

قسم علم الحيوان .
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رئيس القسم : أ. د . محمد خليل النفار .

بعض التريماتودا من بعض أسماك بحيرة ناصر بأسوان
مع وصف نوع جديد " استيوتريما لازيري "

محمد النفار ، محمد مسعود ، اسماعيل حسن

تم وصف ثلاثة أنواع من طفيليات التريماتودا من نوعين من
الاسماك جمعت من بحيرة ناصر بأسوان ، وهذه الأنواع
الثلاثة من التريماتودا هي " استيوتريما لازيري نوع
جديد ، أرينتوكريد يوم لازيري " من سمكة الفرموط ،
استيوتريما أمبليتم من سمكة الفهه .

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**SOME TREMAATODES FROM SOME FISHES OF LAKE NASSER AT ASSWAN
INCLUDING A NEW ASTIOTREMA, ASTIOTREMA LAZERI N.SP.**
(With 2 Tables & 3 Figures)

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SUMMARY

Three trematode parasites were surveyed from two species of fishes captured from lake Nasser at Asswan. Astiotrema lazери n.sp. and Orientocreadium lazери KHALIL, 1961 from the fish Clarias lazera; and Astiotrema impletum LOOSS 1900 from Tetraodon fahaka.

INTRODUCTION

Owing to the economical importance of lake Nasser in the production of fishes in Egypt, especially if we know that the problem of food constiute today the most dngerous one among the Human problems throughout the world, and due to the few investigations that had been carried out on the fish parasites in lake Nasser, consequently, the present studies were decided to throw the light on the helminth parasites which may infest the fishes at lake Nasser of Asswan.

MATERIAL and METHODS

The present parasites were collected from the intestine of Clarias lazera and Tetraodon fahaka caught from lake Nasser at Asswan. The collected worms were adequately washed in physiological saline solution and fixed in 10% formal saline or hot F.A.A. (Formaline acetic acid). They were stained in Acetic Acid Alum Carmine and mounted in Canada balsam. Measurements were taken from mounted specimens and all drawings were done by Camera lucida. All the measurements are in millimeters.

RESULTS and DISCUSSION

Plagiorchiidae WARD, 1901 - Astiotrematinae BAER, 1924.

Astiotrema LOOSS, 1900 - Astiotrema lazери n.sp.

This species is a rare parasite collected from the intestine of Clarias lazera. Out of 50 fish examined, one (2%) only was found harbouring this species and the number of the collected specimens was five.

Description:

The parasite (Fig. 1) is oval in shape, rounded anteriorly and slightly tapering posteriorly. The length of the body is 1.34 - 1.63 mm. (1.46 mm), by 0.41 - 0.51 mm. (0.47 mm) wide. The thick tegument is provided with minute spines throughout entire body except the posterior fourth of the body. The two suckers are nearly equal in size. The oral sucker is spherical,

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slightly subterminal, large in size measuring 0.19 - 0.22 X 0.17 - 0.23 mm. (0.205 X 0.202 mm.). The preoral body length is about 0.022 - 0.027 mm. (0.023 mm.). The prepharynx and oesophagus are indistinct. The pharynx is well developed, slightly rounded measuring 0.093 - 0.12 X 0.11 - 0.12 mm. (0.10 X 0.12 mm.). The two simple intestinal caeca are wide anteriorly and runs posteriorly near the posterior extremity of the fluke. The acetabulum is large, rounded, measuring 0.18 - 0.20 X 0.15 - 0.22 mm. (0.19 X 0.20 mm.). The pre-acetabular body length is about 0.41 - 0.49 mm. (0.45 mm.). The distance from the acetabulum to intestinal bifurcation is about 0.071 - 0.093 mm. (0.08 mm.).

The two testes are slightly tandem and located in the posterior half of the body. They are nearly equals in size and the measurement of both anterior and posterior testis are 0.12-0.192 X 0.176 - 0.198 mm., (0.150 X 0.180 mm.); and 0.143 - 0.231 mm. (0.160 X 0.187 mm.) respectively. The distance from acetabulum to the anterior testis is 0.137 - 0.209 mm. (0.160 mm.); and that to the posterior testis is 0.308 - 0.429 mm. (0.347 mm.). The post-testicular body length measures 0.275 - 0.440 mm. (0.345 mm.). The cirrus sac is stout, lies lateral to the acetabulum. It measures 0.247 - 0.357 X 0.082 - 0.110 mm. (0.315 X 0.090 mm.). It contains bipartite seminal vesicle. The receptaculum seminis is oval to elliptical in shape measuring 0.077 - 0.110 X 0.099 - 0.165 mm. (0.087 X 0.122 mm.), and lies close to the ovary and may overlap it. The ovary is oval in shape, located lateral and close to the acetabulum or shortly behind the latter. It measures 0.082 - 0.110 X 0.099 - 0.176 mm. (0.102 X 0.130 mm.). The distance from the acetabulum to the ovary is 0.038 - 0.066 mm. (0.046 mm.). The vitelline glands are follicular, overlapping the caeca of both sides and extending from ovarian level to the posterior border of the posterior testis. They are few in number about 28-38 on each side. The uterus is voluminous, occupying the area between the ovary and the posterior end of the parasite. The genital atrium lies just in front of the acetabulum. The eggs are numerous, yellow coloured, thin shelled, operculated measuring 0.026 - 0.033 X 0.009 - 0.12 mm., (0.027 X 0.011 mm.).

