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A REVIEW OF THE TREMATODE GENERA *HAPLOPORUS* LOOSS, 1902 *DICROGASTER* LOOSS, 1902 AND *SACCOCOELIOIDES* SZIDAT, 1954 WITH REDESCRIPTION OF THREE SPECIES FROM MULLET IN LIBYA

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ABSTRACT

In the present work, three trematode genera: *Haploporus* Looss, 1902, *Dicrogaster* Looss, 1902 and *Saccocoelioides* Szidat, 1954 were reviewed. *Haploporus lateralis* Looss, 1902, *D. fastigatus* Thatcher and Sparks 1958 and *S. pearsoni*, Martin, 1973 were redescribed from the mullet *Liza ramada* from Libya. This represent a new host record and new locality. A comparison between the previous results and the present work is presented and discussed. A key was suggested to distinguish between the known species of the two genera *Dicrogaster* Looss, 1902 and *Haploporus* Looss, 1902.

INTRODUCTION

The two genera *Dicrogaster* (with *D. perpusillus*) as the type species and *Haploporus* (with *H. benedenii*) were established by Looss, 1902 from *Mugil chelo* from Triest. The genus *Saccocoelioides* (with *S. nani*) was established by Szidat, 1954 from *Prochilodus lineatus* from Argentina as the type species.

Fares and Maillard (1974) reported Haploporid trematode from mullets from the northern coast of the Mediterranean Sea of Fience

Al-Bassel (1990) reported other species belonging to the above three genera of Haploporid trematodes from mullet from different inland waters in Egypt. He also believed that these genera are known from mullets in the Mediterranean Sea. Accordingly, it seems plausible to assume that the original *Mugil spp.* which have been transferred from the Mediterranean Sea to inland lakes must have carried with them, the parasites they normally have in the Mediterranean Sea. Then the parasites have been apparently maintained in inland lakes through the presence of suitable intermediate hosts there.

The aim of the present work was to clarify the distribution of Haploporid trematodes in mullets from the southern coast of the Mediterranean Sea in Libya.

MATERIAL AND METHODS

Several adult mullet fishes of *Liza ramada* locally called "Bouri" were caught from the Libian Coastal waters near Misurata in Libya. They were examined for helminth parasites inhabiting the intestine. Trematodes were first relaxed, then fixed in 70 % alcohol or 5 % formalin. The parasites were then stained using aceto - alum carmine stain. Drawings were made to the scale with a Camera Lucida. Measurements are in millimetres, unless otherwise stated. The identification of fishes as well as methods followed in collection, fixation, staining, clearing and mounting were carried out by the usual way.

RESULTS AND DISCUSSION

1) *Haploporus lateralis* Looss, 1902 (Fig.1) :

The following description is based on ten specimens.

The body is fusiform in shape, tegumental spines 5-6 u in length, found on the body surface. The body measures 1.69 - 1.89 long and 0.60 - 0.76 wide. The length / width ratio varies from 2.78 - 2.80 - 1. Oral sucker subterminal, 0.10- 0.14 long and 0.21 - 0.23 wide. The ventral sucker is almost round in shape, lying at the anterior half of the body

0.14 – 0.17 long and 0.15 – 0.19 wide. The prepharynx is short 0.03 – 0.08 in length. The pharynx is round in shape, 0.06 – 0.12 in diameter. The oesophagus is long bifurcates at the level of acetabulum, and measures 0.26– 0.30 in length. The oesophagus leads to short intestinal caeca extending a short distance behind the acetabulum, being 0.39 – 0.42 long and 0.05– 0.10 wide.

The testis is round in shape, situated preequatorial at the left side of acetabulum and measures 0.30–0.33 long and 0.33 – 0.36 wide. The cirrus pouch is round in shape, situated immediately in front of acetabulum, being 0.19 – 0.20 long and 0.19 – 0.22 wide. The cirrus pouch contains an oval-shaped internal seminal vesicle measuring 0.13 – 0.15 long and 0.092 – 0.096 wide, small pars prostatica surrounded by prostatic gland cells, muscular metraterm and long muscular hermaphroditic duct. External seminal vesicle is elongate saccular situated below the anterior portion of acetabulum and measuring 0.17 – 0.18 long and 0.053 – 0.055 wide.

The ovary is oval in shape situated at level with the bifurcation and measures 0.15–0.17 long and 0.11 – 0.13 wide. Vitelline gland has the form of two small compact symmetrical lobes, situated behind the ovary, each lobe measuring 0.011– 0.12 long and 0.098 – 0.099 wide. Receptaculum seminis is moderately large overlapping by the anterior portion of ovary and measures 0.13 – 0.14 long and 0.092 – 0.094 wide. Uterus occupying the middle third of the body but leaving posttesticular space about the last third of the body. Eggs are numerous and measure 37 – 38u long and 22– 25 u wide, each encloses miracidium with prominent eye spot. Excretory vesicle is saccular in shape occupying posttesticular space and opened by excretory pore in the posterior extremity.

Looss (1902) established the genus *Haploporus* for these haploporiid trematodes, having short oesophagus, cylindrical caeca extending posterior to the acetabulum; the single testis is submedian, situated immediately behind the ovary; excretory vesicle elongate and

saccular. *Haploporus benedenii* (Stossich, 1898) Looss, 1902 from *Mugil chelo* from Trieste was designated as the type species of the genus. He also added *Haploporus lateralis* from *Mugil auratus* and *M. chelo* from the same locality. Looss (1902) considered *Distoma benedenii* Stossich, 1887, as a synonym of *Haploporus benedenii* Looss, 1902.

