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ON THE SPECIES DESCRIBED BY SZIDAT IN 1954 IN THE GENUS *SACCOCOELIOIDES* (DIGENEA: HAPLOPORIDAE)

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New morphological data, original measurements and figures of syntypes of the species of Saccocoelioides *described by Szidat in 1954 are presented:* S. nanii, S. elongatus, S. magniovatus, S. magnus, S. quintus *(= S. sp. 5) and* S. szidati *(= S. sp. 6). Two specimens of* S. elongatus *are identified to* S. nanii, S. leporinodus *is considered a synonym of* S. saccodontis *and* S. quintus *is regarded as "species inquirenda".*

Key words: *Saccocoelioides* – Digenea – Haploporidae

The genus *Saccocoelioides* was erected by Szidat in 1954 for seven species from Argentina's rivers: *S. nanii,* type species from *Prochilodus lineatus, S. elongatus* from *Prochilodus platensis* (?), *S. magniovatus* from *Leporinus obtusidens, S. magnus* from *Curimata platana, S.* sp. 5, an immature form found in *Loricaria anus, S.* sp. 6 from *Schizodon fasciatus* and *S.* sp. 7 from *Pyrrhulina brevis.* All the species, except *S.* sp. 7, which was lost, were illustrated and described but only few measurements had been given.

Yamaguti (1958) considered *Saccocoelioides* as a subgenus of *Lecithobotrys* Looss, 1902. Latter, Lumsden (1963) described *Saccocoelioides sogandaresi* from *Mollienisia latipinna.* In 1969 Travassos, Freitas & Kohn denominated *Saccocoelioides szidati* to Szidat's "*S.* sp. 6", considered *Saccocoelioides* a valid genus and referred to the species described from Argentina's rivers, as probably occurring in Brazil. In the same year Cable & Isseroff described a larva from *Amnicola comalensis* as supposed to be from *S. sogandaresi.*

Szidat described two more new species: *S. octavus* from *Astyanax fasciatus* in 1970, whose cercaria was described by Graefe (1970) and *S. bacilliformis* from *Astyanax bipunctatus* in 1973.

In 1971 Yamaguti considered *Saccocoelioides* a valid genus and Overstreet transferred *Saccocoelium beauforti* Hunter & Thomas, 1961, to it.

Martin (1973) described the life history of the new species *S. pearsoni* from *Mugil cephalus* and *Trachystoma petardi,* transferred *S. magniovatus* to the genus *Lecithobotrys* and considered the position of *S. elongatus* and *S. magnus* as uncertain.

Lamothe-Argumedo in 1974 proposed *S. chauhani* from *Astyanax fasciatus aeneus;* Ostrowski de Nuñez (1975) described a cercaria from *Littoridina piscium* that probably belongs to the genus *Saccocoelioides* and Watson (1976) described a specimen in poor conditions as *Saccocoelioides* sp. from *Roeboides guatemalensis.*

Nasir & Gómez (1976) accepted Martin's proposition of *Lecithobotrys magniovatus* and considered *Saccocoelioides* a synonym of *Lecithobotrys,* transferring to this genus the species: *S. nanii, S. beauforti, S. pearsoni, S. elongatus, S. magnus, S. szidati* and *S. octavus.* He considered "*S.* sp. 5" and "*S.* sp. 7" "subjudice" and *S. bacilliformis* as an intraspecifically varied form of *S. elongatus.*

In 1978 Thatcher described three new species: *S. magnorchis* and *S. saccodontis* from *Saccodon caucae* and *S. leporinodus* from *Leporinodus vittatus* and named *S. quintus* to Szidat's "*S.* sp. 5". He included also in the genus *Saccocoelioides* the species *S. nanii, S. magniovatus, S. szidati, S. octavus, S. beauforti* and *S. pearsoni,* considered *S. elongatus* and *S. magnus* as "species inquirenda" and excluded *S. sogandaresi,* but didn't refer to which genus it must be transferred. Thatcher intended to make a revision of the genus but he didn't refer to the species *S. bacilliformis* and *S. chauhani* and to the papers of Cable & Isseroff (1969), Graefe (1970), Overstreet (1971), Szidat (1973), Lamothe-Argumedo (1974), Nasir & Gómez (1976) and Watson (1976).

In 1979 Madhavi described *S. martini* from *Mugil waigiensis.*

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We had the opportunity to examine some syntypes of the species of *Saccocoelioides* described by Szidat in 1954 and in order to contribute to the better knowledge of these species, original measurements and figures are presented.

MATERIALS AND METHODS

We examined the following material, preserved in balsam, from Prof. Szidat's Collection, deposited in the "Museo Argentino de Ciencias Naturales Bernardino Rivadavia": *S. nanii:* nº 27.791b (1 specimen) and 27.792b (2 specimens); *S. elongatus:* nº 27.792a (1 specimen) and 27.792b (1 specimen); *S. magniovatus:* nº 27.793a-c (7 specimens); *S. magnus:* nº 27.786a-c (4 specimens); *S. quintus* (= *S.* sp. 5): nº 27.798 (3 specimens) and *S. szidati* (= *S.* sp. 6): nº 27.797 (holotype).