From the above description, it is clear that the present parasite belongs to family Plagiorchiidae WARD 1901, genus Astiotrema LOOSS, 1900. This genus was created by LOOSS, 1900 to include Astiotrema impletum which originally reported and described from the intestine of the freshwater fish Tetraodon fahaka from the River Nile at Cairo, Egypt. The same species described from the same host from the Nile in Sudan by ODHNE (1911); YEH & FOTEDAR (1958) and by FISCHTHAL & KUNTZ (1963) from the Nile in Egypt; EL-NAFFAR (1970) from the Nile at Assiut province.

YEH and FOTEDAR, (1958) revised the genus Astotrema LOOSS, 1900, transferring A. emydis EJSMONT, 1930, to the genus Leptophallus LUHE, 1909. They regarded that four species are valid: A. reniferum (LOOSS, 1898) LOOSS, 1900; A. impletum (LOOSS, 1899) LOOSS, 1900; A. monticelli STOSSICH, 1904; A. odhneri BHALERAO, 1963. All other species were regarded as synonyms of either A. reniferum or A. odhneri.

KHALIL (1959) regarded A. odhneri as a synonym of A. reniferum. Accordingly he recognized five valid species as the following:

1- A. reniferum which originally described from one fish, Clarias batrachus from Burma and India by LOOSS 1898; LOOSS 1900 respectively. The same species was reported from the intestine of the freshwater fish Clarias lazera in the Sudan by KHALIL, (1959) as a new host and new geographical distribution.

SOME TREMATODES FROM FISHES OF LAKE NASSER

- 2- A. impletum (LOOSS, 1899) LOOSS, 1900.
- 3- A. monticelli (STOSSICH, 1904.)
- 4- A. geomydia (SIDDIQUE, 1958) which originally reported and described from the intestine of tortoise Geoemyda spinora from India.
- 5- A. sudanensis KHALIL, 1959 which reported and described from the intestine of the freshwater turtle, Trionyx triungus in the Sudan.

TIWARI (1958) described A. giganticum, A. lobiorchis and A. mehri from the freshwater tortoise in India. The validity of these three species described by TIWARI was not considered by FISCHTHAL and KUNTZ (1963). Moreover, the latter two species of TIWARI were regarded to come under the variations of A. reniferum and considered it as synonyms by SIDDIQUI (1965) who described Astiotrema cyclemysi as a new species from the intestine of the freshwater turtle, Cyclemys dentate from Aligarh, U.P., He also provided a key for eight valid species in the genus Astiotrema.

YAMAGUTI (1958) listed the genotype, A. reniferum (LOOSS, 1898) STOSS., 1904 as syn. Distoma unicum LOOSS, 1896, renamed, in Trionyx nilotica, from Egypt; together with other eleven species from reptiles. These species are: A. amyda OGATA, 1938; A. elongatum MEHRA, 1931; A. emydis EJMONT, 1930; A. fochowense TANG, 1941; A. fukuui OGATA, 1958; A. indicum THAPAR, 1933; A. lossii MEHRA, A. monticellii STOSSICH, 1904; A. odhneri BAHALERA, 1936; A. orientale YAMAGUTI, 1937; and A. rami BHALERAN, 1936.

GRABDA (1959a) described A. tritusi from Trituse vulgaris, as the first record of the genus Astiotrema from an amphibian, and in (1959 b) he elucidated its life cycle. The validity of this species was not considered by FISCHTHAL and KUNTZ (1963).

GRABDA (1961) questioned the transfer of A. emydis to leptophallus by YEH & FOTEDAR (1958), and returned it to Astiotrema. The present writer believes that GRABDA (1961) was unjustified in retaining this species (A. emydis) to Astiotrema, as it is undoubtedly transferred by YEH and FOTEDAR (1958) to leptophallus.

KHALIL (1971) in studying the zoogeographical affinities of the helminth parasites of African freshwater fishes stated in genus Astiotrema that about 11 species are assigned to it from fishes, amphibian and reptiles and the genus is predominantly oriental and predominantly a parasite of chelonians although it is potentially adapted to different hosts including fishes and amphibians.

In having oral sucker roughly equal to acetabulum, the present new species comes closest of A. reniferum. It differs from this species by the absence of oesophagus, the extension of vitellaria from ovarian level, length of caeca whereas they do not reach posterior extremity, egg size and measurements of different parts of the body.

In having very short or indistinct prepharynx and oesophagus, the present new species comes closest to A. cyclemysi, but differs in suckers ratio where they are nearly equal, the extension of vitellaria from ovarian level to the posterior region of the posterior testis, of eggs, large cirrus sac and external seminal receptacle close to ovary, host and geographical distribution.

In conclusion, the authors believe that all the above differences are sufficient to justify the designation of the present parasite as a new species and the name Astiotrema lazeri n.sp. is proposed.

Host: Clarias lazera. Location: Intestine.

Locality: Lake Nasser, Aswan, Egypt.