Nicoll (1914) reported *Haploporus benedenii* Looss, 1902 from *Mugil chelo* from Plymouth. Wlassenko (1931) described *Haploporus longicollum* from *Mugil cephalus* from the Black Sea. In (1946). Dawes outlined Looss's description of both *H. benedenii* and *H. lateralis*. He also believed that *H. lateralis* was probably a synonym of *H. benedenii*. Mikailov (1958) reported *H. longicollum* Wlassenko, 1931 from *Mugil saliens* from the Caspian Sea. He also studied the host parasite relationships of this parasite as well as other species of the family Haploporidae.

Yamaguti (1971) considered *Wlassenkotrema* Skrjabin, 1956 as a synonym of *Haploporus* Looss, 1902. He also outlined the diagnostic characters of this genus and listed three species namely ; *H. benedenii*, *H. lateralis* Looss, 1902 and *H. longicollum* Wlassenko, 1931. Fares and Maillard (1974) redescribed *H. benedenii* from mullet from the Western Mediterranean, and stated that the excretory vesicle is not y-shaped as Looss's description but saccular-shaped. Rekharani and Madhavi (1985) described *H. indicus* from the intestine of *Valamugil cunnesius* and *H. pseudoindicus* from the intestine of *Liza macrolepis*, both fishes caught from brackish water in India.

In Egypt, Al-Bassel (1987) redescribed *H. benedenii* (Stossich, 1898) Looss, 1902 and *H. lateralis* Looss, 1902 from *Mugil cephalus*, *M. capito* and *M. chelo* caught from Lake Qarun in Egypt. In (1990) Al-Bassel added *H. loossi* from *Mugil capito* from Lake Qarun in Egypt

Haploporus lateralis Looss, 1902 was originally described from *Mugil auratus* and *Mugil chelo* from Trieste. In the present investigation *H. lateralis* was recorded for the first time from Libya. The present material is similar to the specimens described by Looss, 1902 in the main

characteristics but there are certain minor differences in the body length, caeca length, egg size and oral sucker size. A comparison between the previous results is presented in table (1).

The following key is suggested to distinguish between the known species of the genus *Haploporus* Looss, 1902.

- * Oral sucker terminal (1)
- * Oral sucker subterminal (2)
- 1- Testis situated in forebody; ventral sucker armed with rows of spines; caeca extending to posterior of testis and excretory vesicle represented by two main fine tubules branched and opened laterally near posterior extremity; prepharynx present ..*H. loossi* Al-Bassel 1990.
- * Testis situated in hind body; ventral sucker unarmed with spines, caeca extending to testicular level; prepharynx absent (3)
- 2- Oral sucker larger than the ventral sucker; caeca ending just anterior to testis, excretory vesicle y-shaped. *H. benedenii* (Stossich, 1898) Looss, 1902.
- * Oral sucker equal to the ventral sucker, caeca ending just at the posterior margin of testis; excretory vesicle saccular-shaped. *H. lateralis* Looss, 1902.
- 3- Oesophagus bifurcates preacetabulum; excretory vesicle elongate; posttesticular space large *H. indicus* Rekharani and Madhavi, 1985.
- * Oesophagus bifurcates postacetabulum, excretory vesicle saccular; posttesticular space small *H. pseudoindicus* Rekharani and Madhavi, 1985.

2- *Dicrogaster fastigatus* Thatcher and Sparks, 1958 (Fig. 2)

The following description is based on three specimens.

The body is very small, measuring 0.49- 0.52 long and 0.14-0.16 wide, elongated with a papilla like extremity and is covered with minute

spines. The oral sucker is subterminal, rounded and measured 0.081-0.086 long and 0.085- 0.090 wide. The prepharynx is missing and the pharynx is strongly muscular and spherical, it measured 0.056 – 0.059 long and 0.049- 0.052 wide. The oesophagus is moderately long and measured 0.093 – 0.098 in length. The caeca are saccular- shaped, ending at the level of the posterior border of acetabulum and measure 0.056- 0.058 long and 0.030 – 0.032 wide. The ventral sucker is very large and measured 0.10 – 0.12 long and 0.099–0.10 wide. The ratio of oral sucker / ventral sucker is 0.75 – 0.9 : 1.

The single testis is oval – shaped and lies posterior to acetabulum, being 0.060 – 0.061 long and 0.046 – 0.048 wide. The cirrus pouch is oval – shaped and measured 0.091 – 0.095 long and 0.077-0.079 wide; lying dorsally between the pharynx and the intestinal furca. The cirrus pouch contains prostatic gland cells surrounding the hermaphroditic duct, that opens by the genital pore. The seminal vesicle is bipartite and has a thick wall. The internal portion of the seminal vesicle measures 0.052- 0.057 long and 0.022 – 0.025 wide and the external one being 0.058 – 0.060 long and 0.027 – 0.030 wide.

The ovary is round in shape, situated between the acetabulum and the testis, being 0.032 – 0.035 long and 0.029 – 0.031 wide. The receptaculum seminis is not detected. The vitellarium is single, oval in shape and lies immediately posterior to the ovary, being 0.050- 0.052 long and 0.028 – 0.030 wide. The eggs are 4-6 large in size each is 39-41 μ long and 14-16 μ wide. The eggs contain well developed miracidia which possess conspicuous eye spots of oval to triangular shape. The excretory vesicle is tubular in shape and opens by a terminal excretory pore.

Looss (1902) established the genus *Dicrogaster* for those haploporiid trematodes having vitellaria consisting of a single bilobed mass, body very small and oval in shape; very large eggs, acetabulum larger than the oral sucker. *Dicrogaster perpusillus* from the intestine of *Mugil chelo* from Triest was designated as the type species of the genus. In the same article, he described *D. contractus* from the same host and locality. Dawes (1946) postulated that *Dicrogaster* Looss 1902, was not

recorded from fishes inhabiting British water, but there was every likelihood of its being found in that country. He also questioned the validity of *D. contractus*, believing that it was probably a synonym of *D. perpusillus*.

