A new species of *Kritskyia* (Dactylogyridae, Ancyrocephalinae), parasite of urinary bladder and ureters of *Leporinus lacustris* (Characiformes, Anostomidae) from Brazil

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ABSTRACT. This paper describes a new species of *Kritskyia*, *K. eirasi* n. sp., from the urinary bladder and ureters of *Leporinus lacustris*, "corró", an anostomid fish collected in the Upper Paraná River floodplain, Brazil. The new species was included in this genus because of the infection site, the absence of anchor, bar and 4A hooks and the sinistral vaginal aperture. It differs from the type species, *K. moraveci* and from the other known species of the genus, mainly by the shape of the copulatory complex. The accessory piece is distally complex, serving as a cirrus guide. The base of male copulatory organ, like in congeneric species, is adorned with a sclerotized fringe; however *K. eirasi* n. sp. presents an elongate projection of this fringe. It also differs from *K. boegeri* because of the lacking of sclerotized disk in vaginal aperture; and from *K. annakohnae* due to the absence of keel-like projection in the body's left margin.

Key words: Monogenea, Dactylogyridae, *Kritskyia eirasi* n. sp., *Leporinus lacustris,* Paraná River, Brazil.

RESUMO. Uma nova espécie de *Kritskyia* (Dactylogyridae, Ancyrocephalinae) parasita da bexiga urinária e ureteres de *Leporinus lacustris* (Characiformes, Anostomidae) do Brasil. Neste artigo é descrita uma nova espécie do gênero *Kritskyia, K. eirasi* n. sp., parasita da bexiga urinária e ureteres de *Leporinus lacustris*, "corró", um peixe anostomídeo coletado na planície de inundação do Alto rio Paraná, Brasil. A nova espécie foi incluída no gênero devido ao sítio de infecção, à ausência de âncoras, barras e ganchos 4A e por possuir abertura da vagina na margem esquerda do corpo. Difere da espécie tipo, *K. moraveci* e das demais espécies conhecidas do gênero, principalmente na forma do complexo copulador. A peça acessória é distalmente complexa e serve como guia para o cirro. A base do órgão copulador masculino, como nas espécies congenéricas, é guarnecida com bordas esclerotizadas, porém *K. eirasi* n. sp. possui uma projeção alongada dessa borda. Difere ainda de *K. boegeri* pela ausência de disco esclerotizado na abertura da vagina e de *K. annakohnae* devido à ausência de projeção em forma de quilha na margem esquerda do corpo.

Palavras-chave: Monogenea, Dactylogyridae, *Kritskyia eirasi* n. sp., *Leporinus lacustris,* Rio Paraná, Brasil.

Introduction

The majority of the monogenean species are parasites of gills, nasal fossae and skin of fishes. There are few records of them parasitizing urinary systems, being the known species pertaining to four genera (*Urogyrus* Bilong Bilong, Birgi and Euzet, 1994; *Philureter* Viozzi and Gutiérrez, 2001; *Acolpenteron* Fischthal and Allison, 1940 and *Kritskyia* Kohn, 1990).

Three species from the genus *Kritskyia* were described until now in fishes from Southern Brazil: *K. moraveci* Kohn, 1990, parasitizing *Rhamdia quelen* (Quoy and Gaimard, 1824); *K. annakohnae* Boeger, Tanaka and Pavanelli, 2001 in *Serrasalmus spilopleura* Kner, 1858 and *S. marginatus* Valenciennes, 1836; *K. boegeri* Takemoto, Lizama and Pavanelli, 2002 in *Prochilodus lineatus* (Valenciennes, 1836) (Kohn, 1990; Kritsky *et al.*, 1996; Boeger *et al.*, 2001 and Takemoto *et al.*, 2002).

The genus *Kritskyia* was proposed by Kohn (1990) to accommodate species lacking anchors, bars and 4A hooks, with accessory piece bipartite, male copulatory orga'n non-articulated with accessory

piece and tandem gonads. *Kritskyia moraveci*, type species of this genus, was redescribed by Kritsky *et al.* (1996), who considered the accessory piece unipartite and sheathlike and did not confirm the tandem disposition of the gonads. Boeger *et al.* (2001) related overlapping gonads in *K. annakhonae* and suggested that this may occur also in type species. Consequently, it may occur in other species of the genus. Bipartite accessory piece was also observed in *K. boegeri* by Takemoto *et al.* (2002).