Type: Helminthological collections. Department of Zoology, Faculty of Science, Assiut University.

So far, two species of Astiotrema have been recorded from African freshwater fishes: A. reniferum (LOOSS, 1900, which reported from Clarias lazera by KHAIL (1958) from the Sudan, and A. impletum (LOOSS, 1899) LOOSS, 1900 from Tetraodon fahaka from Egypt.

The present new species A. lazera brings the third species of Astiotrema to the African freshwater fishes. These three species can be separated by the sucker's ratio, length of oesophagus and extension of vitellaria.

I- Oral sucker roughly equal to acetabulum:

(1) Oesophagus very short or indistinct, vitellaria extend posteriorly from ovarian level
..... A. lazera.

(2) Oesophagus long, vitellaria extend posteriorly from caecal bifurcation.....
..... A. impletum.

II- Oral sucker larger than acetabulum A. impletum.

Astiotrema impletum (LOOSS, 1899) LOOSS, 1900.

More than three hundred specimens of this species were collected from the intestine of twenty five fish Tetraodon fahaka. Twenty three (92%) out of the examined fish were found to harbour the present parasite and the number of specimens varied from 5 to 26 flukes in each infected fish. Twenty percentage of the collected specimens of this parasite are completely adult, while the remaining 80% are more or less immature flukes.

Description:

The adult aflupe (Fig. 2 a,b) is oval in shape, rounded anteriorly, slightly tapers to rounded posteriorly, with a length of 1.33 - 3.33 mm. (2.72 mm), and a width of 0.617 - 1.045 mm. (0.92 mm). The tegument is provided with spines in the anterior third of the body, each is 0.025 - 0.033 mm. (0.033 mm). The oral sucker is subterminal, rounded and large in size measuring 0.199 - 0.380 X 0.427 mm. (0.308 X 0.358 mm.), and is about two times the size of the acetabulum which measures 0.095 - 0.18 X 0.123 - 0.237 mm. (0.15 X 0.188 mm.).

Both suckers lies in the anterior half of the body whereas pre-oral body length measures 0.047 - 0.095 mm. (0.062 mm.), pre-acetabular body length measures 0.427 - 1.092 mm. (0.856 mm.) and the distance between the anterior border of the acetabulum to the posterior border of the oral sucker reach about 0.180 - 0.617 mm. (0.430 mm.). The distance from the acetabulum to intestinal bifurcation is 0.066 - 0.142 mm. (0.104 mm.), and from the acetabulum to the genital atrium is about 0.019 - 0.047 mm. (0.035 mm). The mouth is subterminal and leads to a well developed spherical to oval pharynx measuring 0.085 - 0.142 X 0.076 - 0.152 mm. (0.114 X 0.113 mm). The pharynx is followed by a long oesophagus of 0.047 - 0.332 mm. (0.196 mm) long. The oesophagus bifurcates into two simple intestinal caeca which extend posteriorly to the level of the posterior testis or slightly posterior to it.

SOME TREMATODES FROM FISHES OF LAKE NASSER

The testes are smooth, more or less rounded and more diagonal in position. In two of the available specimens, the testes were observed to be less diagonal in position and they located one beside the other (Fig. 2 c). The anterior testis is 0.209 - 0.418 X 0.247 - 0.332 mm. (0.300 X 0.292 mm), and the posterior testis measures 0.237 - 0.437 X 0.237 - 0.313 mm. (0.330 X 0.280 mm). The distance from acetabulum to both anterior and posterior testis is about 0.19 - 0.617 mm. (0.384 mm), and 0.361 - 0.931 mm. (0.672 mm) respectively. The post-testicular body length measuring about 0.19 - 0.855 mm. (0.66 mm). The cirrus sac is large, stout, measuring 0.237 - 0.57 X 0.142 - 0.19 mm. (0.152 mm), and extends anteriorly on the lateral side of the acetabulum. It encloses a large seminal vesicle which leads to a short cirrus that opens in the genital atrium. The later lies immediately in front of the acetabulum at a distance about 0.019 - 0.104 mm. (0.047 mm.) posterior to the intestinal bifurcation.

The single ovary is roughly spherical measuring 0.085 - 0.19 X 0.085 - 0.196 mm. (0.16 X 0.163 mm.) and located shortly behind the acetabulum, slightly to the left side. The distance from the acetabulum to the ovary is nearly about 0.095 - 0.209 mm. (0.144 mm.). Small vitelline reservoir was observed only in one specimen. The vitelline follicles occupy lateral fields extending from the level of intestinal bifurcation to the ends of the intestinal caecal. They are intra and extra caecal. Uterus is convoluted, descends from zone and passing between the two testes to the posterior end of the parasite, before ascending to opens in the genital atrium.

The eggs are numerous, elongated, thin shelled operculated, yellowish, in colour, measuring 0.038 - 0.057 X 0.014 - 0.19 mm. (0.049 - 0.018 mm.).

The excretory vesicle which is clearly seen in the young specimens is Y-shaped and is bifurcating behind the ovary (Fig. 2 d).