Thatcher and Sparks (1958) described *D. fastigatus* from the intestine of *Mugil cephalus* from Grand Isle, Gulf of Mexico. They stated that the vitellaria composed of a single lobe only. Yamaguti (1971) outlined the generic diagnosis of the genus *Dicrogaster* Looss, 1902 and listed the three species mentioned above. Overstreet (1971) redescribed *D. fastigatus* from *Mugil cephalus* from estuarine water of the Northern Gulf of Mexico. In 1974 *D. contractus* was redescribed by Fares and Maillard from the intestine of *Mugil spp.* from the Mediterranean Sea. Skinner (1975) reported *D. fastigatus* from *Mugil cephalus* from Biscayne Bay, Florida.

In Egypt Al- Bassel (1987) redescribed *D. contractus* Looss, 1902 from the intestine of *Mugil cephalus* and *M. chelo* from lake wadi Al-Raiyan at Fayoum. He also in (1990) described *D. maryutensis* from the intestine of *Mugil cephalus* from maryut Fish farm in Egypt. A comparison between previous results and present work is presented in Table (2).

Dicrogaster fastigatus Thatcher and Sparks, 1958 was originally described from *Mugil cephalus* from Gulf of Mexico. In the present investigation *D. fastigatus* is recorded for the first time from Libya and from *Liza ramada* as well. The present material is similar to the specimens described by Thatcher and Sparks in the main characteristics but there are certain minor differences in the body length, eggs size and the ratio of oral sucker / ventral sucker (Table. 1)

The following key is suggested to differentiate between the known species of the genus *Dicrogaster* Looss, 1902.

- 1- Vitelline gland formed of a single oval mass situated at a level with testis excretory vesicle tubular body elongated .*D. fastigatus* Thatcher and Sparks 1958.

- 2- Vitelline gland formed of a single irregular mass, situated posterior to testis, eggs 14- 19 in number, both suckers much smaller; excretory vesicle tubular *D. maryutensis* Al- Bassel, 1990
- 3- Body very much small, eggs 2-3 in number, excretory vesicle saccular in shape..*D. perpusillus* Looss, 1920.
- 4- Body small plump oval – shaped, eggs 7-10 in number, excretory vesicle Y. shaped *D. contractus* Looss, 1902.

3- *Saccocoelioides pearsoni* Martin, 1973. (Fig. 3):

The following description is based on 5 specimens.

The body is elongate oval, measuring 1.42 – 1.48 long and 0.51-0.53 wide. The length/ width ratio is 2.79-2.90 : 1. The tegument is spined each spine measures 2-4u in length. The oral sucker is rounded, subterminal measuring 0.11-0.13 long and 0.12-0.14 wide. The ventral sucker is spherical, and lies at the end of the anterior third of the body, being 0.11-0.14 long and 0.13-0.15 wide. The prepharynx is moderately long and measured 0.085-0.086 in length. The pharynx is well developed, and 0.070-0.072 long and 0.085-0.089 wide. The oesophagus is long and bifurcates at level with the half of the ventral sucker, it measures 0.19-0.20 in length. The caeca are saccular in shape, ending at the middle of the body, each measures 0.18-0.20 long and 0.078-0.080 wide. The testis is elongate oval in shape, lies postero-lateral to the left caecum. It is 0.22-0.25 long and 0.15-0.17 wide. The cirrus pouch is oval in shape, measuring 0.17-0.20 long and 0.13-0.16 wide, lying between the ventral sucker and the pharynx. The cirrus pouch includes, internal seminal vesicle which occupies the posterior half of the cirrus pouch. It measures 0.11-0.13 long and 0.07-0.09 wide; prostatic bulb measuring 0.042-0.044 long and 0.036-0.038 wide and opens in the hermaphroditic duct. The metraterm leads into a hermaphroditic duct that measures 0.10-0.12 long and 0.04-0.06 wide. The genital pore opens between the pharynx and the

ventral sucker. The external seminal vesicle is oval in shape and measures 0.10-0.12 long and 0.05-0.06 wide.

The ovary is oval in shape, lies between the two caeca and measures 0.11-0.13 long and is 0.078-0.080 wide. The vitellaria consist of 9-10 follicles occupying the middle third of the body. The uterus also occupies the middle third of the body overlapping by the vitelline follicles. The eggs are few in number, operculated and comparatively large in size, each measures 48-56 μ long and 36-38 wide. The excretory vesicle is y-shaped and opens by the terminal excretory pore.

Szidat (1954) established the genus *Saccocoelioides* for those Haploporiid trematodes having moderately long oesophagus bifurcating posterodorsal to acetabulum. Caeca wide, usually short. Testis median, intercaecal, spherical or elliptical. Vitellaria forming symmetrical groups of follicles extending more or less longitudinally ventral, lateral, partly posterior to caeca. *S. nanii* Szidat, 1954 from *Prochilodus lineatus* from Argentina was designated as the type species of the genus. posterior to caeca. *S. nanii* Szidat, 1954 from *Prochilodus lineatus* from Argentina was designated as the type species of the genus. The same author added 6 species belonging to the same genus from the same locality *S. elongatus*, *S. magniovatus*, *S. magnus*, *S. sp. (5)*, *S. sp. (6)* and *S. sp. (7)* from *Prochilodus platensis*, *leporinus obtusidens*, *Curimata platana*, *Loricaria anus*, *Schizodon fasciatus* and *Pyrrhulina brevis*, respectively.