Two species (*K. annakohnae* and *K. boegeri*) have been recorded in the Upper Paraná River floodplain at the moment. During a survey of the parasite fauna of *Leporinus lacustris* Campos, 1945, from this locality, a new species of *Kritskyia* was collected parasitizing the urinary bladder and ureters. *Kritskyia eirasi* n. sp. is described in this paper.

Material and methods

Eighty-four specimens of *Leporinus lacustris* were caught with aid of gill nets in lagoons, rivers, channel and glade from Upper Paraná River floodplain (22º50' – 22º70'S and 53º15' – 53º40'W), Southern Brazil. The fishes were examined from May/2001 to September/2003. The monogenean specimens were removed with the aid of a stereoscopic microscope, killed in 1: 4000 formalin, and fixed and preserved in 5% formalin. Some specimens were mounted in Hoyer and Grey & Weiss mediums for study of sclerotized structures. Other specimens were stained with Gomori's trichrome and mounted in Canada balsam to observe internal organs (as described in Eiras *et al.*, 2000). Measurements are expressed in micrometers, and given as the mean followed by the range and number of specimens measured in parentheses. Illustrations were made with the aid of a drawing tube and a Nikon YS 2 microscope. The holotype and paratypes were deposited in the Helminthological Collection of Instituto Oswaldo Cruz (CHIOC), Rio de Janeiro, Brazil. Terminology related to parasite ecology is based on Bush *et al.* (1997).

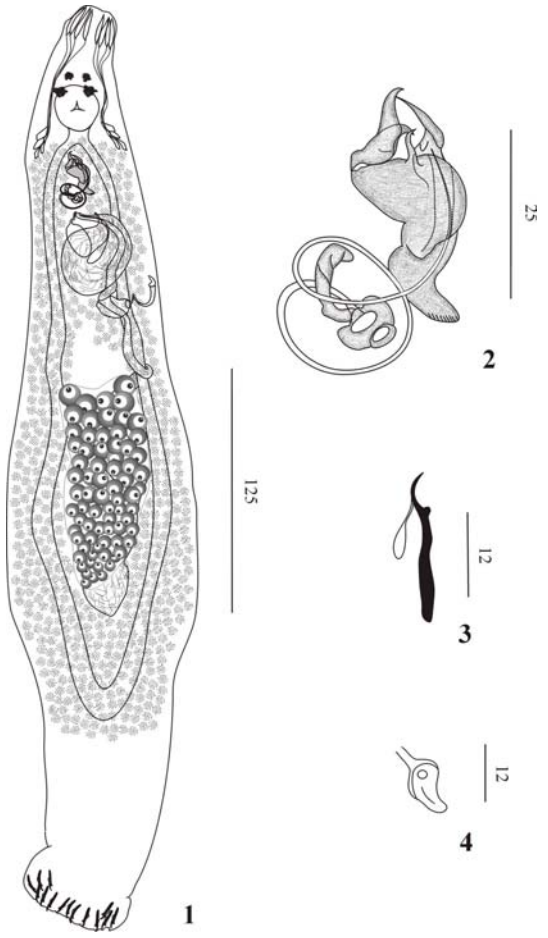
Results

Dactylogyridae Bychowsky, 1933

Ancyrocephalinae Bychowsky, 1937

Kritskyia Kohn, 1990

Kritskyia eirasi n. sp. (Figures 1-4).



Kritskyia eirasi n. sp. – **Fig. 1.** Whole mount (composite, ventral view). **Fig. 2.** copulatory complex. **Fig. 3.** Hook. **Fig. 4.** vaginal aperture.

