal level; pore terminal.

DISCUSSION: Two paratypes (30-152 b and c) were kindly loaned to me by the late Dr. J. F. Teixeira de Freitas for examination. I





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did not see the originally described cirrus sac in either specimen, a character which, in the true sense, would place the species into another genus and differentiate it from my specimens. My specimens and the loaned ones both have prominent eyespot pigment granules and granular appearing egg-shells. The only apparent difference between the North and South American specimens is the average size. The length of the paratypes from *Paralichthys brasiliensis* (Ranzani) were listed as 0.73 to 1.45 mm, and those from *Lutjanus jocu* (Bloch and Schneider), including the holotype, as 1.81 to 2.00 mm (Travassos, Freitas, and Bührnheim, 1967), whereas the length of those in my collection from sciaenid fishes range from 0.32 to 1.22 mm. Only a few of my specimens, including numerous worms not used for the redescription, overlap in size with any of those from *P. brasiliensis*. My specimens from *Bairdiella chrysura* agree in all respects with those from *Micropogon undulatus*.

The vitellaria in *M. spectanda* are in the shoulder region as they are in *M. lopastoma* Winter, 1958, *M. magdalenae* Arai, 1963, *M. pauli* (Vlasenko, 1931), and *M. eurystoma* Oshmarin, 1965. The first two of these species have relatively large oral suckers and vitelline follicles which transverse the bodies. The last two show more similarity to *M. spectanda* and are also reported from sciaenid fishes. Variations in the last two species are not well known, the latter being described from a single specimen. *Metadena pauli* is rounder than *M. spectanda*, with distinctly extratesticular ceca. In *M. eurystoma* the oral sucker is broad at the posterior portion, and the testes are wider than long. Additional examination of material of these two species may reveal that not all species of *Metadena* are valid.

Metadena spectanda may differ from all the other species by having a bipartite seminal vesicle and testes that are occasionally in an extracecal location. The external seminal vesicle described for *M. eurystoma* by Oshmarin (1965) is probably a seminal receptacle. The testes illustrated by Janiszewska (1953) for *M. depressa* (Stossich, 1883) are nearly extracecal.

In view of the bipartite seminal vesicle in *M. spectanda*, the location of the vitellaria and ceca in several species, and the small unlobed ovary in *M. lutiani* (Yamaguti, 1942), I place *Exorchis oviformis* Kobayashi, 1915, as a synonym of *Metadena oviformis* (Kobayashi, 1915) comb. n. and consequently *Exorchis* Kobayashi, 1915, as a synonym of *Metadena* Linton, 1910. The only feature that could be used to separate the species of *Exorchis* from those of *Metadena* is the apparent consistently extracecal location of the testes in the former, and I do not consider that of generic magnitude.

Metadena spectanda Travassos, Freitas, and Bührnheim, 1967, is one of eleven recognized species of *Metadena* Linton, 1910, not including *Paracryptogonimus leilae* (Nagaty, 1957) Manter, 1963, *P. apharei* (Yamaguti, 1953) Velasquez, 1961, *Neochasmus microvatus* (Tubangui, 1928) Tubangui and Masilungan, 1944, and *Siphoderina brotulae* Manter, 1934, which were all at one time considered species of *Metadena*. An additional species is being described by Robert Schroeder and was discussed briefly by Overstreet (1969). *Metadena spectanda* was previously known only from Brazil. It is redescribed below in order to add new information, provide a description that may be more readily available, and include ranges on the size of individuals that are commonly found in two estuarine sciaenid fishes of Mississippi and Louisiana.

Cryptogonimidae

Metadena sp. Overstreet, 1969

Metadena sp. Overstreet, 1969
Host: *Lutjanus griseus* (1 of 3).
Site: Pyloric caeca.
Discussion: Specimens from a single *Lutjanus griseus* are similar to *Metadena adglobosa*, except they have a large, heavily-spined ventrogenital pouch. I consider these to be a new species which is described by Schroeder (in press) from the same host near Lower Matecumbe Key, Florida.

METADENA

MITOTREMA Manter, 1963

Generic diagnosis of Mitotrema: Very elongate, slender, more or less cylindrical Cryptogonimidae; Diplopharyngotrematinae. Cuticula with fine spines. Oral sucker with six muscular lobes; pharynx not bipartite. Long distance (more than half body length) between ovary and genital pore. Gonads tandem, separated by uterine coils. Excretory crura extending to near oral sucker. Parasites of marine fishes. Type species: *M. anthostomatum*.

Discussion: This trematode is remarkable in its greatly elongate, slender, filamentous body. This elongation is mostly in the distance between the ovary and genital pore, a distance almost three-fourths body length. The seminal vesicle stretches as a sinuous tube almost this entire distance. In spite of the great elongation of the seminal vesicle and the uterus, the vitellaria are restricted to rather exact levels a little anterior and posterior to the ovary. The lobed oral sucker is another unusual feature of the genus. Its similarity to the oral sucker of the genus *Enenterum* Linton, 1910 (family Lepocreadiidae) is apparently an example of convergence. *Mitotrema* belongs in the family Cryptogonimidae as indicated by the sunken acetabulum, lack of cirrus and cirrus sac, excretory system, posterior extent of the uterus, and the small eggs.

One other known genus is related to *Mitotrema*: *Diplopharyngotrema* Yamaguti, 1958, with a single species, *D. lateolabracis* Yam., 1958, from *Lateolabrax* in Japan. It is the type genus of the subfamily Diplopharyngotrematinae Yam., 1958. *Diplopharyngotrema* has a funnel-shaped oral sucker with some indication of lobes and is similar in location of gonads and other organs. Yamaguti found no cuticular spines but these are very fine and scalelike in *Mitotrema* and may well have been lost in his material. *Mitotrema* differs from *Diplopharyngotrema* in its extremely elongate body, lack of a distinctly bipartite pharynx, and presence of six distinct oral lobes, as well as in many specific differences such as distribution of the vitellaria.

Mitotrema anthostomatum ~~gen. nn., sp. n.~~ MANTER, 1963
(Figs. 14 to 16)

Host: *Plectropomus* probably *maculatus* (Bloch);* rock cod; Serranidae.

Location: Intestine.

Holotype and paratype: No. 59860.

