

东海鱼类的囊双科吸虫*

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囊双科 Didymozoidae Poche, 1907 吸虫为鱼类专性寄生虫之一,其体形多变,寄生部位广泛,侵袭宿主体内与体外各种组织与器官,因而引起人们的注意,国外不断有该科的研究报道。我国关于该科的研究,顾昌栋在 1965, 1983 年曾有文章发表,但其中有关东海的种类不多。1975, 1976, 1979 年作者在东海采集鱼类寄生虫,整理后共得囊双科吸虫 11 种。其中除双枝囊双吸虫 *Didymozoon biramus* Ku et Shen, 1965, 大眼鲷囊双吸虫 *Didymozoon priacanthi* Ku et Shen, 1965, 海南合体双吸虫 *Syncorpozoum hainanensis* Ku et Shen, 1965 鲐囊双吸虫 *Didymozoon Pneumatophori* Gu et Shen, 1983 和线形线双吸虫 *Nematobothrium filiiforme* Yamaguti, 1934 在我国已作报道外,共发现 1 新属 3 新种及 3 个新记录。本文为新种和新记录描述。测量一律用毫米,卵子用微米。模式(副模式)标本存放于中国科学院海洋研究所。

泡双吸虫属 *Didymocystis* Ariola, 1902

1. 盘状泡双吸虫 *Didymocystis soleiformis* Ishii, 1935

包囊圆盘状,前体自后体一端伸出,后体 U 字形。睾丸 1 对,腊肠状。卵巢和卵黄腺都有分枝,卵子 $12-15 \times 6-12$ 。

寄生于圆鳊 *Auxis tapeinosoma* Bleeker 的鳃, 1979 年 5 月 22 日采于浙江省宁波。为我国新记录。

2. 分叉泡双吸虫 *Didymocystis bifurcata* Yamaguti, 1970

包囊椭圆形,前体自后体腹面近前端伸出;后体形状不规则,呈椭圆形或 V 形,前端钝,后端尖。睾丸 1 对,短棒状。卵巢分叉,卵黄腺有 4 个分枝,卵子 $13-18 \times 8-9$ 。

寄生于油鲰 *Sphyræna pinguis* Günther 的鳃, 1979 年 5 月 9 日采于浙江省宁波。为我国新记录。

瓜形吸虫属 *Colocyntotrema* Yamaguti, 1951

3. 鳊瓜形吸虫 *Colocyntotrema auxis* Yamaguti, 1951

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包裹半球状,有2个前体,后体愈合形似南瓜。睾丸1对,短棒状。卵巢和卵黄腺都有分枝,卵子 $12-14 \times 8-9$ 。

寄生于扁鰻鲚 *Auxis thazard* (Lacepede) 的幽门盲囊。1976年4月23日采于福建省东山。为我国新记录。

鳞双吸虫(新属) *Lepidodidymozoon* gen. nov.

特征 囊双科,囊双亚科。完全雌、雄同体,两虫在一起,外面无明显包裹。虫分前体与后体两部分,前体细弱,自后体中间处伸出;后体似哑铃状,分左右两叶,中间有柄相连。背腹扁平,口吸盘在前体亚前端,没有腹吸盘。有咽,食道细,肠管可伸入后体。

睾丸1对,位于后体的右叶。生殖孔在口吸盘后缘。卵巢单个,管状,有4—5分枝,分布于后体两叶。有受精囊。卵黄腺的形状与分布和卵巢相似,有分枝4—6条;子宫发达,占满整个后体;没有贮卵囊;卵子小,椭圆形,在子宫内不孵化。寄生于海产鱼类鳞片下(内)面。

模式种 中华鳞双吸虫 *Lepidodidymozoon sinicum* gen. et sp. nov.