Description: Body elongate, narrow, 579 (489-705; n=11) long; maximum width 118 (91-149; n=11). Cephalic lobes poorly developed; head organs conspicuous, cephalic glands posterolateral to pharynx. Eyes subequal, compact, composed by pigment granules of variable size; members of posterior pair larger than anterior pair. Pharynx spherical, 28 (20-37; n=12) in diameter. Esophagus short. Haptor semicircular, 49 (39-59; n=2) long, 38 (38-39; n=2) wide. Fourteen similar hooks, each 21 (18-25; n=10) long, with short broad thumb, delicate point, expanded shank; FH loop ½ shank length. Male copulatory organ a counterclockwise coil of about 1.5 rings; base of male copulatory organ adorned with a sclerotized fringe that present an elongate projection. Accessory piece distally complex, serving as cirrus guide, 37 (29-41; n=10) long. Testis single, post-germarium, partially overlapping to germarium, difficult to observe

because of dense vitellarium, only measured in 1 specimen, 45 long; vas deferens loops left gut; large seminal vesicle; one prostatic reservoir. Germarium 102 (85-119; n=2) long; rounded seminal receptacle; ootype, oviduct, uterus, egg not observed. Vagina a sclerotized tube; aperture spoon-like, sinistral, preequatorial.

Taxonomic summary:
Type host: *Leporinus lacustris* Campos, 1945, Anostomidae
Common name: "corró", "piava-de-lagoa"
Site of infection: urinary bladder and ureters
Type locality: Upper Paraná river floodplain (22º50' – 22º70'S and 53º15' – 53º40'W) (Sampling sites in the floodplain: Lagoons: Patos, Cervo, Peroba, Ventura, Onça, Pousada das Garças, Traíra, Finado Raimundo, Sumida, Zé do Paco, Gavião and Fechada; Rivers: Ivinheima and Baía; Channel: Cortado; Glade: Pau Véio)
Sampling period: May 2001 to September 2003
Number of examined fishes: 84
Prevalence: 45.2%
Mean intensity: 2.1
Amplitude of intensities: 1-18
Specimens deposited: Holotype: CHIOC under number 36401; Paratypes: CHIOC under numbers 36396, 36397, 36398a-b, 36399 and 36400.
Etymology: The species is named after Dr. Jorge da Costa Eiras, Universidade do Porto, Portugal, in honor of his contributions to the study of fish parasites.

Discussion

Such as the congeneric species, *Kritskyia eirasi* n. sp. was recorded parasitizing the urinary bladder and ureters of fishes. Other genera of monogenean that present specimens parasitizing urinary systems of fishes are *Urogyrus*, *Philureter* and *Acolpenteron* (Bilong Bilong *et al.*, 1994; Viozzi and Gutiérrez, 2001; Fischthal and Allison, 1940). The *Urogyrus* (Urogyridae) and *Philureter* (Dactylogyridae) species are characterized by the presence of anchor and bars. In *Acolpenteron* and in *Kritskyia*, the species do not have anchors and bars and present 14 ventral marginal hooks. However, the first one have two pre-postpharingeal groups of cephalic glands, and the vaginal aperture is located in the right margin of the body. Thus, the new species can be considered pertaining to *Kritskyia* in virtue of the sinistral vaginal aperture, the absence of two groups of cephalic glands, the haptor shape, armed with 14 marginal hooks, the lack of anchor, bars and 4A hooks, the base of male copulatory organ non-articulated to the accessory piece and the site of infestation.

The new species differs from the known congeneric species by conspicuousness of the head organs and cephalic glands and mainly by the shape of the copulatory complex. The accessory piece of *K. eirasi* n. sp. is more similar in shape to *K. boegeri*. In our specimens, however, the piece is smaller and distally more complex. Moreover, the new species lack sclerotized disk in vaginal aperture, present in *K. boegeri*. In *K. annakohnae*, the accessory piece is ribbon–like and in *K. moraveci*, they comprise variable grooved sheath. The male copulatory organ is a coiled tube with counterclockwise rings and the organ's base, like in congeneric species, is adorned with a sclerotized fringe. However *K. eirasi* n. sp. presents an elongate projection of this fringe.

The new species also differs from *K. annakohnae* by the absence of kell-like projection in the body's left margin.

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