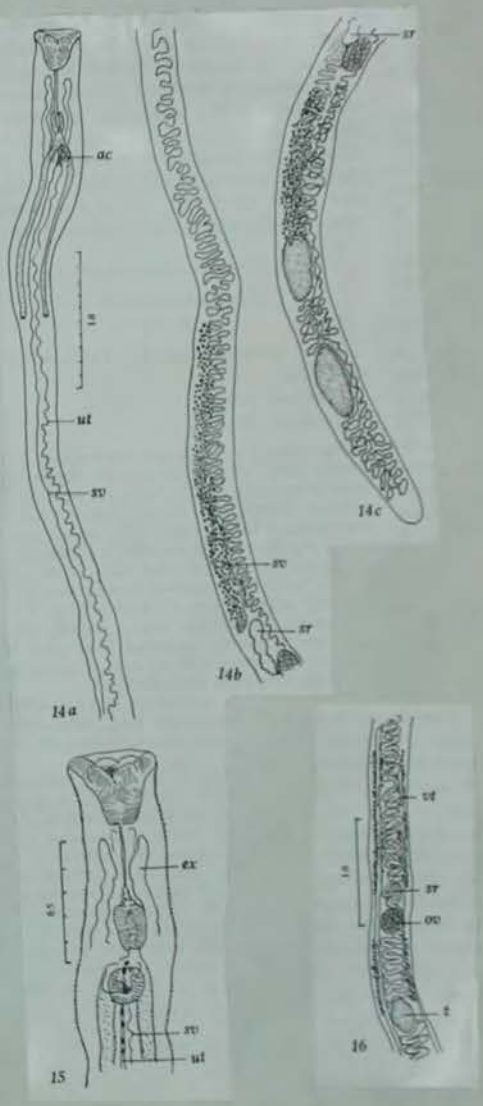
Description (based on five specimens): Body very long and slender, more or less cylindrical, 8.930 to 13.908 long by 0.334 to 0.368 wide, or about 30 to 40 times longer than wide; almost equally wide along entire length; anterior end truncate, posterior end rounded but only slightly tapered. Cuticula with fine spines which disappear near ovary or anterior testis. Oral sucker inverted bell-shape, with six muscular lobes around mouth, two dorsal, two ventral, and one on each side; mouth funnel-shaped. Oral sucker at widest (anterior) point, 0.241 to 0.368; acetabulum embedded in body, 0.114 to 0.154 in diameter; sucker ratio 1:0.41 to 0.45. Forebody 0.608 to 0.931, or only one-fourteenth to one-fifteenth body length. Prepharynx 0.268 to 0.335 long, posterior end crinkled or folded and sometimes projecting, valvelike, into pharynx. Pharynx 0.120 to 0.167 long by 0.094 to 0.120 wide; circular muscles more prominent in anterior half. Esophagus very short, 0.030 to 0.040 long; bifurcation at anterior edge of acetabulum; ceca extending to near posterior end of body.

Genital pore inconspicuous, median, immediately preacetabular. Testes smooth, longer than wide, tandem, separated by uterine coils, in posterior sixth of body length; posttesticular space 0.608 to 0.950 or approximately same length as forebody. Seminal vesicle tubular, remarkably long, extending from genital pore to near ovary (some 8.45 mm in holotype), ending dorsal to seminal receptacle, gradually enlarging posteriorly. Cirrus and cirrus sac lacking.

Ovary ovoid, smooth, pretesticular, separated from anterior testis by uterine coils; Mehlis' gland large, dorsal to ovary; seminal receptacle a large long sac extending anterior to ovary, ending near base of seminal vesicle. Vitelline follicles in lateral groups, sharply limited to two regions: (1) from anterior end of seminal receptacle forward about 1 mm, or about twice the distance between ovary and anterior testis, and (2) between ovary and anterior testis; follicles partly lateral but mostly dorsal to ceca and almost confluent dorsal to uterus. Uterus consisting of short transverse coils, extending ventrally posterior to ovary, coiling between testes and posterior to posterior testis, then dorsally forward the long distance (almost 14 mm in holotype) to genital pore, becoming sinuous and then almost straight about halfway between ovary and acetabulum. Eggs yellow, 20 to 24 by 9 to 11 μ.

Excretory pore terminal; excretory duct thick-walled; forking of vesicle not observed; crura extending to near oral sucker.

The name *Mitotrema* is from *mito*, thread, and *trema*, for trematode, and refers to the filamentous character of the body. The name *anthostomatum* is from *anthos*, flower, and *stomum*, mouth, referring to the petallike appearance of the oral lobes.



MITOTREMA

***Multigonotylus* gen. n.**

Diagnosis Pramvati, 1967

Cryptogonimidae. Body elongate, 7 to 11 gonotyls in preacetabular region. Ventral sucker and genital pore within ventrogenital sac. Oral sucker funnel-shaped, large; ventral sucker small; intestinal ceca simple, extending to near posterior end of body. Testes tandem or slightly diagonal in posterior half of body; seminal vesicle long, tripartite. Ovary trilobed, submedian; seminal receptacle and Laurer's canal present; uterus extending to near posterior end of body; vitellaria branched, preacetabular. Excretory bladder Y-shaped, wide arms reaching to level of Pharynx. Type and only species:

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* At present on leave from the Zoology Department, University of Lucknow, Lucknow (India).

Multigonotylus micropteri sp. n.
(Figs. 1–3) Premvati, 1967

Host: *Micropterus salmoides* (Lacépède).
Locality: Wakulla River, Leon County, Florida.
Location: Pyloric ceca and intestine.
Holotypes and four paratypes in USNM Helm. Coll. Nos. 62927, 62928. Four paratypes in helminthological collection of Professor Robert B. Short, the remaining with the author.
Number of worms obtained: About 300 from four hosts.

