Lissorchis kritskyi sp. n. (Digenea: Lissorchiidae) from the River Carpsucker, Carpiodes carpio (Rafinesque)

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ABSTRACT: Lissorchis kritskyi sp. n. is described from the intestine of Carpiodes carpio in the Des Moines River, Iowa. The new species is most similar to L. simeri, but differs in having a short posttesticular body space and smaller eggs. It differs from L. fairporti, L. gullaris, L. polylobatum, L. crassicrurum, and L. heterorchis by its uniformly trilobed ovary; and from L. translucens, L. attenuatum, L. hypentelli, and L. garriki by presence of a bipartite seminal vesicle with the distal portion smaller than the proximal. Unlike L. mutabile it has a protrusible cirrus and has no vas deferens.

In the course of a survey of the helminth parasites of Iowa fishes (Barnhart et al., 1976) several specimens of river carpsucker from the Des Moines River were examined. Numerous specimens of a new species of the genus Lissorchis were recovered from the intestines, in infections ranging from three to 25 worms per fish. The trematodes were fixed with ethanol-formalin-acetic acid under slight cover glass pressure and stained with Semichon’s acetocarmine; some specimens were counterstained with fast green to accent surface features. Figures were drawn with the aid of a camera lucida and microprojector. All measurements are given in micrometers unless otherwise stated. Dimensions of organs are stated as length by width.

Lissorchis kritskyi sp. n.

TYPE HOST: Carpiodes carpio (Rafinesque).
TYPE LOCALITY: Des Moines River in Polk and Boone Counties, Iowa.
LOCATION IN HOST: Intestine.

DESCRIPTION: Measurements based on 25 mature specimens. Body elongate, tapering at both ends, 1.12 mm (0.68–1.58 mm) by 0.37 mm (0.24–0.50 mm), widest at level of acetabulum. Spines less than 7.2 present on ventral surface from acetabulum to posterior end, and around oral sucker; absent on margins, dorsally or between oral sucker and acetabulum ventrally. Oral sucker slightly subterminal, 192 (130–245) by 226 (170–300). Prepharynx short; pharynx muscular, 90 (62–125) by 82 (50–145). Esophagus 102 (48–190) long, ceca bifurcating anterior to acetabulum, extending posteriorly to posteriormost 10–15% of body. Acetabulum 294 (180–390) by 293 (180–385), in anterior ½ of body. Testes tandem, often irregular in outline, in posterior ½ of body; anterior testis 265 (150–415) by 187 (150–285); posterior testis larger and slightly overlapping anterior testis, 328 (205–450) by 171 (105–300). Cirrus sac oblique, 286 (175–485) by 95 (48–130), opening near left body margin at middle level of acetabulum. Cirrus bulbous, tapering distally when protruded; armed with very minute spines. Seminal vesicle bipartite with distal portion about ½ as large as proximal. Prostatic gland

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cells numerous in anterior $\frac{1}{2}$ of cirrus sac. Vasa efferentia discharge directly into seminal vesicle. Vasa deferens absent. Posttesticular body space slightly less than 10% of body length. Ovary 216 (160–295) by 205 (160–250), trilobate with lobes of equal size, lobes attached to a central portion which gives rise to an oviduct. Oviduct passes just anterior to ovary, where joined by seminal receptacle and Laurer’s canal, extending left, loops around the right vas efferens and returns right past seminal receptacle; at this point it is joined by the vitelline duct. Laurer’s canal prominent, extending left and opening dorsally above anterior
margin of ovary. Mehlis’ gland cells not numerous (in holotype apparent on only 1 side of oviduct). Uterus makes several loops before descending on right side to posterior end where it coils, usually with 1 loop ascending a short distance on left side, returning anteriorly on right and crosses left anterior to the ovary, then loops posteriorly on left before ending in a muscular metraterm posterosinistral to cirrus sac. Vitelline glands follicular, broadly interconnected, extending approximately from midlevel of acetabulum to midlevel of posterior testis. Lateral vitelline ducts join in vitelline reservoir which lies ventral to the ovary. Mature uterine eggs amber, 16.0 (14.4–18.0) by 9.1 (8.4–10.8). Excretory pore terminal on posterior end. Excretory bladder tubular, extending anteriorly to level of anterior testis.