Lumsden (1963) described *S. sogendaresi* from the intestine of *Mollienisia latipinna* from Texas. In 1970 Szidat described *S. octavus* from *Astyanax fasciatus* from the brackish water of Chascomus Lake in Argentina. One year later Overstreet (1971) redescribed *S. beaforti* Hunter and Thomas, 1961 from *Mugil cephalus* from Gulf of Mexico. Yamaguti (1971) outlined the generic diagnosis of the genus *Saccocoelioides* Szidat 1954 and listed five species in the genus. Szidat (1973) described *S. bacilliformis* from the intestine of *Astyanax bipunctatus* from Argentina. Martin (1973) described *S. pearsoni* from *Mugil cephalus* from Australia and studied the life cycle of this parasite. One year later Lamothe

Argumedo (1974) added *S. chauhani* from the intestine of *Astynax fasciatus* from Mexico.

Skinner (1975) redescribed *S. beauforti* from *Mugil cephalus* from Biscayne Bay in Florida. One year later Watson (1976) described *Saccoelioides* sp. From *Roeboides guatemalensis* caught from Lake Nicaragua. Madhavi (1979) added *S. martini* from *Mugil waigiensis* from Bay of Bengal. Lunaschi (1984) described *S. carolae*, *S. antonioi* and *S. platensis* from the intestine of *Cichlasoma facetum*, *Curimatorbis platanus* and *C. platanus* respectively from Buenos Aires. Kohn (1985) reviewed the genus *Saccocoelioides* Szidat, 1954, discussed the Szidat's results and he agreed with Lumsden, (1963) that *Saccocoelioides* is not synonym with *Lecithobotrys* Looss, 1902. Rekharani and Madhavi (1985) noted on *S. martini* Madhavi, 1979. Kohn and Faoes (1986) described *S. godoyi* from *leporinus elongatus* from Brazil.

In Egypt, Al-Bassel (1990) described *S. elgindy* from the intestine of *Mugil cephalus* caught from three localities, namely a Fish farm at Maryut, a Fish farm at Al-Rasswa and Lake Edku in Egypt. A comparison between the previous results and the present work is presented in (Table 3).

Saccocoelioides pearsoni Martin, 1973 was originally described from *Mugil cephalus* from Australia. In the present investigation, *S. pearsoni* is recorded for the first time from *Liza ramada*. and from Libya as well. The present material has much similarity with the specimen described by Martin, 1973 in the main characteristics, but there are certain minor differences in the body length, sizes of eggs, oral sucker and cirrus pouch (Table 3).

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(TABLE 1)

A Comparison between the known species of the genus *Haploporus* Looss, 1902.

Characters	<i>H. benedicti</i> (cited by Fares and Maillard, 1974)	<i>H. lateralis</i> Looss, 1902.	<i>H. indicus</i> Rekharani and Madhavi, 1985.	<i>H. pseudolindicus</i> Rekharani and Madhavi, 1985.	<i>H. Loosi</i> Al-Bassel, 1990
Body size	0.64 - 2.09 x 0.23 - 0.65	0.80 - 0.95 x 0.38	0.75 - 1.12 x 0.16 - 0.20	1.28 x 0.32	1.79 - 1.82 x 0.50 - 0.57
Oral sucker	0.09 - 0.22 diameter	0.11 diameter	0.039 - 0.058 x 0.058 - 0.089	0.080 x 0.12	0.14 - 0.15 x 0.16 - 0.17 Terminal
Ventral sucker	0.08 - 0.19 diameter	0.12 diameter	0.039 - 0.058 x 0.039 - 0.046	0.064 x 0.080	0.12 - 0.13 x 0.13 - 0.14 Spined
Prepharynx	Very Short	Short	Absent	Absent	Long 0.074 - 0.078
Pharynx	0.06 - 0.11 diameter	0.068 diameter	0.031 - 0.036 x 0.027 - 0.029	0.048 x 0.080	0.08 - 0.09 x 0.1 - 0.12
Receptaculum Seminis	Not seen	Not seen	Small	Small	0.06 - 0.07 x 0.10 - 0.12
Cirrus Pouch	Saccular 0.10 - 0.27	Oval - shaped	0.13 - 0.19 / 0.054 - 0.097	0.21 x 0.12	0.16 - 0.17 x 0.17 - 0.18
Excretory Vessels	Y - Shaped	Saccular	Elongate	Saccular	Fine tubules
Testis	0.1 - 0.24 diameter	At ovary level	0.089 - 0.13 x 0.078 - 0.13	0.27 x 0.19	0.20 - 0.24 x 0.28 - 0.30
Ovary	0.07 - 0.23	At testis level	0.054 - 0.062	0.096 x 0.96	0.10 - 0.12 x 0.17 - 0.18
Vitellina	At ovary level	At ovary level	Behind ovary	Behind ovary	0.096 x 0.098
Eggs	40 - 70 x 20 - 35 u	42 - 45 x 23 - 26u	31 - 35 x 11 - 15u	19 x 15 u	37 - 39 x 22 - 24u
Hosts	Mugil Spp	Mugil Spp	Valamugil cunnesins	Liza macrolepis	Mugil Capito
Locality	Mediterranean Sea	Triest	India	India	Lake Qarun Egypt

(TABLE 2)