The illustrations were made with the aid of a drawing tube; measurements are in mm.

RESULTS AND DISCUSSION

The measurements of the studied species are presented in Table I.

TABLE I

Species of *Saccocoelioides* described by Szidat 1954. Original measurements, in milimeters

Species	*S. nanii* Fig. 1	*S. nanii** Figs. 2-3	*S. elongatus* Figs. 4-5		*S. magniovatus* Figs. 6-8	*S. magnus* Figs. 9-12	*S. quintus* Fig. 14	*S. szidati* Fig. 13
Col. Szidat nº (Syntypes)	27.791b	27.792b	27.792a	27.792b	27.793a-c	27.786a-c	27.798	27.797
Measured specimens	1	2	1	1	7	4	3	1
Body sise	0.6 x 0.2	0.55–0.64 x 0.26–0.29	1.8 x 0.47	1.11 x 0.46	0.49–0.75 x 0.25–0.41	1.7–1.96 x 0.78–1.00	1.15–1.25 x 0.52–0.56	1.59 x 0.75
Oral sucker	0.09 x 0.08	0.10–0.11 x 0.10	0.16 x 0.18	0.15 x 0.18	0.10–0.12 x 0.11–0.13	0.21–0.27 x 0.18–0.29	0.08–0.12 x 0.10–0.12	0.165 x 0.15
Ventral sucker	0.10 x 0.10	0.12 x 0.09–0.11	0.17 x 0.19	0.19 x 0.20	0.10–0.12 x 0.12–0.14	0.21–0.30 x 0.27–0.30	0.13 x 0.13–0.14	0.165 x 0.165
Suckers width ratio	1:1.25	1:0.9–1.1	1: 1.1	1: 1.1	1: 1.07–1.09	1: 1.03–1.5	1:1.2–1.3	1: 1.1
Pharynx	0.04 x 0.06	0.05–0.07 x 0.06–0.07	0.10 x 0.13	0.14 x 0.12	0.084–0.096 x 0.078–0.10	0.11–0.15 x 0.11–0.17	0.04–0.06 x 0.06	0.12 x 0.13
Hermaphroditic sac	0.08 x 0.07	0.14–0.15 x 0.08–0.09	0.30 x 0.12	0.11 x 0.06	0.072–0.11 x 0.11–0.13	0.16–0.22 x 0.15–0.20	0.13–0.15 x 0.13–0.15	0.21 x 0.22
Testis	0.14 x 0.09	0.12 x 0.09	0.40 x 0.20	0.36 x 0.21	0.08–0.12 x 0.05–0.10	0.30–0.40 x 0.25–0.38	0.16–0.24 x 0.18–0.26	0.39 x 0.30
Ovary	0.06 x 0.04	0.04 x 0.06	0.14 x 0.10	0.06 x 0.06	0.06–0.08 x 0.06–0.07	0.11–0.15 x 0.10–0.16	0.06–0.08 x 0.06–0.08	0.10 x 0.08
Eggs	0.078–0.087 x 0.038–0.042	0.068–0.089 x 0.038–0.054	0.060–0.075 x 0.033–0.038	0.066–0.079 x 0.030–0.035	0.092–0.116 x 0.048–0.060	0.062–0.075 x 0.032–0.049	– x –	0.108–0.118 x 0.053–0.056
Site	intestine	intestine			intestine	intestine	intestine	intestine
Host	*Prochilodus lineatus*	*Prochilodus platensis* (?)			*Leporinus obtusidens*	*Curimata platana*	*Loricaria anus*	*Schizodon fasciatus*
Locality	"Rio Paraná" Rosario	"Rio de La Plata" Buenos Aires			"Rio Lujan" Buenos Aires	"Rio Paraná" Rosario	"Rio Paraná" Rosario	"Rio Paraná" Rosario

*Nec *S. elongatus* Szidat, 1954 in part.

When Szidat described *S. elongatus* he pointed out the similarity of the new species with *S. nanii.* We examined two slides with four specimens determined by Szidat as *S. elongatus:* one slide with one mature specimen (Table I and Fig. 4) and another with three specimens: one is a young specimen of *S. elongatus* (Table I and Fig. 5) and the other two do not belong to this species. They have same measurements and morphological characteristics described for *S. nanii:* body small, oval, tegument spinose (also observed in the ventral sucker), with very large eggs considering the size of the body (Table I and Figs. 2-3).

From the seven specimens of *S. magniovatus* examined, we measured all of them and figured three (Table I and Figs. 6-8). In most of them the gonads were obscured by the large eggs and only in one specimen with few eggs, we could identify the vitelline follicles reaching the posterior level of the testis (Fig. 8).