4. 中华鳞双吸虫(新属、新种) *Lepidodidymozoon sinicum* gen. et sp. nov. (图1)

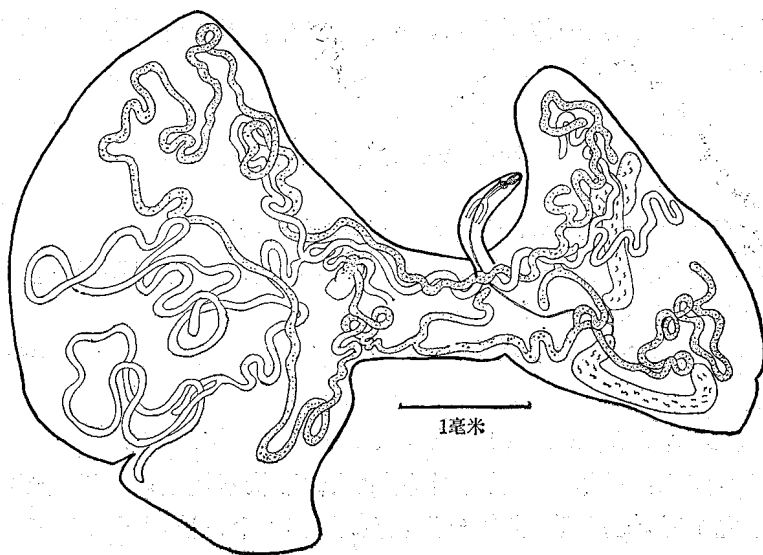


图1 中华鳞双吸虫(新属、新种) *Lepidodidymozoon sinicum* gen. et sp. nov. 的腹面图

宿主 油鲚 *Sphyraena pinguis* Günther.

寄生部位 鳞片下。

采集地点、日期 浙江省宁波; 1979年5月11日。

感染率及强度 检查8尾鱼,在3尾的鳞片下各发现1组虫。

描述 (根据6个标本)虫寄生于宿主鳞片下(内)面,两虫在一起,外面没有明显的包囊,虫在生活时显淡黄色。虫体背腹扁平,可分出前体与后体。前体细弱,稍长,长0.731—1.751,宽0.102—0.187。前体自后体中部一侧伸出。后体大,分左右两叶,中间有柄相连,呈哑铃状,边缘有缺刻,长4.437—6.035,两侧宽稍有差异,为1.994—4.029,中间柄宽0.697—1.190。口吸盘在前体的亚前端,近梨形,0.039—0.078 × 0.018—0.039。没有腹吸盘。生殖孔位于口吸盘后缘,在咽附近。

咽小、球形,直径0.018—0.030,食道细,0.030—0.066 × 0.012—0.027。食道后面肠又分出两肠管,经前体进入后体,常为发达的生殖器官所遮掩,不能看清。

睾丸1对,腊肠状,相对排列于后体的右叶。左睾丸1.190—2.210,右睾丸1.071—2.567,睾丸宽0.085—0.204。睾丸前端有输出管汇合成输精管,通至生殖孔。

卵巢1条,呈管状,有4—5条分枝,排列不规则,分布于后体左右两叶,最后在靠近受精囊附近有1主枝,通至生殖联合,卵巢宽为0.035—0.051。受精囊为不规则的椭圆形,0.204—0.374 × 0.119—0.204,位于后体左叶接近中间处,周围布满卵壳腺细胞。子宫极发达,布满整个后体各处,进入前体成子宫末段,通到生殖孔,不形成贮卵囊。卵黄腺1条,形状与卵巢相似,分枝4—6条,宽0.051—0.068,一般分布在有受精囊的一叶上,较稠密。卵子小,椭圆形,9—12 × 6—8。

讨论 囊双科吸虫中寄生在宿主鳞片下面的只有 *Lepidodidymocystis* Yamaguti et Kamegai, 1969 一属,其特征为虫体外有包囊,前体棒状,自后体前端伸出;前体头部有乳头状突起,具腹吸盘。后体为半圆形,前端截形,后端圆锥状,睾丸在后体前1/2处。卵巢和卵黄腺都是1条,没有分枝,有受精囊,卵子具盖,在子宫内不孵化。宿主为无鳔石首鱼 *Menticirrhus nasus*, 采于墨西哥。本种与上述特征毫无共同之点,且与该科其它各属亦无相似之处,故建立新属鳞双吸虫属 *Lepidodidymozoon* gen. nov.。

新次囊双吸虫属 *Neometadidymozoon* Yamaguti, 1971

5. 浙江新次囊双吸虫(新种) *Neometadidymozoon zhejiangensis* sp. nov. (图2)