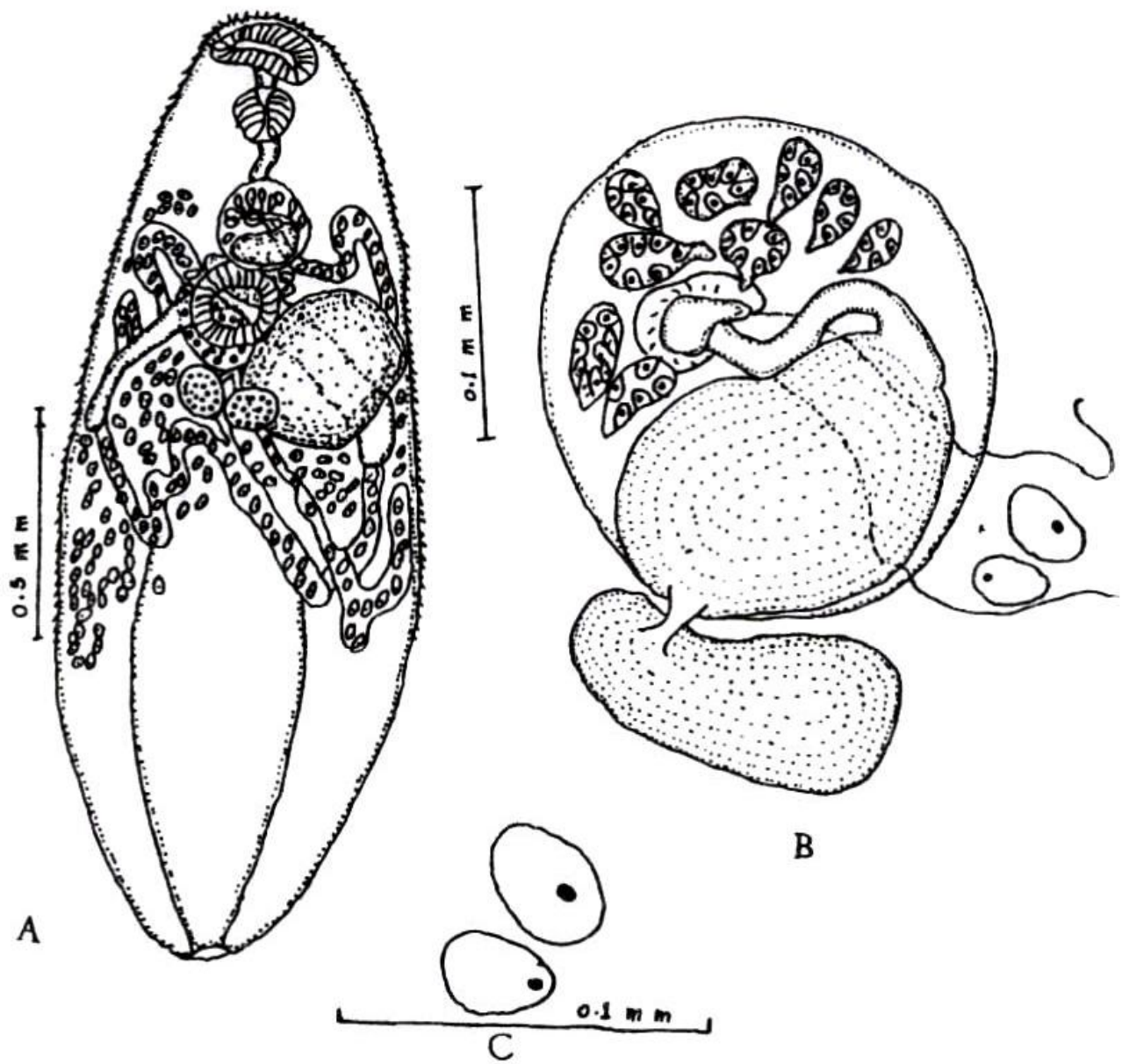
A Comparison between different species of the genus *Dicrogaster* Looss, 1902. And the present work

Characters	<i>D. perpusillus</i> Looss, 1902	<i>D. fastigatus</i> Thatcher & Sparks, 1958	<i>D. contractus</i> cited by Fares and Maillard, 1974.	<i>D. Maryutensis</i> Al-Bassel, 1990	<i>D. Fastigatus</i> (present material)
Body Shape	Small, spined	Conical spined	Small, oval, spined	Elongate, spined	elongate, spined
Body size	0.3-0.33x0.18	0.27-0.86x0.14-0.33	0.46-1.43x0.27-0.65	0.9-1.019x0.29-0.36	0.49-0.52x0.14-0.16
Oral sucker	0.066 indiameter	0.042-0.083	0.09-0.16	0.07-0.1x0.09-0.12	0.081-0.086x0.085-0.09
Ventral sucker	0.1 indiameter	0.062-0.094	0.1-0.26	0.1-0.12x0.11-0.12	0.10-0.12x0.099-0.10
Sucker ratio	0.66 : 1	0.44-0.88:1	0.6-0.9:1	0.7-0.8 : 1	0.75-0.90 : 1
Pharynx	0.018	0.028-0.052x0.028-0.055	0.04-0.08	0.059-0.060	0.056-0.059x0.049-0.052
Desophagus	long	long	long	0.16-0.19 long	0.093-0.098 in length
Caeca length	saccular	Have terminal expansions	-	0.14-0.16	0.056-0.058x0.03-0.032
Testis	lateral	0.073-0.16x0.049-0.097	0.11-0.23	0.08-0.097x0.049-0.059	0.046-0.048x0.06-0.061
Cirrus pouch	Saccular	Elongate	0.14-0.29	0.16-0.18x0.09-0.098	0.077-0.079x0.091-0.095
Seminal vesicle	Bipartite	Bipartite	Bipartite, 0.06-0.1	Ex: 0.08-0.089, in 0.08-0.081	Ex: 0.052-0.057 long in. 0.058-0.060
Ovary	Egg - shaped	0.035-0.087	0.07-0.18	0.10-0.12x0.065-0.075	0.032-0.035x0.029-0.031
Vitellarium	Bilobed mass	0.031-0.083	Bilobed	irregular, 0.075x0.043 diameter	0.05-0.052x0.028-0.030
Eggs	53x25 u (12-20) nume.	42-52x17-21u (20-30)	35-70x20-50u (33)	46-49x23-28 u (15-20)	39-41x19-16 u (4-6)
Ex. Vesicle	saccular	Tubular	Y-shaped	Tubular	Tubular
Hosts	Mugil chelo	M. cephalus	10 spp.	M. cephalus	Liza ramada
Locality	Triest	Gulf of Mexico	Mediterranean	Maryut fish farm Egypt	Misurata, Libya