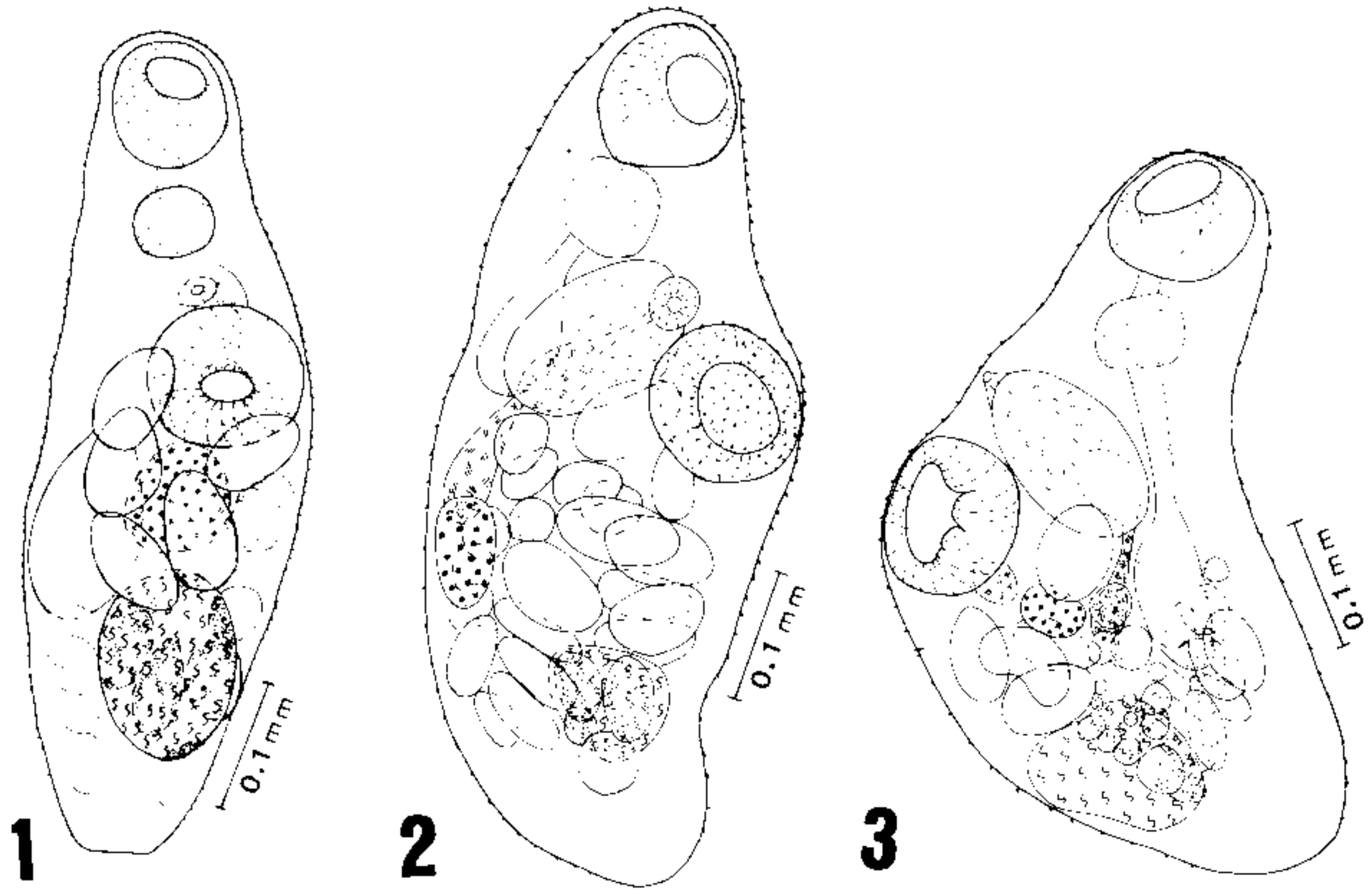
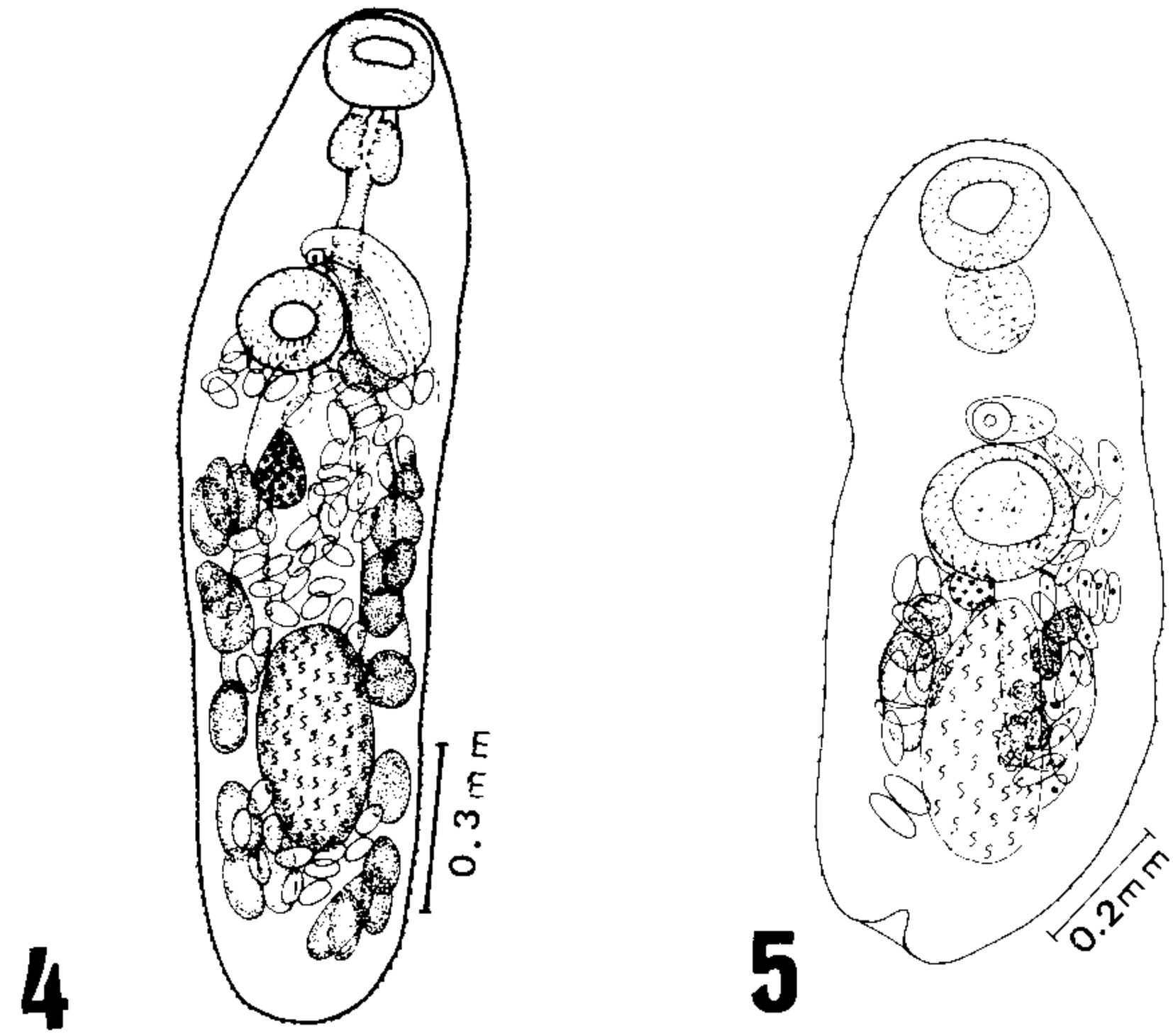