Astiotrema impletum was originally described by LOOSS (1899) from *Tetraodon fahaka* in the Nile at Cairo, Egypt. ODHNER (1911) and YEH and FOTEDAR (1958) redescribed it from the same host from the Nile in Sudan. FISCHTHAL and KUNTZ (1963) redescribed it from the same host in the Nile at Cairo, Egypt. EL-NAFFAR (1970) redescribed this species from the same host in the Nile at Assiut province.

The length of LOOSS largest specimen was 3 mm. ODHNER'S specimens were up to 2.5 mm. long; YEH and FOTEDAR'S specimens between 1.8 to 3.5 mm. in length; FISCHTHAL & KUNTZ'S specimens between 1.105 to 2.530 mm. (average 1.72 mm.) in length and EL-NAFFAR specimens between 1.8 to 2.8 (average 2.3 mm.). The present specimens measured between 1.33 to 3.33 mm. (average 2.714 mm.) in length and 1.045 mm. in maximum width.

The present material was compared in detail with those described by previous authors. It is identical with FISCHTHAL and KUNTZ'S and EL-NAFFAR specimens in many respects but there are some differences summarized as follow:

- 1- The ovary overlaps the acetabulum in FISCHTHAL & KUNTZ, and EL-NAFFAR specimen's while in the present material they are separated.
- 2- The testes of FISCHTHAL & KUNTZ'S specimens were in contact to each other, while that in the present material, the testes were separated by a distinct inter-testicular space.

The observation of the present authors agrees with that found by LOOSS, YEH & FOTEDAR, and EL-NAFFAR.

- 3- In two available specimens of the present material, the testes were located one on each side. This observation was not mentioned by the previous authors.

- 4- The vitellaria of the present materials extending from the level of the intestinal bifurcation to the end of the intestinal caeca, while in EL-NAFFAR specimens, it extending from the level of the intestinal bifurcation to the level of the posterior testis.
- 5- The larval stage of A. impletum was described and illustrated for the first time in the present work.
- 6- Small vitelline reservoir was found in one specimen of the present material, while that was not observed or mentioned by any of the above authors.

Table (1) shows the measurements of the present fluke in addition to those given by FISCHTHAL & KUNTZ (1963), and EL-NAFFAR (1970). A detailed description of A. impletum was given to amplify the description given by the previous authors. Lake Nasser constitutes a new locality for this parasite.

Family Allocreadidae STHOSSICH, 1903. - Subfamily Orientocreadinae YAMAGUTI, 1958.
Genus Orientocreadium Tubangui, 1931,
Orientocreadium lazeri KHALIL, 1961.

This species is a very rare parasite of Clarias lazera from lake Nasser. Fifty fishes were examined during the present investigation, but only one fish was found to harbour this species in its intestine. Two specimens only were present in that infected fish, and one of the two specimens was available for study.

Description:

The body (Fig. 3) is elongated in shape, measuring 2.70 mm. in length, with a maximum width of 0.74 mm. attained at testicular region. The cuticle is provided with fines which gradually diminished until it disappear completely at the level of posterior testis. The two suckers are well developed and nearly equal in size'. The oral sucker is rounded, measuring 0.21 mm. in diameter and lies subterminal at a distance 0.079 mm. from the anterior extremity. The acetabulum measures 0.23 mm. in diameter, and the distance between the anterior border of the acetabulum and the posterior border of the oral sucker is about 0.57 mm. The preacetabular body length is 0.79 mm.

The oral sucker is followed by a short pre-pharynx measuring 0.027 mm. in length. This leads into a well developed pharynx, oval to round in shape, measuring 0.137 X 0.17 mm., and followed by a short oesophagus measuring 0.08 mm. in length. The intestinal caeca are moderately wide, extending laterally and ending near the posterior end of the body.

The two testes are tandem, nearly equal in size, situated at the anterior portion of the posterior half of the body and separated by a short inter-testicular space about 0.09 mm. They are nearly equal in size measuring 0.25 X 0.26 mm., and 0.27 X 0.25 mm. respectively 0.60 mm. The post-testicular body length is 0.72 mm. The cirrus sac is oval, thick walled, measuring 0.44 X 0.08 mm., and lies dorso-lateral to the acetabulum. It encloses a well developed oval seminal vesicle measuring 0.044 mm. in diameter, which end by a cirrus that opens in the genital atrium. The genital atrium is pre-acetabular.

The ovary is nearly rounded in shape, measuring 0.19 mm. in diameter. It lies behind the acetabulum and in contact with it. The distance from the ovary to the anterior testis measuring 0.44 mm. The ootype is small measuring 0.03 mm. and lies between the ovary and the anterior testis. Transverse vitelline duct arises from each field at the level of anterior margin of the anterior testis, and the duct meets its fellow of the opposite side near the mid line of the body, to form a yolk reservoir, from which the short common yolk ducts

SOME TREMATODES FROM FISHES OF LAKE NASSER

extends to the ootype. The vitellaria are follicular in shape, situated at the lateral sides of the posterior half of the body from the level of the ovary to the posterior end of the worm. The number of follicles is about 18-22 on each side. The uterus is much coiled and extends from the ootype to the posterior end of intestinal caeca. The uterus contains numerous eggs, each is oval in shape, operculated, yellowish in colour, measuring 0.033 X 0.019 mm.