宿主 短尾大眼鲷 *Priacanthus macrocanthus* Cuvier et Valenciennes

寄生部位 鳃

采集地点、日期 浙江省宁波;1979年5月16日。

感染率及强度 检查10尾鱼,在1尾鱼鳃上获得包囊1个,内有虫4个。

描述 (根据4个标本)虫体外被包囊,囊小,呈长椭圆形,3 × 2,囊内有虫4个。虫可明显分出前体与后体。虫彼此互相紧贴,背腹扁平。前体棒状,长1.362—1.598,前端宽0.187—0.272,基部宽0.204—0.255,前体自后体正前方伸出。后体叶片状,边缘有不规则的缺刻24—28个,长5.491—7.990,宽0.799—1.241。口吸盘在前体前端,椭圆形,0.033—0.045 × 0.015—0.033。没有腹吸盘,生殖孔开口于口吸盘附近。

咽小,圆形,直径0.012—0.030;食道细,0.306—0.391 × 0.034—0.051,食道两侧及肠叉附近布满腺细胞。肠管较粗,进入后体为生殖器官所遮掩,不能看清。

睾丸1对,长管状,位于后体前端、前体基部,长2.805—4.828,约为后体长的1/2,宽

0.051—0.068。睾丸前端有输出管,汇合为输精管通向生殖孔。

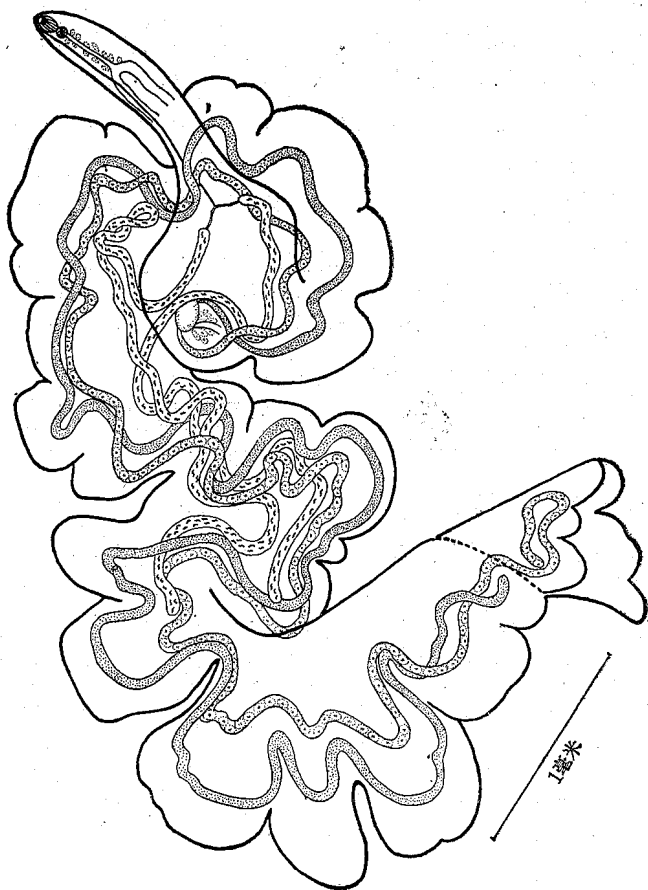


图2 浙江新次囊双吸虫(新种) *Neometadidymozoon zhejiangensis* sp. nov.

虫体小于前者而大于后者。宿主也不相同。

卵巢1条,细管状,无分枝,宽0.031—0.051,起自后体后缘,距体末0.085—0.272。曲折前行,通到受精囊。受精囊椭圆形,0.170—0.221 × 0.119—0.136,位于后体前端,靠近前体。子宫排列颇有规律,起始先下行,到后体末又折向上,至后体前端又转而向下,在后体后缘转向上,最后进入前体成子宫末段,通向生殖孔。卵黄腺1条,与卵巢形状相似,没有分枝,但起点比卵巢稍前,距后体末0.425—0.918,卵黄腺宽0.034—0.055,与卵巢平行。卵子椭圆形,12—15 × 6—9。

讨论 新次囊双属 *Neometadidymozoon* Yamaguti, 1971 已记载有两种: *N. polymorphis* (Oschmarin et Mamer, 1963) 和 *N. helicis* Lester, 1979。本种与它们的区别是:没有腹吸盘,睾丸不伸进前体,长度仅达后体的2/3,虫