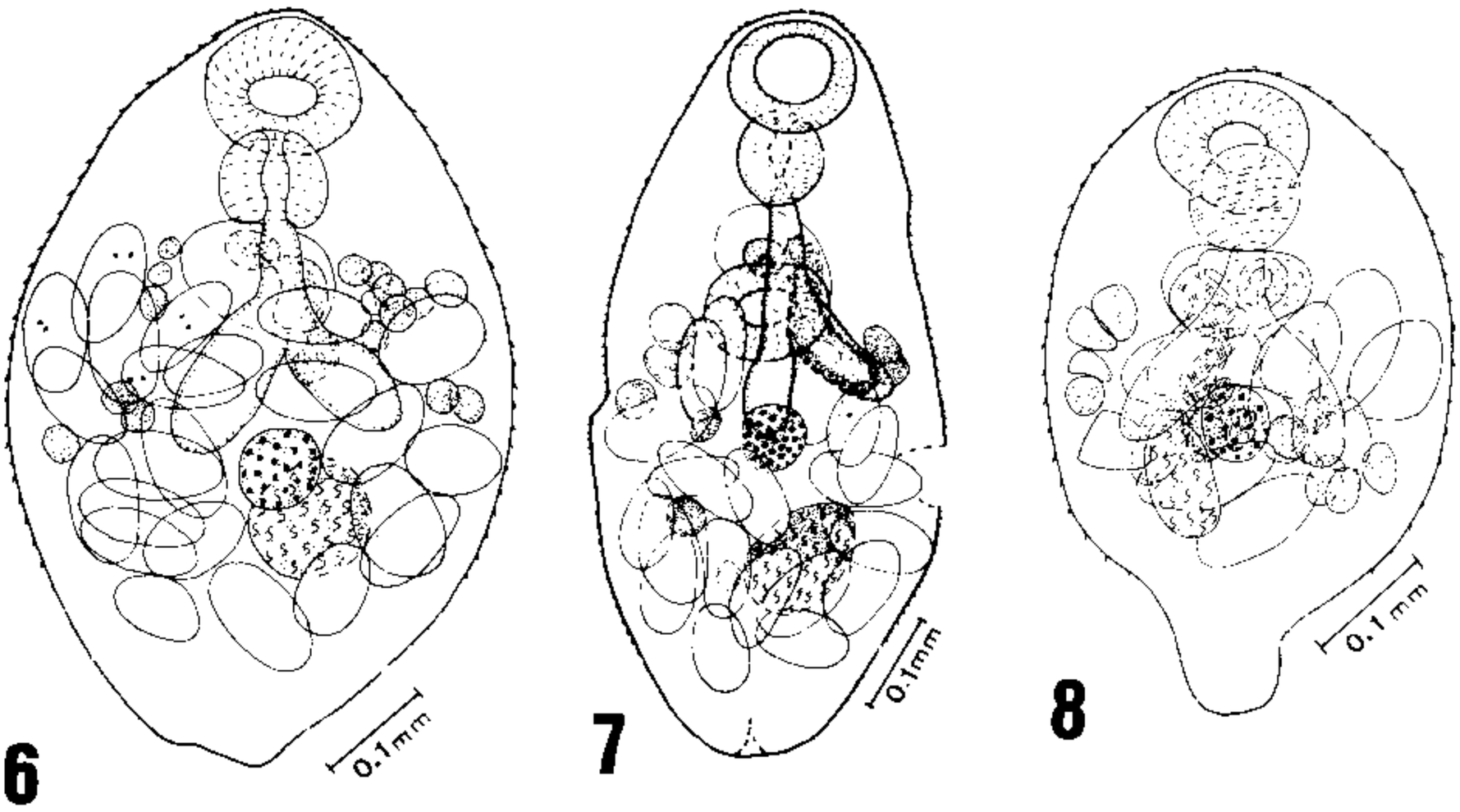