The excretory vesicle is Y-shaped.

The above description coincides with the characters of the genus Orientocreadium. This genus was created by TUBANGUI (1931), who described Orientocreadium batrachoides as the type species of the genus, from the freshwater fish Clarias batrachus from the Philippine. Also, he assigned the genus to the family Allocreadidae STOSSICH, 1903 and in (1933) he assigned it to the subfamily Allocreadinae LOOSS, 1902.

PANDE (1934) reported O. indicum and emended the generic diagnosis of the genus Orientocreadium and allocated it to Subfamily Plesiocreadinae WINFIELD, 1929. Independently, YAMAGUTI (1934) reported O. pseudobagri and assigned the genus to the latter Subfamily.

YAMAGUTI (1958) within Allocreadiidae, created a new Subfamily Orientocreadiinae for the genus Orientocreadium together with the genus Macrotrema GUPTA, 1951 and five genera were synonymised with the genus Orientocreadium. These are: Ganada (CHATTERJI, 1933; Neoganada DAYAL, 1938; Nigamia DAYAL, 1938; Ganadotrema DAYAL, 1949; Paratormopsolus DUBINIA and BYCHOVSKY, 1954.

SKRJABIN and KOVAL (1960) created the family Orientocreadiidae, listing it as one of six in Lepocreadioidea CABLE, 1950. Since, the family name Orientocreadiidae must be based obviously, on the genus Orientocreadium.

YAMAGUTI (1958) listed twelve species of Orientocreadium, all reported from freshwater fishes, nine of these species from India (O. barabankiae DAYAL, 1938; O. clariae CHATTERJI, 1933; O. dayali DAYAL, 1949; O. hyderabadii DAYAL, 1938; O. indicum PANDE, 1934; O. mahendrai GUPTA, 1951; O. philippai GUPTA, 1951; O. secundum DAYAL, 1949; O. vermai GUPTA, 1951); one from Japan, (O. pseudobagri YAMAGUTI, 1934); one from Philippines (O. batrachoides TUBANGUI, 1931) and one from Russia (O. siluri DUBININA et BYCHOWSKY, 1954).

KHALIL (1961), described Orientocreadium lazeri as a new species from the freshwater fish Clarias lazera from the White and the Blue Niles from Khartoum area in the Sudan. He assigned this species as the first record of the genus Orientocreadium in Africa. Also, KHAIL (1971), in studying the zoogeographical affinities of the helminth parasites of African freshwater fishes,

stated that, the strictly fresh water genus Orientocreadium parasitizes mainly bagrid and clariid fish and occurs only in the Oriental regions, Africa and Israel, the two African species (O. lazeri and O. batrachoides) occur also in India and one of them, O. batrachoides occurs on the same host in Israel.

FISCHTHAL & KUNTZ (1963) redescribed O. batrachoides TUBANGUI, 1931, from C. lazera in Egypt, with much morphological variations evident, as this species has been redescribed with considerable morphological variations by several authors from different localities and different hosts (TUBANGUI and MASILUNGAN, 1944; BEVERLEY, 1962). Also, FISCHTHAL and KUNTZ (1963) reviewed the valid genera and species of the Orientocreadiinae YAMAGUTI, 1958. In the opinion of FISCHTHAL and KUNTZ THAT O. lazeri KHAIL, 1961, is not a valid species. The present authors believe that FISCHTHAL and KUNTZ were unjustified in their above opinion and agree with KHALIL (1961) who said that although the most characters of O. lazeri, fit readily into O. batrachoides but it can be easily separated from this type

species by the shape and size of the external seminal vesicle, the presence of a well developed internal seminal vesicle, the equal testes, and the host and geographical distribution.

It was possible to assign the species under consideration to O. lazeri. The present material agrees with KHALIL specimens in many respects but there are slight differences summarised in the following, in addition to minor differences in the measurements which are given in Table (2).

- 1- In KHALIL specimens, the vitelline follicles from the two sides, are united in the oposterior end of the body, while in the present material they are separated from each other.
- 2- The two transverse vitelline ducts which are described in the present work was not mentioned by KHALIL.
- 3- The excretory viscle in KHALIL'S specimens was sac-like, while that in the present material is Y-shaped.

None of these differences is exception, and the uthors are jjustified in the identification of the present species as above.

Beside the detailed redescription of this species which given here, lake Nasser consitutes a new locality for it.

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SOME TREMATODES FROM FISHES OF LAKE NASSER

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Table (1): *Astiotsema impletum* (Looss, 1899) Looss, 1900