Description (based on 20 fixed and stained whole mounts and transverse and sagittal sections of six specimens)

Body elongate, oculate, spinose, broader at anterior end with a tapering rounded posterior end, length 1.20 to 1.50 mm, maximum width 250 to 350. Seven to 11 gonotyls in preacetabular region. Gonotyls increasing in size from anterior to posterior. Oral sucker 170 to 200 by 220 to 260, large, funnel-shaped, and terminal. Ventral sucker diameter 80 to 90, about one-third width of oral sucker, equatorial or slightly pre-equatorial, withdrawn into a ventrogenital sac. Prepharynx with two pairs of prepharyngeal glands; pharynx muscular, 60 to 70 by 70 to 80; short esophagus, ceca simple extending to near posterior end of body. Testes oval, median, tandem, or slightly diagonal. Anterior testis 120 to 140 by 100 to 130, posterior testis 120 to 140 by 120 to 130. Seminal vesicle elongated, tripartite, extending to level of anterior border of ventrogenital sac. Genital pore opening into ventrogenital sac anterior to ventral sucker. Ovary 110 to 150 by 60 to 70, trilobed, submedian, mainly pretesticular. Seminal receptacle and Laurer's canal present, uterus coiled, mainly dorsal (at places ventral also), reaching to posterior end of body. Vitellaria branched, completely preacetabular, in two lateral groups, extending from intestinal bifurcation to level of ventrogenital sac, situated mostly dorsal to ceca but present laterally and ventrally also. Right and left vitelline ducts extending posterior to ventral sucker, joining to form common vitelline duct in ovarian region. Eggs (50 in distal part of uterus measured) 30 to 35 by 10 to 15, small, numerous, filling most of the posterior region of body. Excretory bladder Y-shaped, bifurcating in the region of ovary or anterior testis, arms wide, reaching to level of pharynx.

Discussion

Cuirea (1933) erected the family Cryptogonimidae and assigned to it the subfamilies Cryptogoniminae Ward 1917, Neochasminae Mueller and Van Cleave 1932, Galactosominae Cuirea, 1933, Haplorchiinae Looss, 1899, and Alderiellinae Witenberg, 1930. Price (1940) reviewed the superfamily Opisthorchioidea and, on the basis of the excretory system, included only four subfamilies in the family Cryptogonimidae, viz. Cryptogoniminae, Neochasminae, Siphoderinae Manter, 1934 and a new subfamily Polyorchitrematinae. The other three subfamilies: Galactosominae, Haplorchiinae, and Alderiellinae were included in the family Heterophyidae. Yamaguti (1958)

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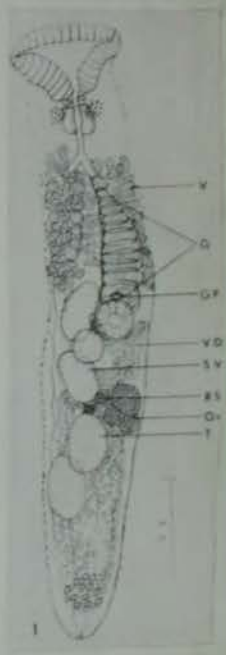

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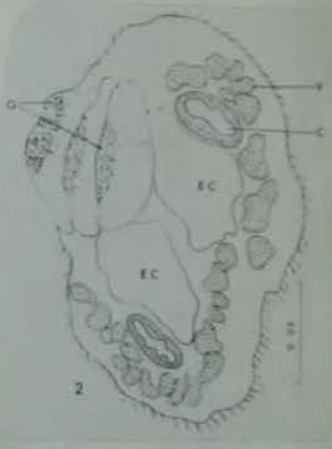

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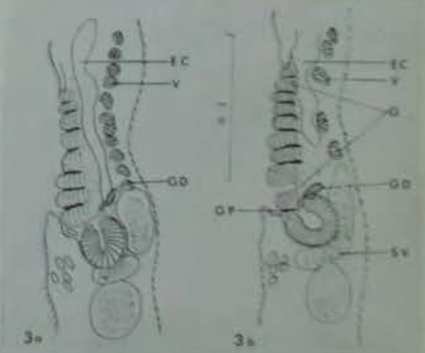

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FIGURES 1–3. *Multigonotylus micropteri* from largemouth bass. **1.** Holotype: Dorsal view. **2** Paratype: Cross section showing gonotyls, vitellaria, and excretory vesicles. **3.** a. and b. Paratype: Sagittal sections showing gonotyls; ventral sucker and genital pore in ventrogenital sac.

raised the number of subfamilies of Cryptogonimidae to 13. Besides the four already included by Price, he included Biovariinae Yamaguti, 1934, Exorchiinae Yamaguti, 1938, and Acetodextrinae Morozov, 1952; and in addition erected six new subfamilies: Tuhanguiinae, Caecincolinae, Bacciginae, Pseudexorchiinae, Metadeninae, and Pseudometadeninae.

Multigonotylus micropteri comes closest to the genus *Cryptogonimus* Osborn, 1903, and resembles the members of the subfamily Cryptogoniminae in having an elongated body, a large funnel-shaped oral sucker, long ceca, and lobed ovary. The ventrogenital complex with regard to the position of the genital pore and posteriormost gonotyl in *M. micropteri* is also similar to what has been shown in *C. chyli* by Mueller, 1934. But *M. micropteri* differs from all the members of the subfamily Cryptogoniminae in having vitellaria completely preacetabular (not in acetabulo-ovarian zone), and in having seven to 11 gonotyls in the preacetabular region. Besides these differences it further differs from *C. chyli* (the only species of the genus *Cryptogonimus*) in having long ceca terminating at the posterior end of the body and in the extension of the seminal vesicle to the level of the genital pore.

The preacetabular vitellaria are found in four other subfamilies: Caecincolinae, Bacciginae, Metadeninae, and Exorchiinae. But *M. micropteri* differs from *Caecincola*, the only genus of *Caecincolinae*, in having long ceca (not short), tripartite seminal vesicle (not bipartite), and in having seven to 11 gonotyls in the preacetabular region (gonotyl absent in *Caecincola*). *Multigonotylus micropteri* differs from the genus *Bacciger* of Bacciginae in having an elongated body (not oval), branched vitellaria (not compact), long ceca (not short), pretesticular ovary (not posttesticular), and in having preacetabular gonotyls. From *Metadena*, the only genus of Metadeninae, it differs in having vitellaria completely preacetabular (not extending posteriorly to level of ovary or testes), in having a freshwater host (not a marine host), and in having preacetabular gonotyls. From the genus *Exorchis* of the subfamily Exorchiinae, *M. micropteri* differs in having a large funnel-shaped oral sucker (not small), testes intercecal (not extracecal), and in having gonotyls in the preacetabular region.

Thus, *M. micropteri* differs from members of the known subfamilies of the family Cryptogonimidae in the presence of a series of gonotyls in the preacetabular region, showing thereby an extreme case of specialization for copulation in absence of any cirrus. It is, therefore, thought appropriate to create a new subfamily Multigonotylinae, with characters of the genus, for the reception of this genus *Multigonotylus*.