Fig. 1: ***Saccocoelioides nanii***, col. Szidat nº 27.791b. Figs. 2-3: *S. nanii* (= ***S. elongatus***), col. Szidat nº 27.792b. Original figures.

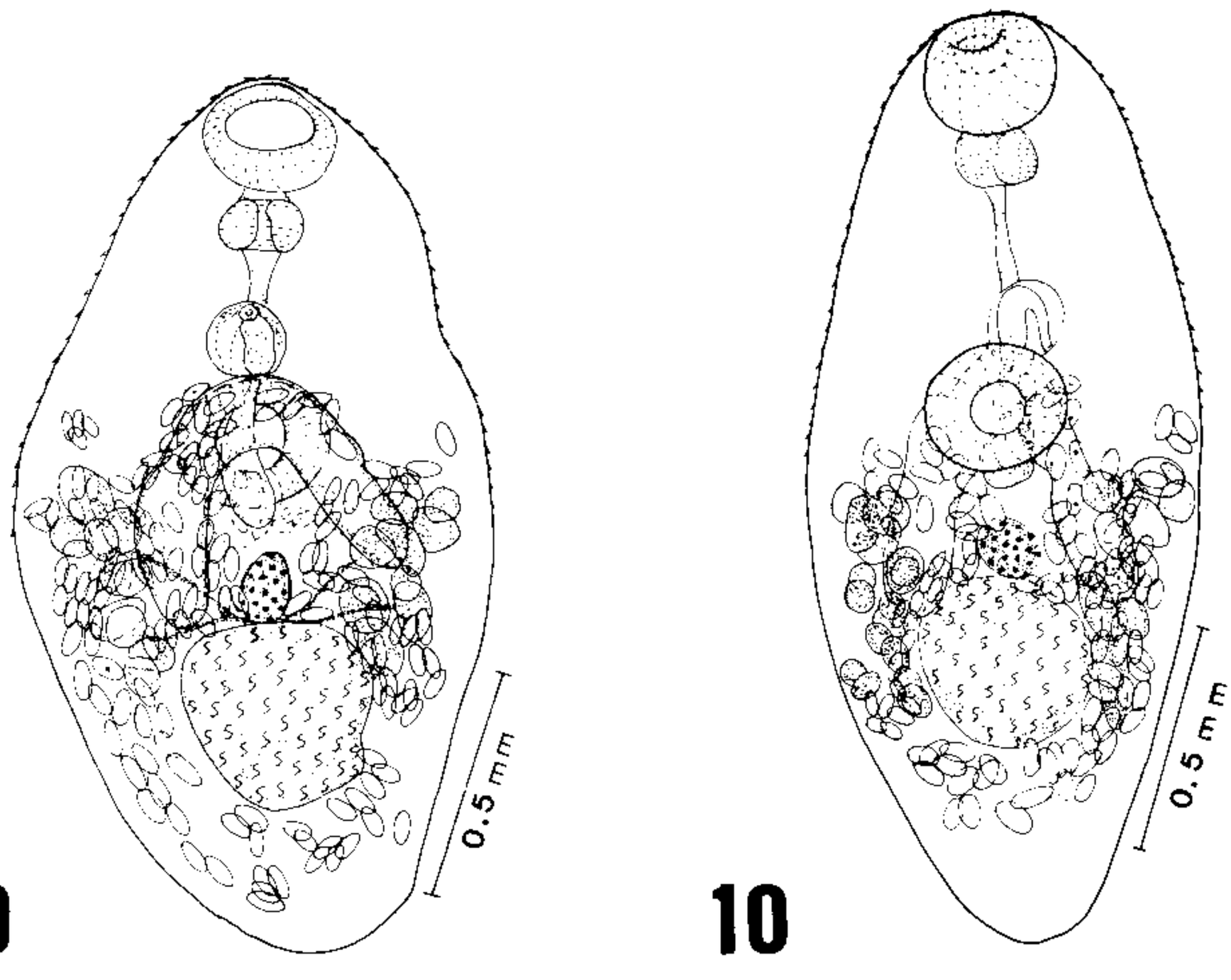


Figs. 4-5: *S. elongatus*, 4: mature specimen, col. Szidat nº 27.792a; 5: young specimen, col. Szidat nº 27.792b. Original figures.