Discussion

Haderlie (1950) reviewed the early literature concerning the genera *Lissorchis* Magath, 1917 and *Triganodistomum* Simer, 1929. Smith (1968) compared the two genera and concluded that they were synonymous. We follow this conclusion, as did Krygie r and Macy (1969) and consider *Triganodistomum* to be a synonym of *Lissorchis*.

Kritsky et al. (1972) reported *Lissorchis* sp. from river carpsucker taken in the Missouri River in North and South Dakota. They considered their specimens to represent at least two species, but found the material inadequate for descriptive purposes. Examination of these specimens showed that most of them can be assigned to *L. kritskyi*, which is named in recognition of Dr. Kritsky’s contributions to helminthology.

Some distinctive features of *L. kritskyi* appear to be the looping of the oviduct around the right vas efferens, the short distance between the posterior testis and the posterior end of the body, the cirrus shape, and the distribution of the tegumental spines. The looping of the oviduct around the right vas efferens was noted in all specimens in which the oviduct could be traced; it was not observed in type specimens of *L. simeri*, *L. fairporti*, *L. heterorchis*, *L. polylobatum*, or *L. attenuatum*. We could not trace the oviduct on specimens of other species. *Lissorchis kritskyi* can be distinguished from *L. fairporti* Magath, 1917, *L. gullaris* Self and Campbell, 1956, *L. polylobatum* (Haderlie, 1950), *L. crassicrurum* (Haderlie, 1953), and *L. heterorchis* Krygie r and Macy, 1969 by its uniformly trilobe d ovary, and from *L. translucens* (Simer, 1929), *L. attenuatum* (Van Cleave and Mueller, 1932), and *L. hypentelii* (Fisht hal, 1942) by the bipartite seminal vesicle with distal portion smaller than proximal. It differs from *L. mutabile* (Cort, 1918) in having a protrusible cirrus and lacking a vas deferens. It appears to be most similar morphologically to *L. simeri* (Mueller and Van Cleave, 1932). Both Mueller (1934) and Mueller and Van Cleave (1932) found *L. simeri* to have eggs about 24 × 12 μm whereas those of *L. kritskyi* are only 16 × 9.1 μm. The posttesticular body length for *L. simeri* is described by Mueller and Van Cleave (1932) as being “... roughly equivalent to the length of the three gonads taken together,” which is larger than the less than 10% of body length as found in *L. kritskyi*.

One other species of *Lissorchis* has been described from the genus *Carpiodes*: *L. garricki* (Simer, 1929) from *Carpiodes difformis* in the Tallahatchie River, Florida. Unfortunately, the description of *L. garricki* is superficial and based on only three specimens. However, *L. kritskyi* differs from *L. garricki* in size, being...
nearly twice as long, in the presence of a seminal receptacle, and in having three equal ovarian lobes. We were unable to obtain specimens of *L. garricki* for comparative purposes, but we believe the differences noted are significant.

Recently, Aliff (1973) in his Ph.D. dissertation noted an apparent new species of *Lissorchis* which he called *L. fischthali* from *Minytrema melanops*. In the subsequent publication of his dissertation material, Aliff (1977) did not describe the new species but referred to it as *Lissorchis* sp. Until more information is forthcoming, *L. fischthali* should be considered a *nomen nudum*.

Krygier and Macy (1969) considered the lobed testes a distinguishing character of *L. heterorchis*. In *L. kritskyi*, however, this is not a constant character; in some specimens the testis are quite smooth in outline while in others the degree of lobateness nearly equals that found in *L. heterorchis*. Several other authors (Simer, 1929; Mueller and Van Cleave, 1932; Haderlie, 1953) have stated that the testis were “irregular in outline” in describing members of this genus.

The genus *Lissorchis* is obviously controversial and there is need for further investigations including studies on life histories, host specificity, allometric growth, and host induced intraspecific variation. Based on the information now available, however, *L. kritskyi* appears to be a species new to science. We agree with Duncan (1972) about the difficulties in making valid comparisons of species of lissorchids based upon the available information, but until more critical investigations are made, we must rely on what is available.

**Acknowledgments**

We would like to thank Mr. Gregg Calderwood, Dr. Ross Bulkley, Mr. Tom Putnam, and the Iowa State Conservation Commission for help in collection of fishes; and Dr. Delane Kritsky for the loan of specimens. Some specimens used in this description were collected in the course of a project funded by the National Science Foundation Undergraduate Research Program (Grant GY-11135).

**Literature Cited**


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