MULTIGONOTYLUS

Neochasminae Van Cleave et Mueller, 1932

Subfamily diagnosis. — Cryptogonimidae: Body rather plump, circumoral crown of spines present. Esophagus very short. Ceca long. Acetabulum median, enclosed in genital atrium. Testes symmetrical or nearly so, postequatorial. Ovary compact, lobed, or divided into numerous follicles. Vitellaria largely in ovarian zone, but often more extensive anteriorly or posteriorly.

Key to genera of Neochasminae

Ovary compact, rounded; vitellaria in bifurco-ovarian zone *Parspina*
Ovary compact, more or less lobed; vitellaria in ovarian zone or more extensive anteriorly or posteriorly ..... *Paracryptogonimus*
Ovary very much elongated transversely; vitellaria extending forward from ovarian zone
- a) Uterus entirely postovarian; seminal vesicle anterior or dorsal to acetabulum; ejaculatory duct not particularly glandular ..... *Allacanthochasmus*
- b) Uterus tightly coiled on each side of ovary; seminal vesicle posterodorsal to acetabulum; ejaculatory duct forming a fusiform glandular organ ..... *Proneochasmus*

Ovary divided into numerous follicles, vitellaria largely in ovarian zone ..... *Neochasmus*

Neochasmus Van Cleave et Mueller, 1932

Generic diagnosis. — Cryptogonimidae, Neochasminae: Body plump, oculate. Oral sucker terminal, large, with a single crown of spines. Prepharynx present. Pharynx usuallly small, esophagus short, ceca terminating some distance short of posterior extremity. Acetabulum deeply submerged. Testes symmetrical, just medial or ventral to ceca at or near their posterior ends. Vesicula seminalis well developed, extending back of acetabulum. Genital pore just in front of acetabulum. Gonotyl rudimentary. Ovary divided into numerous follicular acini extending transversely between acetabulum and testes and overreaching ceca laterally. Receptaculum seminis pre-ovarian. Vitellaria extending in lateral and partly dorsal fields from level of seminal vesicle to cecal ends or from acetabulum to testes. Uterine coils chiefly posttesticular. Excretory vesicle? Intestinal parasites of fishes and reptiles.

Genotype: *N. umbellus* Van Cleave et Mueller, 1932 (Pl. 17, Fig. 216—217), in *Micropterus salmoides, Boleosoma nigrum, Morone interrupta, Necturus maculosus, Micropterus dolomieu, Microperca proeliaris;* U.S.A.

Other species:

N. ictaluri Sogandares-Bernal, 1955, in *Ictalurus furcatus;* Louisiana.

N. microvatus (Tubangui, 1928) Tubangui et Masiluñgan, 1944, syn. *Meladena m.* T., in *Glossogobius* spp. and *Pristipoma hasta;* Philippines.

Representatives from reptiles:

N. labeosus Bennett, 1935 (Pl. 53, Fig. 641), in *Natrix rhombifera;* Louisiana.

HETEROPHYIDAE

Neochasminae Van Cleave & Mueller,1932

Parasitic in digestive tract of fresh-water fishes. Ventro-genital sac median,associated with a single gonotyl. Mouth surrounded by a single crown of spines. Dorsal lip somewhat thickened. Vitellaria lateral, in mid-zone of body. Ovary a pretesticular, transverse band of follicles. Testes two, spheroidal at considerable distance from posterior extremity. Uterus chiefly posttesticular. Type genus: Neochasmus VanCleave & Mueller ,1932.
Other genus: Allacanthochasmus Van Cleave,1922

NEOCHASMUS Van Cleave & Mueller,1932

Small distomes living as adults in the alimentary canal of fishes. Development unknown. Mouth provided with a prominent sucker surrounded by a single, continuous circle of spines, and a fairly conspicuous thickened dorsal lip, but lacking a posterior funnel-shaped appendage. Pharynx, prepharynx, and esophagus all present and of about equivalent length. Intestinal crura stopping short of the posterior third of body. Acetabulum deeply withdrawn into the genital atrium. Gonotyl rudimentary, appearing as a thickened area of the surface musculature just behind the genital pore. The muscle fibers are arranged concentrically, giving the appearance of a finger print when seen from the surface. This area is continuous with the body surface but can probably be erected into a teat-like elevation during functional activity. Testes lateral, slightly oblique, just behind middle of body. Ovary anterior to the testes, composed of a transverse band of follicles on the ventral surface of the body, extending across most of the body width. Vitellaria folliclular, in middle third of body, chiefly lateral but some follicles distributed across the entire width of the dorsal surface. Uterine loops fill most of post-ovarian region. Small pear-shaped seminal receptacle anterior to ovarian band on right side. Seminal receptacle extends as a median, convoluted tube bearing several constrictions, located between ovary and acetabulum.
Type species: Neochasmus umbellus Van Cleave & Mueller,1932

Neochasmus umbellus Van Cleave et Mueller, 1932

(Рис. 143, 144)

Дефинитивный хозяин: рыба — *Micropterus salmoides*.

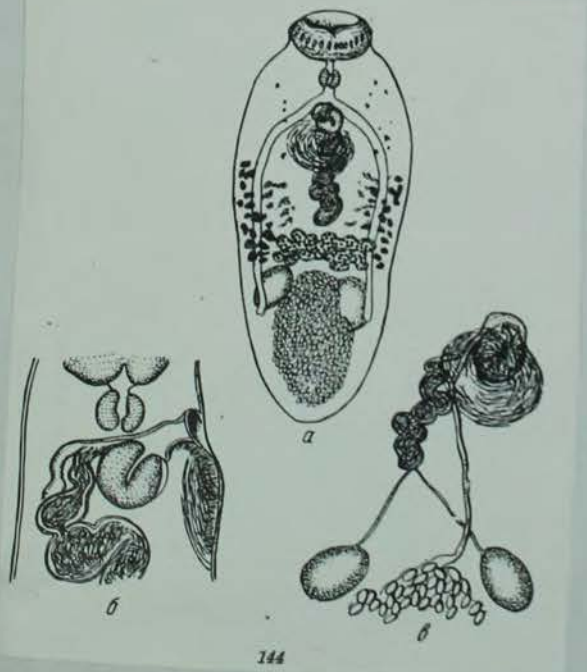
Дополнительный и промежуточный хозяева: неизвестны.

Локализация: кишечник.

Место обнаружения: Северная Америка.