6 7 8

Figs. 6-8: *S. magniovatus*, col. Szidat nº 27.793b-c. Original figures.



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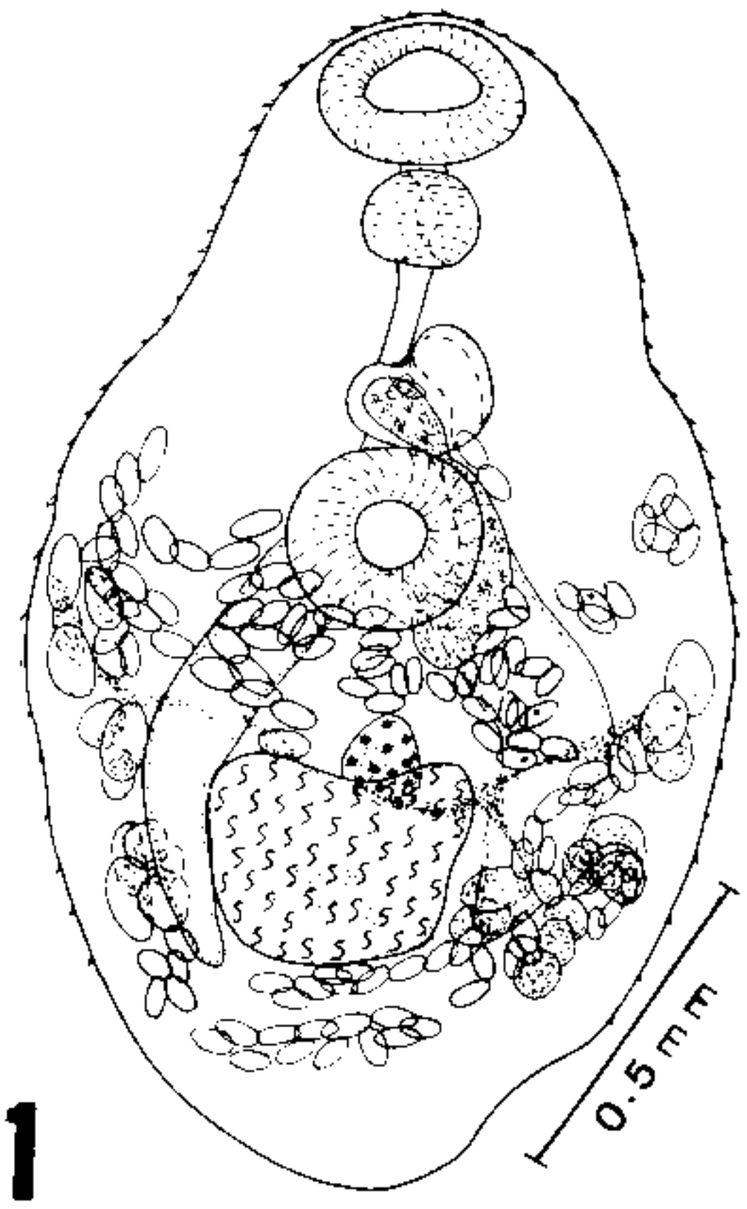
Figs. 9-10: *S. magnus*, col. Szidat nº 27.786 b. Original figures.

From *S. magnus* we examined four specimens; in two of them the caeca extends to the anterior border of the testis and in the other two the caeca overreach the testis; the vitellaria may extend from the ventral sucker level to the anterior or posterior level of the testis (Table I, Figs. 9-12).

In *S. szidati* (= *S.* sp. 6) we observed that the vitelline follicles extends from the hermaphroditic sac level to the posterior border of the testis, in a more extensive distribution than described originally (Table I and Fig. 13).