镶双吸虫属 *Koellikeria* Cobbold, 1860

6. 鲟镶双吸虫(新种) *Koellikeria sphyraenae* sp. nov. (图3)

宿主 油鲟 *Sphyraena pinguis* Günther。

寄生部位 鳃。

采集地点、日期 浙江省宁波;1979年5月8日。

感染率及强度 检查4尾鱼,在1尾鱼鳃上获得包裹1个(内有虫2对)。

描述 (根据4个标本,雄2、雌2)虫体外被有包裹,囊球形,直径2。囊内有虫2对,雌雄异体,雄虫附于雌虫体上。每虫可明显分出前体与后体。

雄虫 前体细且纤弱,长0.459—0.714,宽0.068—0.085,前端尖;前体自后体前端伸出。口吸盘梨状,0.033—0.036 × 0.012—0.015,没有腹吸盘。生殖孔开口于口吸盘附近。后体肾形,长1.326—1.445,宽0.408—0.544。后体内除有消化器官两肠管和生殖

器官 1 对睾丸外,没有其它任何器官。

咽小,球状,直径 0.012—0.015,食道细,0.060—0.066,两肠管进入后体加粗。

睾丸 1 对,短棒状,位于前体基部,长 0.136—0.170,宽 0.051—0.068,有输出管汇合为输精管通生殖孔。

雌虫 雌虫远比雄虫大,雄、雌之比约为 1:2。前体细长,长 1.224—1.394,宽 0.102—0.119;前体自后体前 1/2 中间伸出。后体长椭圆形,长 2.839—3.179,近前端宽 0.884—1.496。口吸盘茄形,0.042×0.021。生殖孔开口于口吸盘附近。

咽圆形,直径 0.018;食道细,肠管进入后体为发达的子宫所遮没。

卵巢为细管状,宽 0.020—0.034,有分枝,两枝起自后体后缘,向前伸,前端一枝向后,在后体中央受精囊附近汇合成一条卵巢总管。受精囊椭圆形,0.102—0.119×0.051—0.068,位于后体 1/2 背侧。子宫极发达,占满整个后体。贮卵囊一般。卵黄腺形状与卵巢相似,宽 0.035—0.037,有分枝,前 1 后 2。卵子稠密,金黄色,12—15×7—8。

讨论 在镶双吸虫属 *Koellikeria* Cobbold, 1860 的已知种中,本种与 *K. reniformis* shii, 1935 近似,区别见下表:

	<i>K. reniformis</i>	<i>K. sphyraenae</i> sp. nov.
包囊	2.0—4.0×2.0—3.0	2.0 (直径)
♂ 前体	2.08×0.48—0.89, 自后体近中间伸出	0.495—0.714×0.068—0.085, 自后体一端伸出
后体	0.509—0.986 (直径)	1.326—1.445×0.408—0.544
♀ 睾丸	0.477—1.272×0.159—0.165	0.136—0.170×0.051—0.068
前体	2.63×0.48—0.89	1.224—1.394×0.102—0.119
后体	2.0—5.0×2.9—3.0, 肾形	2.839—3.179×0.884—1.496, 长椭圆形
咽	无	有
卵巢宽	0.042—0.047	0.020—0.034
受精囊	0.235—0.399×0.165—0.301, 卵形	0.102—0.119×0.051—0.068, 椭圆形
卵子	27—30×15—18	12—15×7—8
宿主	<i>Thunnus orientalis</i> <i>Seriola quinqueradiata</i> <i>Katsuwonus vagans</i>	<i>Sphyraena pinguis</i>

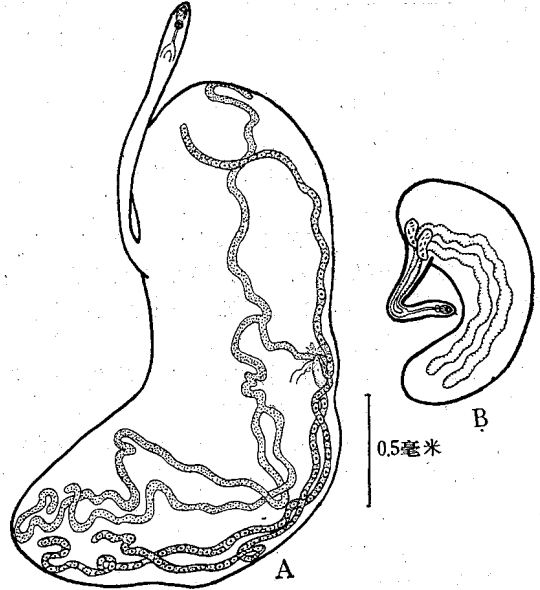


图 3 鲟镶双吸虫(新种) *Koellikeria sphyraena* sp. nov.