Описание вида (по Ван Кливу и Мюллеру, 1932). Длина тела 0,85 мм, ширина 0,08—0,39 мм. Околоротовых шипов 27. Каждый шип около 0,021 мм длины. Яичник неправильный, фолликулярный, в виде поперечной ленты, около середины длины тела, впереди семенников. Семенники располагаются латерально, немного наискось. Матка заполняет заднюю половину тела, позади яичника. Желточники простираются по бокам тела в средней его трети. Половая присоска позади бифуркации кишечника, с вентральной поверхности имеет вид серии концентрических кругов. Эти круги не являются морщинами на поверхности кутикулы, а субдермальными мышечными волокнами половой присоски. С поверхности эти концентрические круги мышечных волокон напоминают оттиск пальца. Генитальный синус впереди половой присоски; он содержит брюшную присоску в своей вентральной стенке. Синус открывается одним простым отверстием впереди половой присоски. Префаринкс короткий. Пищевод приблизительно такой же длины, как и фаринкс. Кишечные ветви тянутся немного далее заднего края семенников. Яйца 0,022—0,032 мм длины и 0,011—0,015 мм ширины.

Литература: Van Cleave and Mueller, 1932, стр. 21—25.



CRYPTOGONOMIDAE Ciurea, 1933

Neochasmus ictaluri n. sp. Sogandares-Bernal 1955
(Fig. 3)

Diagnosis (based on 17 specimens. Average measurements in parentheses): *Neochasmus:* body tongue-shaped, spined at least to posterior level of testes; length 0.52 to 0.74 (0.68); maximum width near acetabulum 0.26 to 0.32 (0.27). Oral sucker terminal, 0.04 to 0.09 (0.07) in diameter; with conspicuous crown of 22 spines 0.02 long. Acetabulum about 0.08 to 0.09 long and 0.07 to 0.08 wide. Sucker ratio 1:1.13. Prepharynx approximately one-fourth length of pharynx. Pharynx globular, 0.04 in diameter. Esophagus about three times length of prepharynx. Ends of ceca not visible. Testes round or nearly so, paired, lateral, equatorial. Seminal vesicle free, sinuous, extending from gonotyl to posterior border of acetabulum. Gonotyl ventral to anterior edge of acetabulum, with two lateral lobes (Fig. 4) having shape of two apposed boxing gloves. Seminal receptacle approximately size of pharynx, sinistral, dorsal to ovary. Ovary median, intercecal, postacetabular, pretesticular, just anterior to mid-body, with many finger-like lateral lobes. Vitellaria lateral, extending from posterior edge of testes to anterior edge of acetabulum, follicles irregular in shape. Uterus with descending and ascending limbs, filling hinder part of body almost completely. Eggs approximately 0.018 by 0.012.

Host: Ictalurus furcatus Le Seur, chuckle-headed catfish.

Location: Intestine.

Locality: Lake Pontchartrain, Louisiana.

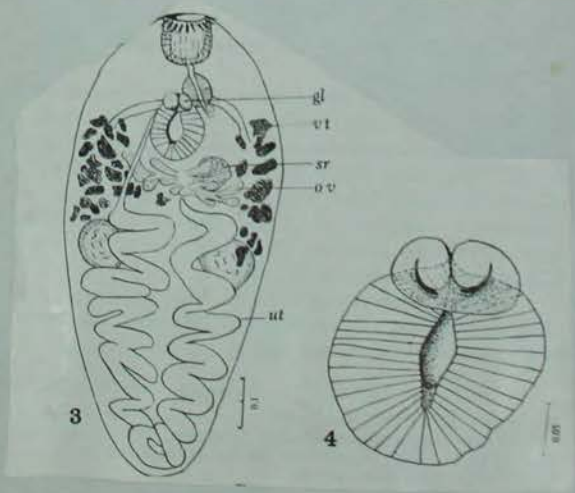
Holotype: U. S. Nat. Mus. Helm. Coll. No. 37,483.

This species is named after its host *Ictalurus*.

Other species in this genus are: *N. umbellus* Van Cleave and Mueller, 1932, from *Micropterus salmoides* Lacépède; *N. microvatus* (Tubangui, 1928) Tubangui and Masiluñgan, 1944 (syn. *Metadena microvata* Tubangui, 1928; *M. ovata* Tubangui and Francisco, 1930) from *Glossogobius giurus, Glossogobius biocellatus* and *Pristipoma hasta; N. labeosus* Bennett, 1935 from a water-snake, *Natrix rhombifera*.

The possession of 22 oral spines separates *Neochasmus ictaluri* from all other species in the genus. *N. umbellus* has 27 spines; for *N. microvatus*, Tubangui and Masiluñgan (1944) reported 7 spines in one specimen and 16 in the other; *N. labeosus* has 34 spines. The seminal receptacle of *N. ictaluri* is much smaller than that of *N. microvatus*, and in this respect, *N. ictaluri* resembles *N. umbellus* and *N. labeosus*. *N. ictaluri* differs from *N. umbellus* in its conspicuous gonotyl, and from *N. labeosus* in that mid-acetabulum lies in the first third rather than in the first fourth of the body; and the sucker ratio is 1:1.13 as compared with 1:0.71.