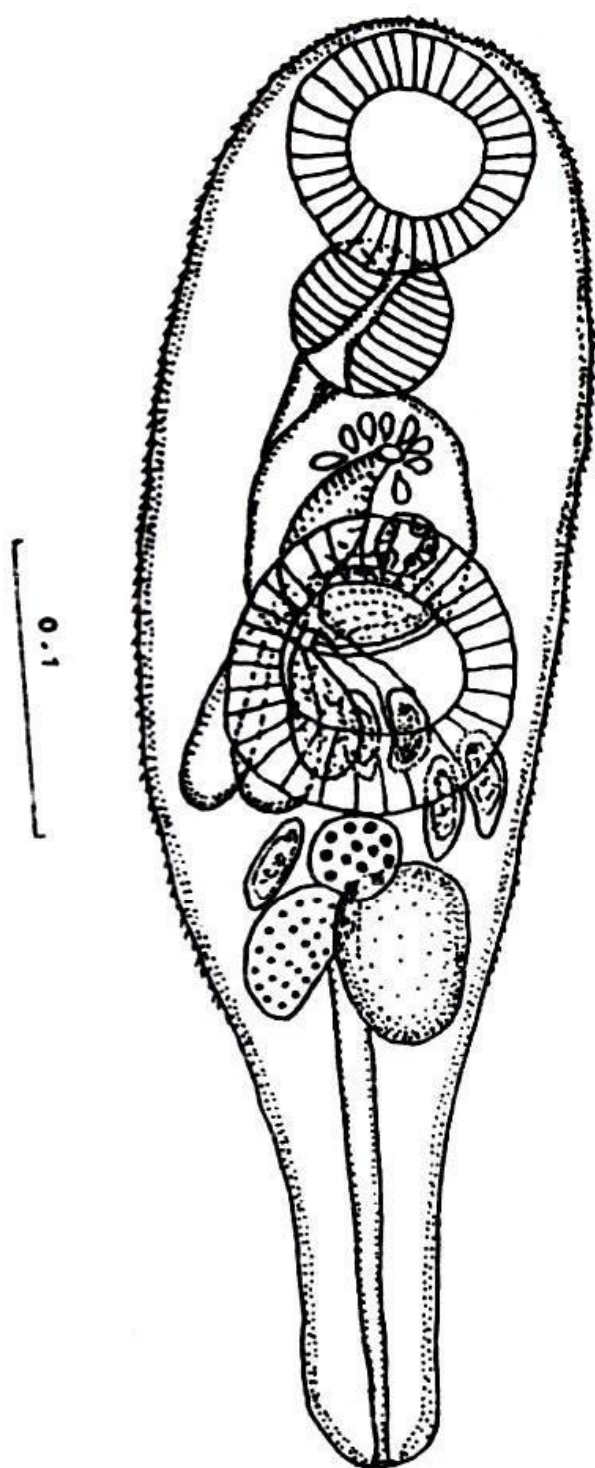
(TABLE 3)

A Comparison between the known species of *Saccoscolecoides* Szidat, 1954 and the present work.