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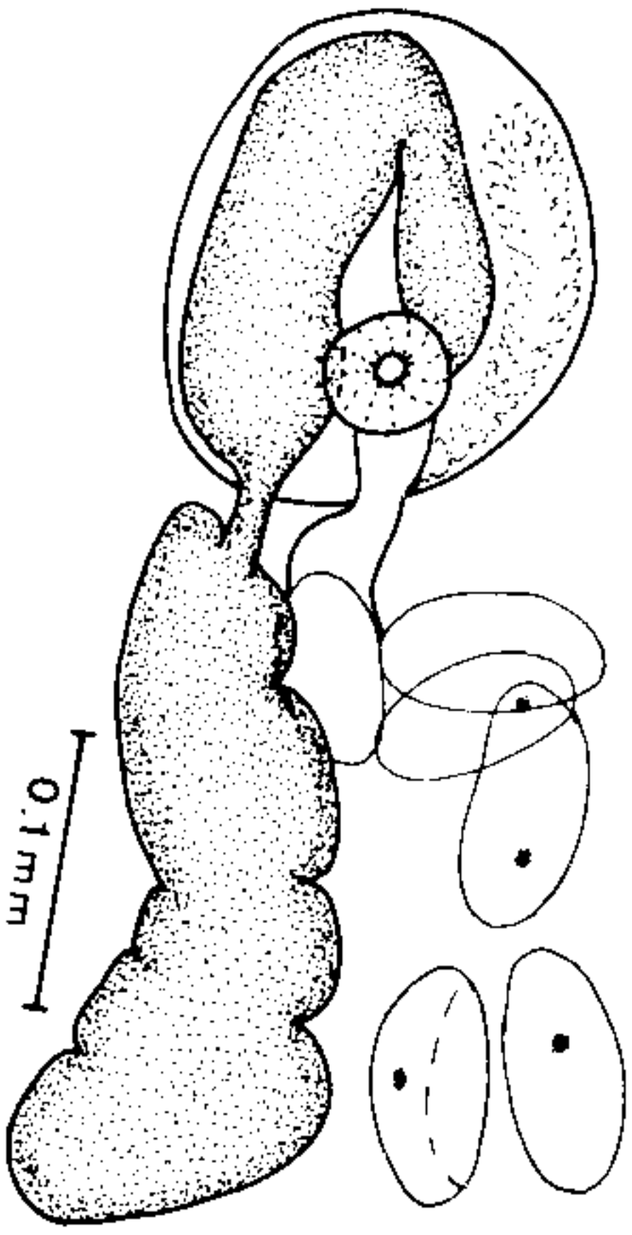

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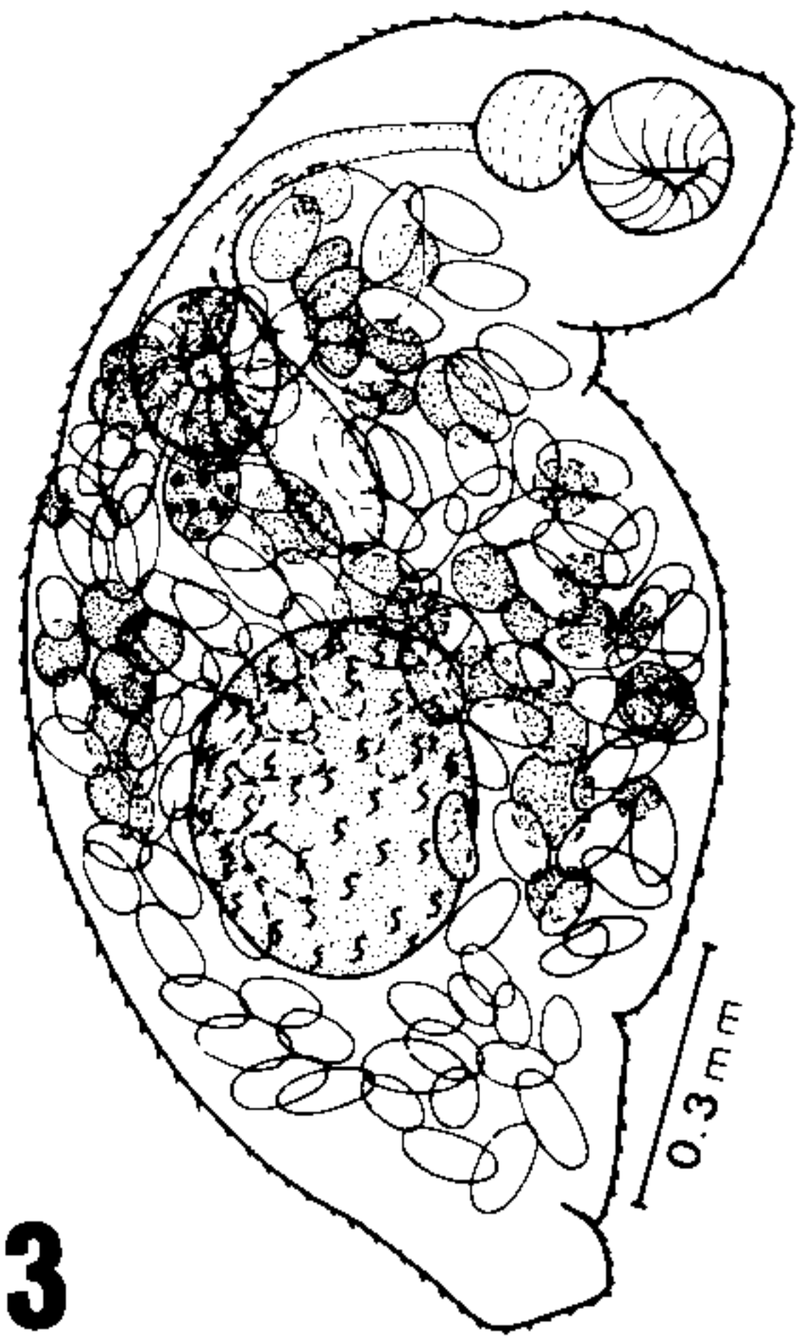
Fig. 11: *S. magnus*, col. Szidat nº 27.786a. Fig. 12: hermaphrodit sac and eggs of *S. magnus*, col. Szidat nº 27.786b. Original figures.