cf Apophallus imperator Lyster 1940

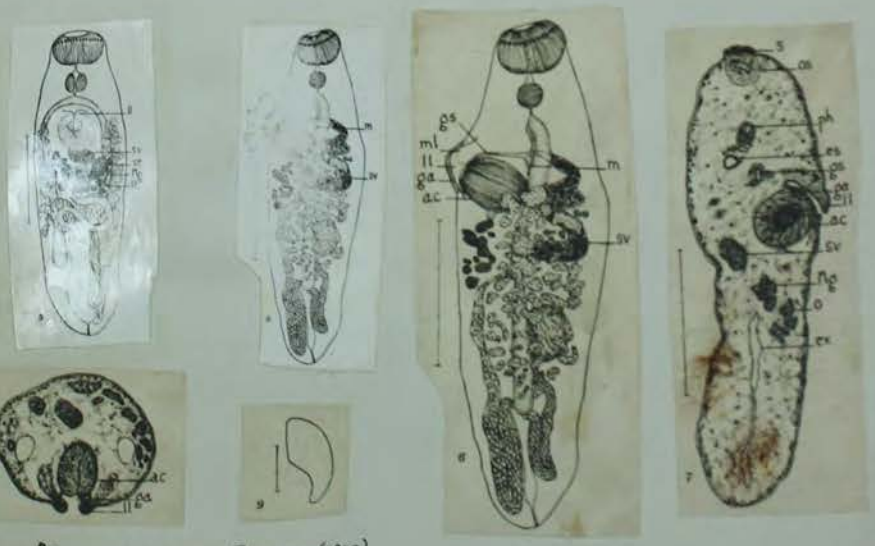


Heterophyidae
Neochasminae

Neochasmus labeosus Bennett, 1935

Body subcylindrical, 0.85 to 0.1 mm. long by 0.25 to 0.36 mm. in width. Cuticule smooth with exception of oral crown of thirtyfour spines measuring 19μ in length. Acetabulum 0.11 by 0.14 mm., at junction of first and second body thirds. Terminal oral sucker 0.09 by 0.14 mm.; prepharynx 0.02 to 0.04 mm. long; Pharynx 0.05 by 0.06 mm.; esophagus about the same length as prepharynx. Intestinal bifrucation occurs a short distance anterior to acetabulm and crura in third fourth of body length. Ovid testes 0.07 by 0.11mm., are obliquely placed in dorsal half of body and are intercrural. Large seminal vesicle coils vertically in dorsal half of body. Its posterior extremity lies mid-way between testes and acetabulum. Long coiled ejaculatory duct opens into an ovid chamber anterior to doraal surface of acetabulum. This chamber is surrounded by small gland cells. No definite prostate region could be distinguished. A genital sinus leads from this chamber to genital pore which is directly in front of acetabulum. Both acetabulum and genital sinus empty into a common atrium which is bounded laterally by prominent lips or folds of body wall. An anterior boundry formed by a single large fold which projects posteriorly, covering genital pore. Posterior boundry formed by a rather inconspicuous fold. Ovary an irregular series of follicles transversly arranged i ventral region of body, just behind acetabulum. Mehlis' gland lies dorsally to it. Seminal receptacle present , anterior to Mehlis' gland. Vitelline reservoir lies ~~dorsal~~ posterior to Mehlis' gland. Laurer's canal present. Uterus coils posteriorly on ventral surface, passes anteriorly between testes. Metreterm, long slender duct, enters genital sinus just ventral and posterior to entrance of male duct. Vitellaria consist of large follicles irregularly placed in lateral fields reaching from acetabulum to ends of crura and mesially to crura dorsally and ventrally. They approach dorsal median line in acetabular region but no connecting band present. Eggs from 20 to 30 μ long by 12 to 19 μ wide. Excretory vesicle empties on dorsal surface near posterior end of body, passes anteriorly in center of the body. It bifurcates between testes and rami terminate lateral to pharynx.

Host: Natrix rhombifera.
Location: Intestine
Distribution: North America



All figures from Bennett (1935)

Neochasmus magnus Winter,1958 1958

Host: Lutjanus colorado

Locality: West Coast of Mexico, Isla Maria Magdalena

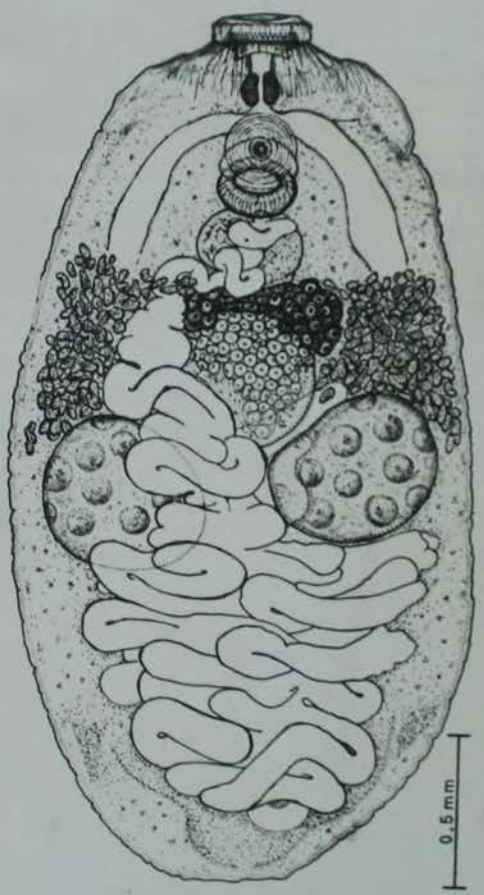


Fig. 3. *Neochasmus magnus* n. sp. Dibujo del holotipo, vista dorsal.

Neochasmus microvatus (Tub., 1928) Tub. & Masilungan, 1945

Metadena microvata Tubangui 1928

Metadena, Stepoda (Typograpical err for Stegopa) and Exorchis are compared as very similar. The species was placed in Metadena because the testes are extracecal in Exorchis and Stegopa is insufficiently described.

Body small, oval. 0.70 to 0.90 by 0.32 to 0.44 mm. Cuticle covered with minute spines.
Oral sucker 0.10 to 0.14 mm.
Acetabulum weak, very much smaller than oral sucker, 0.03 to 0.05 mm., in posterior portion of anterior third.
Pharynx immediately behind oral sucker, esophagus 0.05 to 0.07 mm. long, bifurcating at level of acetabulum.
Ceca moderately dilated, reaching as far as level of post. testes
Genital pore median, inconspicuous, immediately in front of v.s.
Testes slightly oval, intercecal, symmetrical on both sides of median line, at or just behind equator of body.
Seminal vesicle slightly coiled, voluminous, in front of ovary and testes.
Cirrus sac apparently absent.
Ovary median or nearly so, distinctly tri-lobed, between seminal vesicle and testes.
Uterus moderately developed, postovarian, posttesticular, reaching to posterior end of body.
Vitellaria in distinct follicles, from level of genital pore to anterior border of testes.
Eggs yellow-brown, oval, 18 to 22 by 11 to 12 u.
Excretory pore terminal. Excretory bladder V-shaped, reaching anteriorly to posterior margin of testes.
Hosts: Glossogobius giurus, G.biocellatus, and Pristipoma hasta
Location: Intestine
Locality: Laguna Province, Luzon

NEOCHASMUS MICROVATUS (Tubangui, 1928) comb. nov. Plate 1, figs. 2 and 3.

Synonyms: *Metadena microvata* Tubangui, 1928.
Metadena ovata Tubangui and Francisco, 1930.