	A. impletum measurements by the present authors	A. impletum measurements by Fischthal & Kuntz (1963)	A. impletum measurements by El-Naffar (1970)
The body length	1.33-3.33(2.72)	1.105-2.530 (1.722)	1.8-2.8 (2.3)
The body width	0.617-1.045 (0.92)	0.405-0.750 (0.588)	0.79-1.14 (0.96)
The oral sucker	0.199-0.380 (0.308)X	0.185-0.290 (0.250)X	0.26-0.32(0.29)X
	0.228-0.427 (0.358)	0.225-0.360 (0.285)	0.30-0.36 (0.33)
The pre-oral body length	0.047-0.095 (0.062)	0.20-0.70 (0.38)	0.044-0.145 (0.075)
The acetabulum	0.095-0.218 (0.156)X	0.125-0.195 (0.163)X	0.16-0.19 (0.175)
	0.123-0.237 (0.188)	0.130-0.215 (0.173)	
The pre-acetabular body length	0.427-1.092 (0.846)	0.360-0.630 (0.456)	0.59-0.90 (0.70)
The pharynx	0.085-0.142 (0.114)X	0.65-0.105 (0.90)X	0.10-0.12(0.11)X
	0.076-0.152(0.113)	0.102-0.150 (0.123)	0.088-0.88-0.092 (0.09)
The anterior testis	0.209-0.418 (0.300)X	0.195-0.340 (0.260)X	0.25-0.29 (0.27)X
	0.247-0.332 (0.292)	0.135-0.335 (0.245)	0.26-0.31 (0.28)
The posterior testis	0.237-0.437 (0.330)X	0.215-0.345 (0.273)X	0.25-0.29 (0.27)X
	0.237-0.313 (0.280)	0.160-0.340 (0.274)	0.26-0.31 (0.28)
The post-testicular body length	0.19-0.855 (0.66)	0.185-0.795 (0.454)	0.34-0.65 (0.54)
Distance from acetabulum to posterior testis	0.361-0.931 (0.672)	0.205-0.610 (0.372)	0.40-0.66 (0.49)
Distance from acetabulum to posterior end of the cirrus pouch.	0.070-0.237 (0.182)	0.60-0.315 (0.182)	0.077-0.155 (0.124)
The ovary	0.085-0.19 (0.16)X	0.120-0.188 (0.160)X	0.132-0.188 (0.154)
	0.085-0.196 (0.163)	0.130-0.189 (0.163)	
The ovum	0.038-0.057 (0.049)X	0.036-0.045 (0.041)X	0.033-0.041 (0.037)X
Distance from the genital pore to acetabulum.	0.014-0.019 (0.018)	0.019-0.019 (0.018)	0.013-0.016 (0.014)
Distance from intestinal bifork? to acetabulum	0.019-0.047 (0.035)	0.1-0.7 (0.4)	-----
Distance from the acetabulum to ovary	0.066-0.142 (0.104)	to 0.155	0.067-0.157 (0.109)
	0.095-0.209 (0.144)	to 0.75	0.025-0.040

SOME TREMATODES FROM FISHES OF LAKE NASSER

Table (2)
Orientocreadium lazeri Khalil, 1961

	O. lazeri measurments by the present authors	O. lazeri measurments by Khalil, 1961
Body length	2.70	1.5-2.3
Body width	0.74	0.37-0.56
Oral sucker	0.21	0.15-0.20
Acetabulum	0.23	0.16-0.22
Pre-acetabular length	0.79	-
Pre-pharynx	0.027	0.03-0.05
Pharynx	0.137 X 0.17	0.09-0.13 X 0.12-0.16
Oesophagus	0.08	0.03-0.05
Anterior testis	0.25 X 0.26	0.15-0.21 X 0.14-0.19
Posteroir testis	0.27 X 0.25	0.15-0.21 X 0.14-0.19
Cirrus sac	0.44 X 0.08	0.16-0.24 X 0.06-0.09
Internal seminal vesicle	0.044	0.09 X 0.06
External seminal vesicle	0.055	0.09 X 0.14
Ovary	0.18 X 0.12	0.12 X 0.15
Ovum	0.033 X 0.019	0.0288-0.0336 X 0.018-0.021