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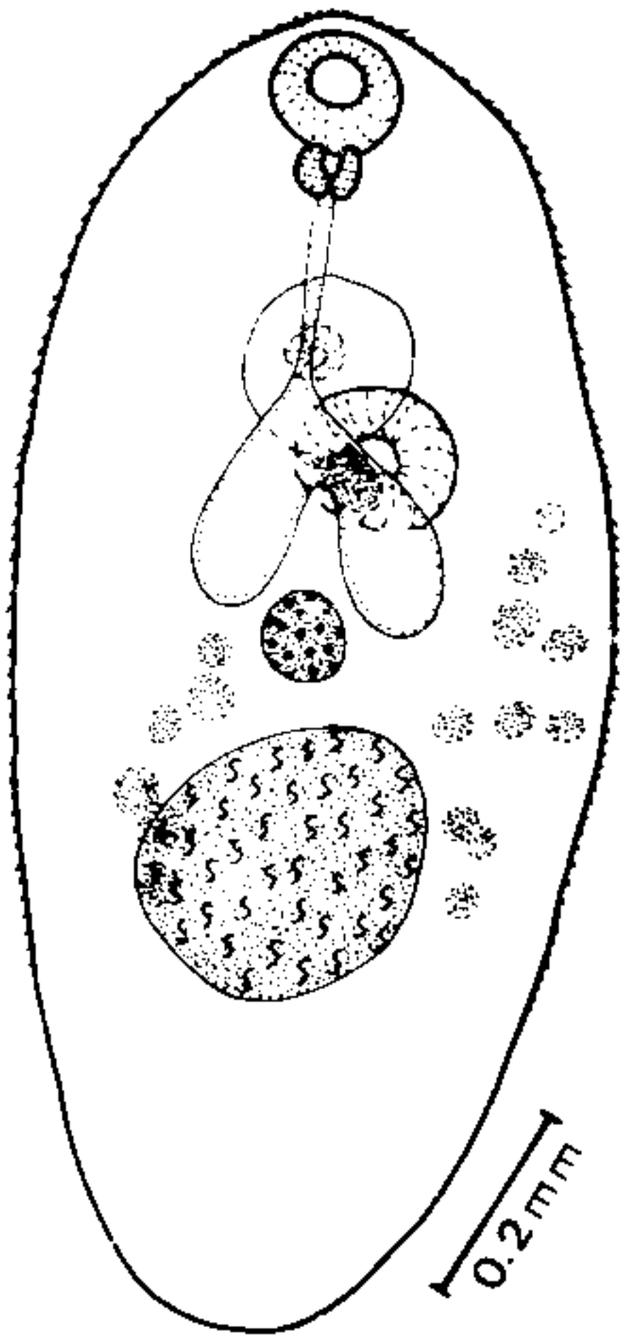

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Fig. 13: *S. szidati*, col. Szidat nº 27.797. Fig. 14: *S. quintus* col. Szidat nº 27.797. Original figures.

We studied the three immature specimens of *S. quintus* described by Szidat as *S.* sp. 5 from *Loricaria anus* and we consider it as "species inquirenda" because no comparison is possible with other species (Table I and Fig. 14).

We agree with Lumsden's opinion (1963): "*Saccocoelioides* is provisionally retained as a genus separated from *Lecithobotrys sensu stricto*, until life history studies indicate otherwise".

S. nanii, S. magniovatus, S. magnus, S. elongatus and *S. szidati* must remain in the genus *Saccocoelioides* mainly because of the more extensive vitellaria. We consider *S. leporinodus* a synonym of *S. saccodontis* because there are no significant differences in the size of the pharynx and suckers as proposed by Thatcher (1978), especially when it concerns the muscular organs such as sucker (*S. saccodontis*: oral sucker: 0.08-0.10 in diameter; pharynx: 0.08-011 in diameter; ventral sucker: 0.11-013 in diameter. *S. leporinodus*: oral sucker: 0.09-0.13 in diameter; pharynx: 0.09-0.13 mm in diameter; ventral sucker: 0.10-0.12 mm in diameter). The small difference in the vitellaria extension concerns only a few more follicles, which can vary from one specimen to another, and is not sufficient to create a new species.

RESUMO

São apresentadas medidas e figuras originais de sintipos das espécies do gênero *Saccocoelioides* descritas por Szidat em 1954: *S. nanii, S. elongatus, S. magniovatus, S. magnus, S. quintus* (= *S.* sp. 5) e *S. szidati* (= *S.* sp. 6). Dois espécimens de *S. elongatus* são identificados a *S. nanii*, *S. leporinodus* é considerada sinônima de *S. saccodontis* e *S. quintus*, "species inquirenda".

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