There are three specimens of this trematode, one of which is in fair condition. It has been noted that the genus *Metadena* Linton, to which the parasite was originally assigned, is given an uncertain status by systematic writers in the scheme of classification of the trematodes due most probably to the scanty knowledge on the morphology of its members. For this reason it was decided to study carefully not only the specimens in the collection but also the type material. As a result, the following taxonomic features that were overlooked in the original description have been found: the presence of small spines around the mouth opening, a voluminous receptaculum seminis, and a genital sinus that is intimately associated with the acetabulum; the submerged position of the acetabulum; and the ventral position of the ovary. These characters together with those already given in the original description place the parasite in the heterophyid genus *Neochasmus* Van Cleave and Mueller, 1932.

The circumoral spines occur in a single row. They can be easily overlooked because of their minute size, the average length being 13.5 microns. They also appear to be easily detached, for of ten specimens examined only two show their presence. One of these two specimens has 7 and the other 16 spines.

The receptaculum seminis, which was mistaken for a part of the seminal vesicle, is voluminous and is dorsally located. In dorsal view, it is seen to occupy most of the space between the intestinal caeca and the testes.

The acetabulum is slightly retracted into the body. It is associated in heterophyid fashion with a small genital sinus, into which the terminal portions of the male and female reproductive organs open. A typical gonotyl cannot be made out, but posterior to the genital pore there is a cuticular thickening which may take the place of a gonotyl.

Host.—*Glossogobius giurus.*
Location.—Intestine.
Locality.—Manila.

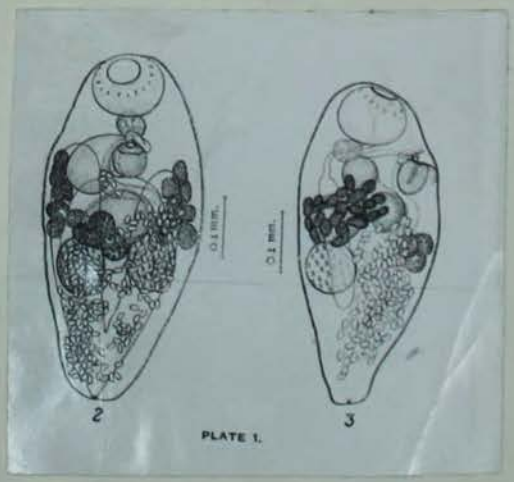


PLATE 1.

Neochasmus microvatus (Tubangui, 1928)
Tubangui and Masilungan, 1944

Syn. *Metadena microvata* Tubangui, 1928
Metadena ovata Tubangui and Francisco, 1931
(Figures 3 and 4)

Host: *Glossogobius giurus* Buchanan-Hamilton.

Location: Stomach (few) and small intestine.

Locality: Pasig, Alabang, Cardona, Binangonan, Rizal Province; Sukat, Cavite Province; Sta. Rosa and Laguna de Bay, Los Baños, Laguna Province; all in Luzon Island, Philippines.

Topotypes: U. S. Nat. Mus. Helm. Coll. No. 39078 also in Zoology Discipline, University of the Philippines' Helm. Coll. Nos. 368 (1)f-394 (1)f; 484 (1)f; 733(2)e.

Prevalence: Several thousand in 63 hosts out of 73 examined.

Diagnosis (measurements based on 10 gravid specimens): Body 0.29 to 0.67 by 0.14 to 0.34; oral sucker 0.069 to 0.115 by 0.069 to 0.13; circumoral spines 3.5 by 1 micron, 18 counted in one specimen; pharynx (5 specimens) 0.023 to 0.04 long; esophagus (3 specimens) 0.028 to 0.035 long; acetabulum 0.035 to 0.064 in diameter; ovary trilobate, immediately anterior to testes and toward left of body; testes symmetrical, 0.046 to 0.115 by 0.046 to 0.13. Eggs operculate, yellowish brown 16 to 20 by 10 to 14 microns. Excretory vesicle Y-shaped, main stem bifurcating just posterior to testes, arms reaching almost to oral sucker.

The above measurements together with the general morphology fall within the range of variations of Tubangui's (1928) specimens and those of Tubangui and Masilungan (1944). It is now being reported as *Neochasmus microvatus* (Tubangui, 1928) Tubangui and Masilungan, 1944, in the same host *Glossogobius giurus* Buchanan-Hamilton, from different localities in Luzon Island.

Tubangui (1928) described *Metadena microvata* and later Tubangui and Francisco (1930) reported it as *Metadena ovata*. In 1944 Tubangui and Masilungan based on careful study of the type specimen and more material, placed the parasite in the genus *Neochasmus* Van Cleave and Mueller, 1932; consequently *Metadena microvata* and *Metadena ovata* are synonyms of *Neochasmus microvatus* (Tubangui, 1928), Tubangui and Masilungan, 1944. Yamaguti (1953, 1958) without noting the synonymy listed *Metadena microvata* and *Neochasmus microvatus* as separate species.

FROM VELASQUEZ, 1961

Neochasmus sogandaresi ~~Hunt~~ OVERSTREET, 1971

Description (based on 9 mature specimens): Body elongate, tapered more posteriorly than anteriorly, 1.35–1.66 mm long by 470–655 wide. Tegument covered with minute spines except on area adjacent to muscular pad (= vestigial gonotyl). Eyespot pigment dispersed in forebody. Oral sucker retractile into anterior end of body, wider than long, 121–168 long by 176–189 wide; with 31–37 oral spines up to 28 in length, in single row. Acetabulum deeply embedded, longer than wide, 100–114 long by 81–93 wide. Sucker width ratio 1:0.45 to 1:0.54. Forebody 205–270 long or 13–18% of body length. Prepharynx shorter than pharynx. Pharynx 58–86 long by 67–86 wide. Esophagus usually inconspicuous, shorter than pharynx. Intestinal bifurcation near level of anterior border of acetabulum; caeca ending 26–39% of body length from posterior end, overlapping testes ventrally.

Testes lateral, symmetrical or nearly so, elongate; left testis 170–222 long by 86–145 wide; right testis 154–212 by 100–145. Posttesticular space 44–58% of body length. Muscular pad thick, elongated, 161–257 long, extending from ahead of to beyond acetabulum, covered with spines. Seminal vesicle long and sinuous, extending between acetabulum and anterior portion of ovary. Ventrogenital sac extremely muscular, opening anterior to acetabulum where prominently lobed.

