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***Anserobilharzia* gen. n. (Digenea, Schistosomatidae) and redescription of *A. brantae* (Farr & Blankemeyer, 1956) comb. n. (syn. *Trichobilharzia brantae*), a parasite of geese (Anseriformes)**

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Abstract

A new genus, *Anserobilharzia*, is proposed to accommodate *Anserobilharzia brantae* n. comb. (syn. *Trichobilharzia brantae* Farr & Blankemeyer, 1956), a species of avian schistosome thus far found exclusively in anserini geese (*Anser*, *Branta*, *Chen*) from Europe and North America, and *Gyraulus* snails. Recent collections and subsequent molecular analyses showed that *A. brantae* was distinct from *Allobilharzia* and *Trichobilharzia* and grouped basal to *Trichobilharzia*. Using nuclear 28S, ITS and mitochondrial *cox1* as genetic yardsticks, samples of *A. brantae* from North America and Europe were each other's closest relative and distinct from *Allobilharzia* and *Trichobilharzia*. *Anserobilharzia brantae* was also distinct when compared morphologically with other species of closely related avian schistosomes. The following description is based on males, females, eggs, and cercariae. The new genus is characterized by a) ovoid egg (72–145µm x 44–89µm) with spine, b) male with >500 testes and caecal reunion anterior to seminal vesicle, c) cercariae with 5+1 flame cells, and d) intermediate hosts are planorbid snails. The only confirmed species of snail host is *Gyraulus parvus* in North America. Based on presented data, we propose a new genus and new combination for *A. brantae* justified by morphological, host use, and molecular characteristics.

Key words: Schistosome, trematode, phylogeny, Anseriformes

Introduction

Avian schistosomes within the Schistosomatidae (Stiles & Hassall, 1898) comprise a diverse and widespread group of dioecious, blood-inhabiting trematodes whose larvae are implicated in outbreaks of cercarial dermatitis, or 'swimmer's itch'. The majority of freshwater avian schistosomes belong to a well-supported clade based on DNA sequence data that includes five recognized genera: *Bilharziella* (Looss, 1899); *Gigantobilharzia* (Odhner, 1910); *Dendritobilharzia* (Skrjabin and Zakharov, 1920); *Allobilharzia* Kolářová, Rudolfová, Hampl, & Skírnisson, 2006; and *Trichobilharzia* (Skrjabin and Zakharov, 1920). This comprises the BTGD clade *sensu* Brant *et al.* (2006). These mostly long and slender avian schistosomes are morphologically difficult to distinguish, particularly within the genus *Trichobilharzia*. Recent surveys of waterfowl and snails for avian schistosome continue to reveal new diversity (Brant *et al.* 2006, 2010; Brant & Loker 2009a,b; Kolářová *et al.* 2006; Rudolfová *et al.* 2007; Jouet *et al.* 2008, 2009, 2010a,b; Skírnisson & Kolářová 2008; Skírnisson *et al.* 2012; Aldhoun *et al.* 2009a,b, 2012; Karamian *et al.* 2011) and in some cases new associations have been made between adults and cercariae (e.g. Brant & Loker 2009b; Jouet *et al.* 2008, 2009, 2010b; Kolářová *et al.* 2013).

In a study of *Trichobilharzia* in North America, which included a much broader representation of samples than previously considered, Brant and Loker (2009b) found based on sequence data, morphology and snail host use that *Trichobilharzia brantae* Farr and Blankemeyer, 1956, did not nest within the clade containing 9 other available species of *Trichobilharzia*. Moreover, a comparison of material collected for the studies of Brant and Loker (2009b) and Jouet *et al.* (2009, see their sample referred to as "haplotype *A. anser* Aa1"), suggested that the same