A. 雌虫侧面图; B. 雄虫侧面图

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DIGENETIC TREMATODES OF DIDYMOZOIDAE POCHE, 1907 FROM MARINE FISHES IN THE EAST CHINA SEA*

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ABSTRACT

11 species of Didymozoidae are found from marine fishes in the East China Sea, during 1975, 1976, 1979, Besides 5 known species, viz. *Didymozoon biranus* Ku et Shen., 1965, *Didymozoon priacanthi* Ku et Shen, 1965, *Syncorpozoon hainanensis* Ku et Shen, 1965, *Didymozoon pneumatophori* Gu et Shen, 1983 and *Nematobothrium filiforme* Yamaguti, 1934. 3 species are record for the first time from China, namely, *Didymocystis soleiformis* Ishii, 1935, *Didymocystis bifurcata* Yamaguti, 1970, *Colocyntotrema auxis* Yamaguti, 1951, 1 genus and 3 species are described as new.

all the measurements are in mm excepting ova in μ . The type specimens are deposited in the Institute of Oceanology, Academia Sinica, Qingdao, China. The descriptions of the new genus and species are given below.

Lepidodidymozoon gen. nov.

Diagnosis Didymozoidae, Didymozinae. Hermaphrodite without distinct cyst, body divided into a slender forbody and dumbbell-shaped hindbody. Two lobes of

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hindbody are joined by a narrow isthmus. Oral sucker subterminal in forebody. No acetabulum. Pharynx present. Esophagus slender.

Testes paired, at right lobe of hindbody. Genital pore near posterior oral sucker. Ovary single, tubular, 4—5 branched. Seminal receptacle present. Vitellaria resembles ovary, 4—6 branched. Uterus occupying all available space of hindbody. Eggs elliptical. Found under scale of marine fishes.

Type species *Lepidodidymozoon sinicum* sp. nov.

1. *Lepidodidymozoon sinicum* gen. et sp. nov.

Host: *Sphyræna pinguis* Gunther

Location: scale

Locality: Ningbo, Zhejiang Province

Date: 11, May 1979

Infection: 1 pair worm each from 3 of 8 hosts

Uncyst in pair under scale of host, forebody $0.731-1.751 \times 0.102-0.187$, arising from middle of hindbody. Hindbody dumbbell-shaped, divided into right and left lobes joined by a narrow isthmus, $4.437-6.035 \times 1.994-4.029$, isthmus $0.697-1.190$ width, Oral sucker $0.039-0.078 \times 0.018-0.039$, no acetabulum. Genital pore behind oral sucker.

Pharynx globular, $0.018-0.030$ in diameter, esophagus slender.

Testes paired sausage-shaped, situated at the right lobe of hindbody. Left testis $1.190-2.210$; right $1.071-2.567$, $0.085-0.204$ in width.

Ovary single, tubular, ramified into 4—5, $0.035-0.051$ width. Seminal receptacle $0.204-0.374 \times 0.119-0.204$, situated at inner side of left lobe of hindbody. Uterus occupying all available space of hindbody. Vitellaria single, tubular, 4—6 ramified, $0.051-0.068$ width. Eggs $9-12 \times 6-8$.

Discussion In the family Didymozoidae the only known genus found under the scales of fish is *Lepidodidymocystis* Yamaguti et Kamegai. Its hindbody is close to the anterior end, semicircular in shape, truncate at anterior end, conical at posterior end, papillated at head end. Acetabulum present. Testes winding in anterior half of hindbody. Ovary and vitellaria single, unbranched. Eggs operculate. Host: *Menticirrhus nasus*. Locality: Mexico. The present new genus differs from the above descriptions.

Neometadidymozoon Yamaguti, 1971

2. *Neometadidymozoon zhejiangensis* sp. nov.