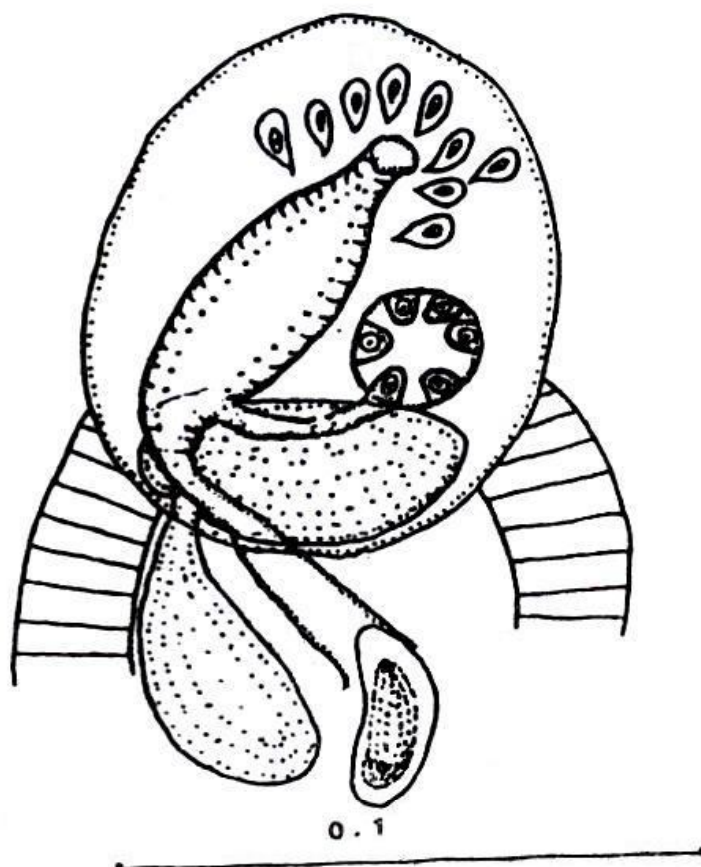
Parasites	Body size	Oral sucker	Ventral sucker	Pharynx	Cirrus pouch	Testis	Ovary	Eggs	Hosts	Locality
<i>S. nassii</i> Szidat, 1954	0.55 - 0.64 0.26 - 0.29	0.10 - 0.11 0.10	0.12 0.08-0.11	0.05 - 0.07 0.06 - 0.07	0.14 - 0.15 0.08 - 0.09	0.12 x 0.09	0.40 x 0.06	68 - 88 38 - 54 u	<i>Prochilodus lineatus</i>	Rosario
<i>S. elongatus</i> Szidat, 1954	1.8 x 0.47	0.16 x 0.18	0.17 x 0.19	0.10 x 0.13	0.30 x 0.12	0.40 x 0.20	0.14 x 0.10	60 - 75 33 - 38 u	<i>Prochilodus platensis</i>	Buenos Aires
<i>S. magnirostris</i> Szidat, 1954	0.49 - 0.75 0.25 - 0.41	0.10 - 0.12 0.11 - 0.13	0.10 - 0.12 0.12 - 0.14	0.084 - 0.096 0.078 - 0.10	0.072 - 0.11 0.11 - 0.13	0.08 - 0.12 0.05 - 0.10	0.06 - 0.08 0.06 - 0.07	92 - 116 48 - 60 u	<i>Lepomis obtusidens</i>	Buenos Aires
<i>S. magnus</i> Szidat, 1954	1.7 - 1.96 0.78 - 1.00	0.21 - 0.27 0.18 - 0.29	0.21 - 0.30 0.27 - 0.30	0.11 - 0.15 0.11 - 0.17	0.16 - 0.22 0.15 - 0.20	0.30 - 0.40 0.25 - 0.38	0.11 - 0.15 0.10 - 0.16	62 - 75 32 - 49 u	<i>Curmatia Platana</i>	Rosario
<i>S. grahami</i> Szidat, 1954	1.15 - 1.25 0.52 - 0.56	0.08 - 0.12 0.10 - 0.12	0.13 0.13 - 0.14 0.04 - 0.06	0.13 - 0.15 0.13 - 0.15	0.13 - 0.15 0.13 - 0.15	0.16 - 0.24 0.18 - 0.26	0.06 - 0.08 0.06 - 0.08	—	<i>Loricaria anus</i>	Rosario
<i>S. szidati</i> Szidat, 1956	1.59 x 0.75	0.165 x 0.15	0.165 x 0.165	0.12 x 0.13	0.21 x 0.22	0.39 x 0.30	0.10 x 0.08	108 - 118 53 - 56 u	<i>Schizodon fasciatus</i>	Rosario
<i>S. beauforti</i> Hunter & Thomas 1961	0.458-0.968 0.152-0.337	0.059-0.100 0.064-0.102	0.063 - 0.102 0.070 - 0.123	0.037 - 0.063 0.037 - 0.065	0.072 - 0.182 0.054 - 0.138	0.105 - 0.266 0.061 - 0.170	0.037 - 0.084 0.030 - 0.072	70 - 107 40 - 56 u	<i>Mugil Cephalus</i>	Mexico
<i>S. pearsoni</i> Martin, 1973	1.050-1.420 0.233-0.350	0.090-0.164 0.10 - 0.145	0.120 - 0.166 0.123 - 0.18	0.10 - 0.145 0.109 - 0.166	0.26 - 0.413 0.232 - 0.37	0.253 - 0.840 0.203 - 0.33	0.083 - 0.139 0.1 - 0.15	93 - 100 51 - 70 u	<i>Mugil Cephalus</i>	Australia
<i>S. chauli</i> Argumedo, 1974	0.330-0.56 0.289 - 0.418	0.108-0.112	0.101 - 0.105 0.086 - 0.108	0.048 - 0.060 0.045 - 0.052	0.112 - 0.217 0.052 - 0.082	0.112 - 0.120 0.75 - 0.180	0.045 - 0.082 0.052 - 0.075	101 - 105 56 - 63 u	<i>Ayanas Fasciatus</i>	Mexico
<i>S. martini</i> Madhavi, 1979	0.688-1.178 0.120-0.40	0.058-0.125 0.078-0.136	0.086 - 0.136 0.088 - 0.136	0.078 - 0.166 0.078 - 0.156	0.086 - 0.156 0.047 - 0.086	0.175 - 0.272 0.112 - 0.160	0.044 - 0.058 0.039 - 0.058	74 - 78 30 - 47 u	<i>Mugil Weigenus</i>	Bay of Bengal
<i>S. goudoni</i> Lumideu, 1963	0.341-0.512 0.165-0.307	0.055-0.087 0.060-0.087	0.062 - 0.105 0.075 - 0.103	0.045 - 0.073 0.037 - 0.070	0.045 - 0.098 0.050 - 0.084	0.075 - 0.112	0.041 - 0.062	78 - 87 37 - 55 u	<i>Mollisus Latipinna</i>	Bay, Texas
<i>S. goudoni</i> Kahn & Faure, 1986	1.21 - 1.74 0.44 - 0.75	0.12 - 0.15 0.13 - 0.16	0.13 - 0.15 0.13 - 0.17	0.08 - 0.11 0.10 - 0.13	0.10 - 0.14	0.15 - 0.25 0.12 - 0.15	0.084 - 0.13 0.060 - 0.080	101 - 120 54 - 65 u	<i>Lepomis elongatus</i>	Brazil
<i>S. ejendy</i> Al-Basser, 1980	1.1 - 1.24 1.41 - 0.50	0.13 - 0.148 0.14 - 0.15	0.13 - 0.14 diameter	0.083 - 0.1 diameter	0.21 - 0.26 0.11 - 0.13	0.12 - 0.148 diameter	0.078 - 0.085 diameter	40 - 46 20 - 24 u	<i>Mugil Cephalus</i>	Lake Edku and Maryut, Al-Rasaw, Fish Farms
<i>S. Pearsoni</i> , Present work	1.42 - 1.48 0.51 - 0.53	0.11 - 0.13 0.12 - 0.14	0.11 - 0.14 0.13 - 0.15	0.07 - 0.072 0.065 - 0.089	0.17 - 0.20 0.13 - 0.16	0.22 - 0.25 0.15 - 0.17	0.11 - 0.13 0.078 - 0.080	48 - 56 36 - 38 u	<i>Liza ramade</i>	Mauritania, Libya



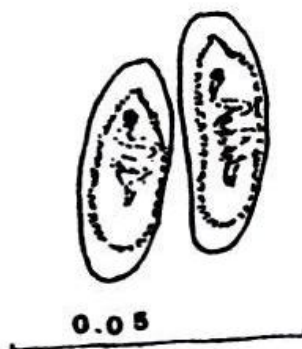
(Fig.1) A) *Haploporus lateralis* Looss, 1902, (ventral view)
 B) The cirrus pouch.
 C) The Eggs.