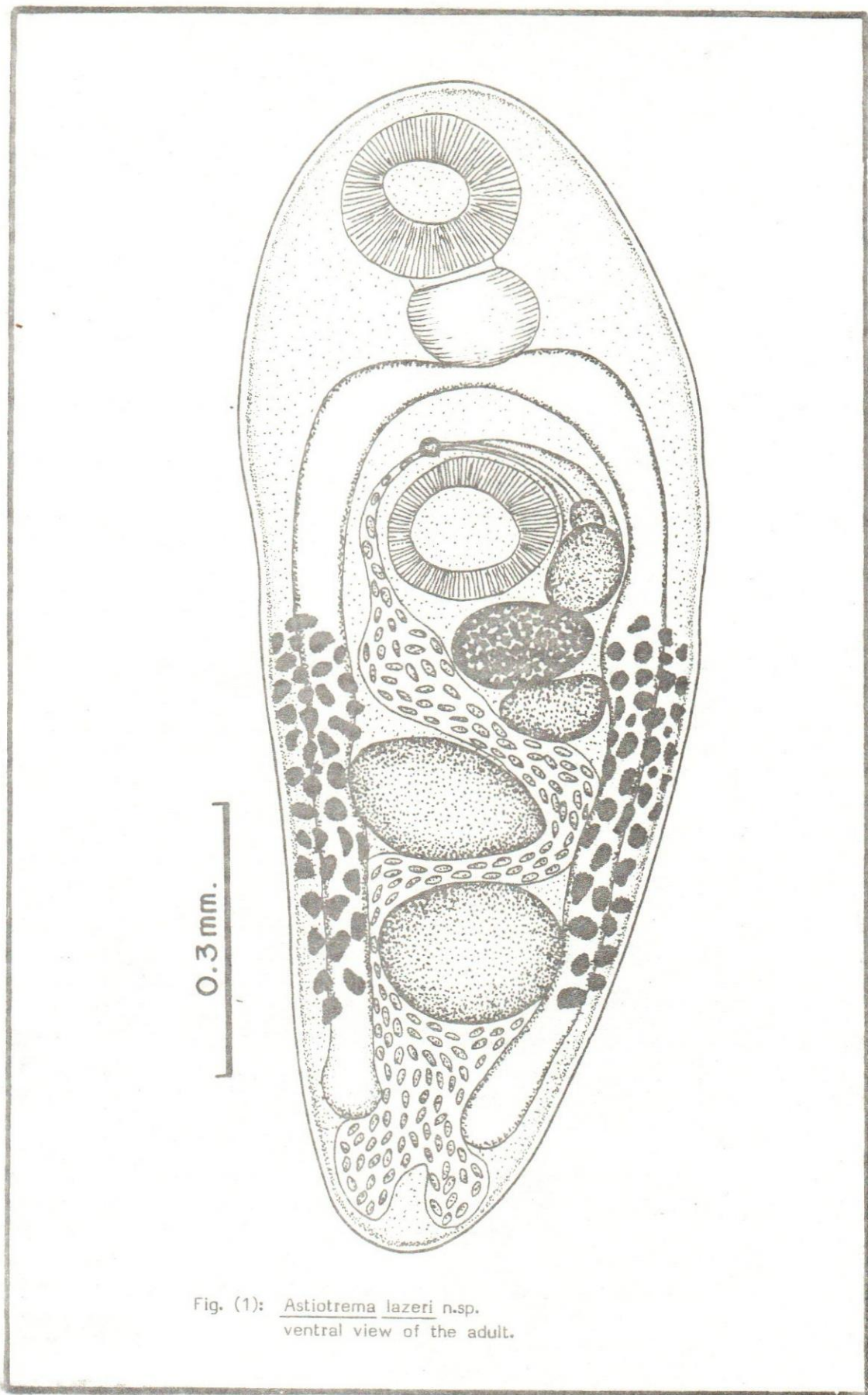


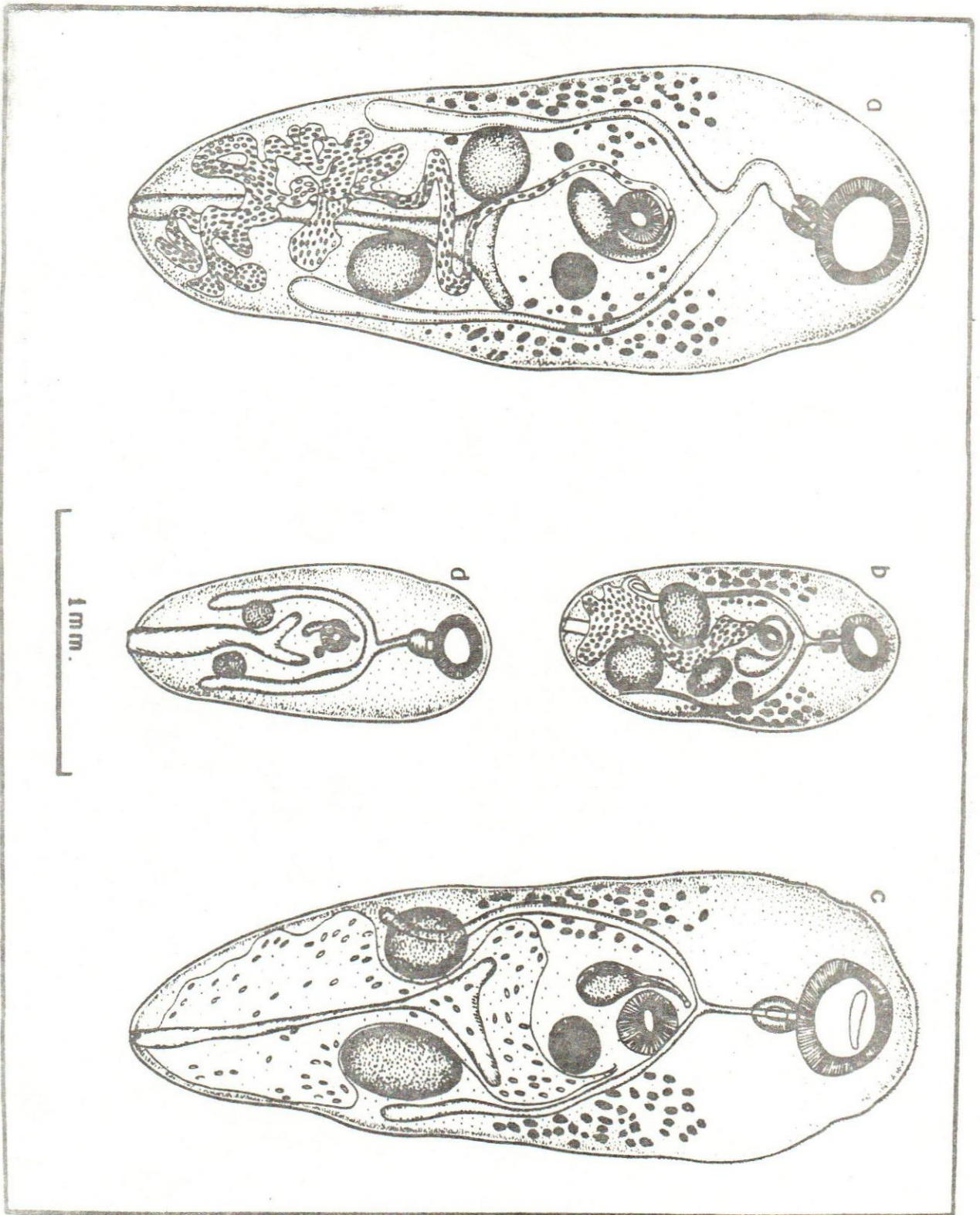
Fig. (1): *Astiotrema lazeri* n.sp.
ventral view of the adult.