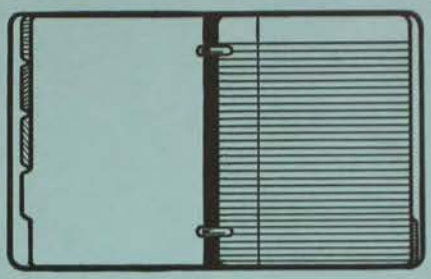
Ovary multilobed, pretesticular, extending to and sometimes appearing similar to vitelline follicles. Seminal receptacle spherical or elongate, usually slightly larger than pharynx, 70–187 long by 67–98 wide, at anterior border of either side of ovary. Mehlis's gland dorsal to ovary. Laurer's canal present. Vitellaria as follicles and finger-like projections in lateral fields, extending between level of acetabulum and middle or posterior portion of testes. Uterus occupying most of body space posterior to and between testes; emptying, along with male duct, into long tubular genital atrium. Atrium opening into ventrogenital sac. Eggs partially collapsed, 21–28 long by 12–16 wide.

Excretory vesicle with prominent arms extending to pharyngeal level.
Type host: *Morone savatilis* (Walbaum).
Sites: Intestine and pyloric caeca.
Locality: Mouth of Moon Lake on West Pascagoula River, Mississippi.
Holotype: USNM Helm. Coll. No. 71655. Paratype: No. 71656.

Discussion

Five other species of *Neochasmus* are known. Only two, *N. labeosus* Bennett, 1935, from the water-snake *Natrix rhombifera*, and *N. magnus* Winter, 1958, have over 27 oral spines. *Neochasmus labeosus* differs from the present species by not possessing the thick muscular pad and having more extended vitellaria and a relatively longer forebody. In *N. magnus*, the seminal receptacle is much larger and located near the posterior rather than anterior portion of the ovary, the tegumental spines are only on the anterior portion of the body, and the vitellaria do not reach the acetabular level. *Neochasmus sogandaresi* differs from the other three species, *N. ictaluri* Sogandares-Bernal, 1955, *N. umbellus* Van Cleave & Mueller, 1932, and *N. microvatus* (Tubangui, 1928) Tubangui & Masilungan, 1944, by being larger, having a greater number of oral spines, having an elongated muscular pad, and by other individual differences.

LOOSE LEAF INDEX



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SUBJECTS

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CLASS SCHEDULE

PERIOD		FIRST	SECOND	THIRD	FOURTH	FIFTH	SIXTH	SEVENTH	EIGHTH
MONDAY	COURSE								
	INSTRUCTOR								
TUESDAY	COURSE								
	INSTRUCTOR								
WEDNESDAY	COURSE								
	INSTRUCTOR								
THURSDAY	COURSE								
	INSTRUCTOR								
FRIDAY	COURSE								
	INSTRUCTOR								
SATURDAY	COURSE								
	INSTRUCTOR								

NEOMETADENA

Diagnosis : Body oval. Cuticle probably unarmed. Cervical glands present. Oral sucker terminal. Acetabulum near anterior end of body, sunken in a ventrogenital depression. Mouth subterminal ; prepharynx indistinct ; pharynx large ; esophagus short ; ceca wide, reaching posterior end of body. Testes postequatorial, intercecal. Cirrus sac absent. Seminal vesicle long, tubular, dorsal and posterior to acetabulum. Pars prostatica and prostatic complex absent. Genital pore immediately in front of acetabulum in ventrogenital depression. Ovary trilobed, median, equatorial, pretesticular. Seminal receptacle present. Vitellaria in lateral fields, from postacetabular level to middle of posttesticular space. Uterus voluminous filling most of hindbody. Eggs thick-shelled. Excretory vesicle not observed.

Type species : *Neometadena lutiani*

This genus resembles *Metadena* Linton, 1910 and *Pseudometadena* Yamaguti, 1952 in many details but differs from them chiefly in the extent and distribution of vitellaria and in the possession of a trilobed instead of a multilobed ovary. It further differs from *Pseudometadena* in having testes far behind acetabulum and a distinctly pretesticular ovary.

From Hafeezullah and Siddiqi, 1970

NEOMETADENA LUTIANI ~~n. gen., n. sp.~~ Hafferullah and Siddiqi, 1970
Figure 11

Type Host : *Lutianus johnii* (Bloch) ; Moses perch ; Lutianidae
Other Host : *Lutianus fulviflamma* (Forskal) ; one spot golden snapper ; Lutianidae
Site : Intestine
Number : 2
Type Locality : Karwar
Other Locality : Tuticorin

Description (Based on 2 specimens) Body 1.364-1.706 mm long, 0.847-0.959 mm wide, oval ; cervical gland cells present. Cuticle aspinose. Eye-spot pigment present. Acetabulum 190-230 by 202-296, spherical, sunken in a ventrogenital depression, near anterior end of body. Oral sucker 167-272 by 225-342, spherical, terminal. Sucker ratio 1:0.81-1.0. Mouth subterminal ; prepharynx indistinct ; pharynx 131-152 by 173-252, subspherical ; esophagus short ; cecal bifurcation in front of acetabulum ; ceca wide, reaching posterior end of body.

Testes 181-298 by 149-240, oval, entire, symmetrical, postequatorial. Cirrus sac absent. Seminal vesicle long ; convoluted, from behind acetabulum to pharyngeal level ; pars prostatica and prostatic gland cells absent, distal narrower part turning back at cecal bifurcation and opening at genital pore immediately in front of acetabulum in ventrogenital depression.

Ovary trilobed, median, equatorial, pretesticular. Seminal receptacle anterior to ovary. Laurer's canal not observed. Vitellaria follicular, in lateral fields from posterior level of acetabulum to middle of posttesticular region. Uterus voluminous, between acetabulum and posterior end ; metraterm undifferentiated. Eggs 16-21 × 9-12, very numerous, thick-shelled. Excretory vesicle undetermined.

This species bears strange resemblance to Gupta's (1956) *Steringophorus lethrini*, a fellodistome from *Lethrinus* sp. from the Gulf of Manaar. The only apparent differences between the two are that the present species has cervical gland cells, eye-spot pigment and does not possess a cirrus sac. These characters indicate its relationship to the Cryptogonimidae rather than the Fellodistomatidae. It so appears that these characters have probably escaped Gupta's observations and led him to place it erroneously in the Fellodistomatidae. However, a request to borrow his specimens for comparison was denied.

NEOMETADENA