A

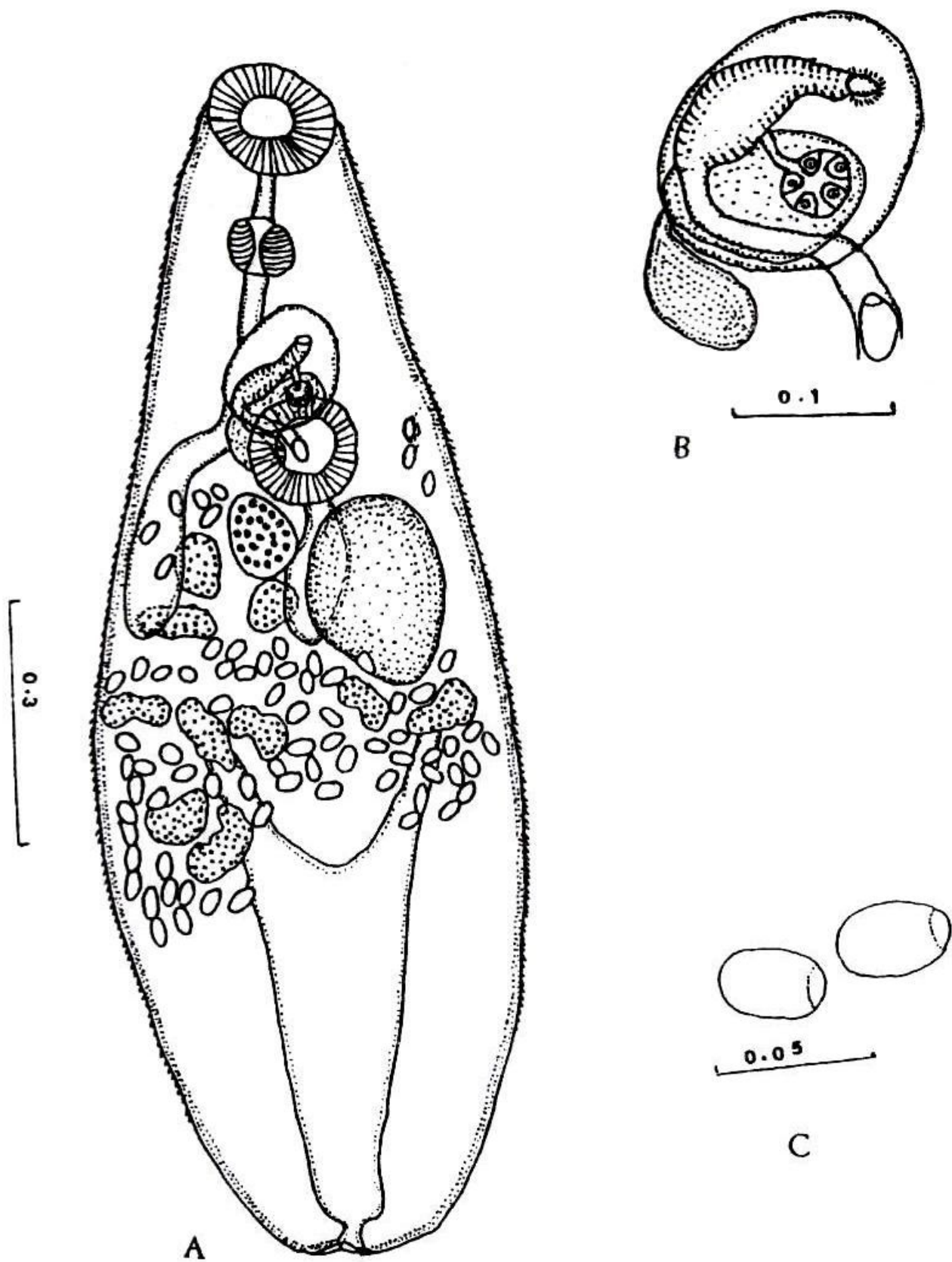


B



C

(Fig2) A) *Dicrogaster fastigatus* Thatcher and Sparks, 1958 (ventral view).
 B) The cirrus pouch.
 C) The Eggs.



(Fig.3) A) *Saccocoelioides pearsoni*, Martin, 1973 (ventral view).
 B) The cirrus pouch.
 C) The Eggs.

مراجعة لثلاثة أجناس من التريمتودا ثنائية العائل (هابلوبورس، ديكروجاستر، وساكوسولوينز) مع إعادة وصف ثلاثة أنواع معزولة من أسماك البورى فى ليبيا

ديهوم عبدالحميد منصور الباسل

قسم علم الحيوان بكلية العلوم بالفيوم - جامعة القاهرة

تمت مراجعة ثلاثة أجناس من التريمتودا ثنائية العائل وهى (هابلوبورس، ديكروجاستر، ساكوسولوينز) مع إعادة وصف ثلاثة أنواع منها هى هابلوبورس لاسيرالز وديكروجاستر فاستيجاتس وساكوسولوينز بيرسونى من أمعاء أسماك البورى فى ليبيا، وهذا يعتبر تسجيلًا جديدًا لتلك الديدان فى سمك البورى من نوع ليزا رامادا فى المياه الساحلية الليبية. وقد تم عمل مقارنة بين نتائج هذه الدراسة والدراسات السابقة، كما تم عمل مفتاح للتفرقة بين الأنواع المختلفة لهذه الأجناس.



المجلة المصرية للبيرولوجيا المائية والمصايد