Fig. (2): *Astiotrema impletum* (Looss, 1899) Looss, 1900.

a & b - Ventral view of the adult.

c - Showing the position of the testes, one beside the other.

d - The young worm showing the Y-shaped excretory vesicle.



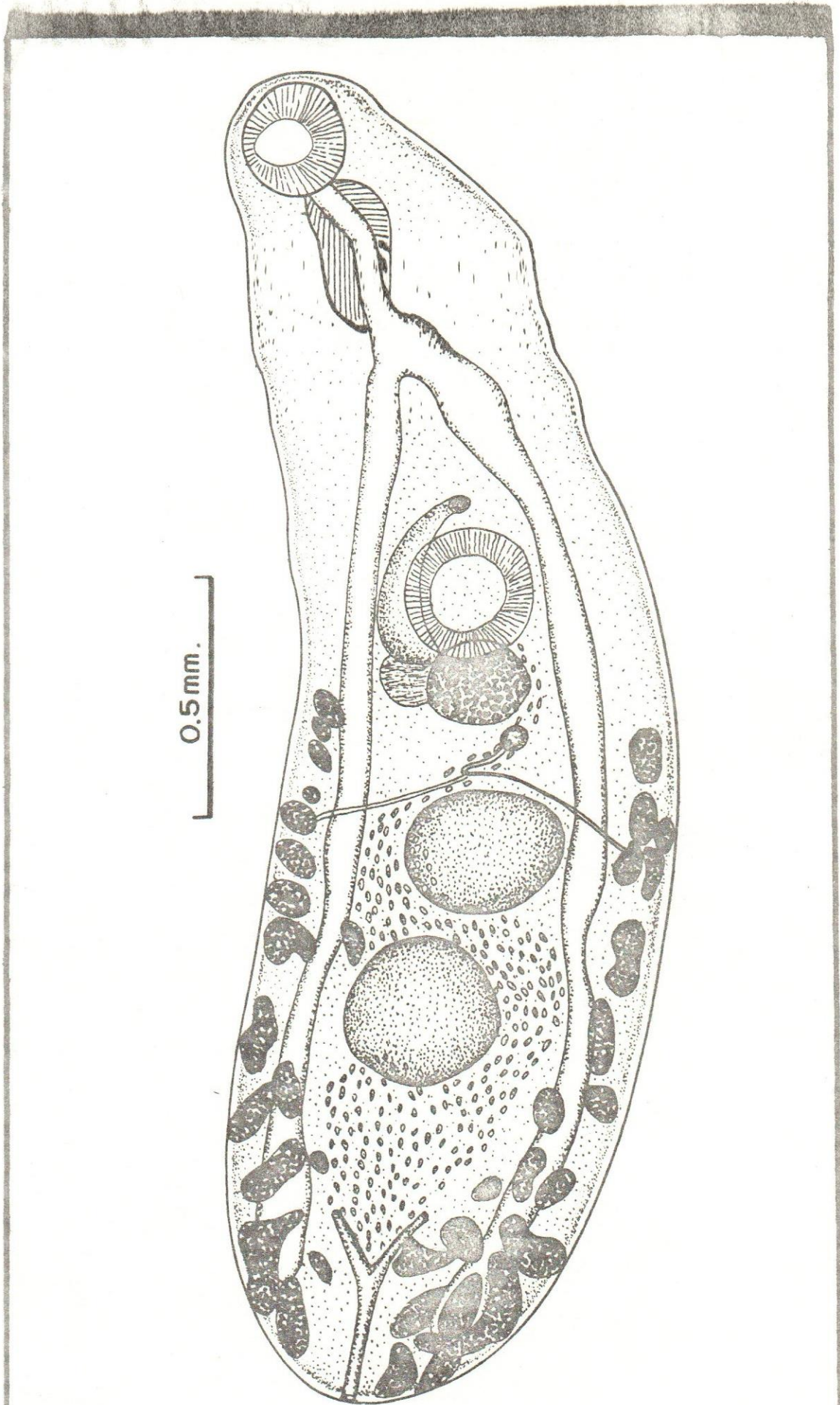


Fig. (3): *Orientocreadium lazeri* (Khalil, 1961)
Ventral view of the adult.