Host: *Priacanthus maccocanthus* Guvier et Valenciennes

Location: gill

Locality: Ningbo, Zhejiang Province

Date: 16, May 1979

Infection: 1 cyst (4 worms) from 1 of the 10 hosts.

Encysted in four worms. Body divided into two regions. Forebody club-shaped, $1.362-1.598 \times 0.187-0.272$, projected from anterior of hindbody. Hindbody leaf-shaped; $5.491-7.990 \times 0.799-1.241$, margin with 24—28 narrow incisions. Oral sucker on anterior end of forebody. No acetabulum. Genital pore opened near oral sucker.

Pharynx small, round, $0.012-0.030$ in diameter. Esophagus slender. Intestinal caeca broad.

Testes paired, tubular, $2.805-4.828 \times 0.051-0.068$, near anterior of hindbody.

Ovary single, tubular, not branched, $0.031-0.051$ in wide, beginning from posterior end of hindbody. Seminal receptacle $0.170-0.221 \times 0.119-0.136$ situated in front of hindbody. Uterus regular. Vitellaria single, resembling ovary, $0.034-0.055$ in wide. Eggs oval, $12-15 \times 6-9$.

Discussion

Only 2 species of *Neometadidymozoon* Yamaguti, 1971, have been recorded previously, namely *N. polymorphis* (Oschmarin et Mamaev, 1963) and *N. helicis* Lester, 1979. This species differs from them in the acetabulum absent, the testes not extending forebody and occupying $2/3$ long of hindbody, the body being larger than anterior, smaller than posterior and the different host.

Koellikeria Cobbold, 1860

3. *Koellikeria sphyraenae* sp. nov.

Host: *Sphyraena pinguis* Gunther

Location: gill

Locality: Ningbo, Zhejiang Province

Date: 8, May 1979

Infection: 1 cyst (2 pairs) from 1 of the 4 hosts.

Male Forebody slender, $0.459-0.714 \times 0.068-0.085$, projecting from anterior portion of hindbody. Oral sucker pear-shaped $0.033-0.036 \times 0.012-0.015$. No acetabulum. Genital pore opened near oral sucker. Hindbody reniform, $1.326-1.445 \times 0.408-0.544$.

Pharynx globular, $0.012-0.015$ in diameter. Esophagus $0.060-0.066$ long. Intestinal caeca extending to hindbody, broad.

	<i>K. reniformis</i> Ishii, 1935	<i>K. sphyraenae</i> sp. nov.
cyst	$2.0-4.0 \times 2.0-3.0$ (diameter)	2.0 (diameter)
♂ forebody	$0.509-0.986$ projecting from centre of hindbody	$0.459-0.714 \times 0.068-0.085$, projecting from anterior portion of hindbody
hindbody	$0.509-0.986$ (diameter)	$1.326-1.445 \times 0.408-0.544$
testes	$0.477-1.272 \times 0.159-0.165$	$0.136-0.170 \times 0.051-0.068$
♀ forebody	$2.63 \times 0.48-0.89$	$1.224-1.394 \times 0.102-0.119$
hindbody	$2.0-5.0 \times 2.9-3.0$ reniform	$2.839-3.179 \times 0.884-1.496$ oblong
ovary broad	$0.042-0.047$	$0.020-0.034$
receptaculum	oval	ellipse
seminis		
eggs	$27-30 \times 15-18$	$12-15 \times 7-8$
host	<i>Thunnus orientalis</i> <i>Seriola quinqueradiata</i> <i>Katsuwonus vagans</i>	<i>Sphyraena pinguis</i>

Testes paired claviform, $0.136-0.170 \times 0.051-0.068$.

Female Body large, ratio of male to female about 1:2. Forebody $1.224-1.394 \times 0.102-0.119$. Hindbody ellipical, $2.839-3.179 \times 0.884-1.496$. Oral sucker circular, 0.042×0.021 . Genital pore opened near oral sucker.

Ovary single, tubular, $0.020-0.034$ in breadth, divided into 3 branches, anterior 1, posterior 2. Seminal receptacle $0.102-0.119 \times 0.051-0.068$. Uterus developed. Vitellaria similar to ovary, $0.035-0.037$ in breadth. Eggs $12-15 \times 7-8$.

Discussion This species is similar to *Koellikeria reniformis* Ishii, 1935, but differs from it in several points as shown in table: