

The invader as an ally in the fight against “swimmers’ itch”

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Alien species of animals and plants are considered a threat to native species. This phenomenon is due to the fact that introduced species are often resistant to natural enemies of their native competitor. Nevertheless, the invaders can be helpful if they interfere with the native parasite-host interaction. We tested this hypothesis for miracidia of bird schistosome.

Bird schistosomiasis represents a perfect research model for a study on interactions between schistosomes and their snail hosts as well as a serious medical problem associated with water recreation. The symptom of this invasion is skin lesion known as dermatitis or “swimmers’ itch” (Fig. 1). The area with the rash is swollen, warm and painful to touch. This parasitic disease may be accompanied by additional symptoms such as anaphylactic shock and disorders of the respiratory system. Although a case of the development of the parasites in the human body has not been reported so far, in experimental conditions, they overcome the barrier of the skin of a mammal and reach the internal organs.

The main objective of the planned research is to check whether the presence of *Potamopyrgus antipodarum* (Gray, 1843) in recreational water bodies can be a natural protection against swimmers’ itch. Our preliminary research consisted of experimental infection of Lymnaeidae with miracidia of bird schistosome in the presence of increasing density of *P. antipodarum* (Fig. 2).

The obtained results show that *P. antipodarum* constitutes natural protection against swimmers’ itch, because the sympatric presence of non-host snail populations (*P. antipodarum*) with host snail populations (Lymnaeidae) demonstrates the capacity of incompatible snail species to interfere with the transmission of bird schistosome miracidia (Fig. 2). Additionally, *P. antipodarum* is not the source of cercariae of bird schistosomes for vertebrate host.

The next stages of our work will be: (i) gaining knowledge about the prevalence of bird schistosome from Lymnaeidae in tanks inhabited and uninhabited by *P. antipodarum*; (ii) gaining knowledge about the diversity of Digenea species in *P. antipodarum* in Polish lakes; (iii) getting to know the bird schistosome miracidial chemotactic swimming behaviour in water conditioned with *P. antipodarum*.

The common occurrence of snails emitting *Trichobilharzia* spp. cercariae, and the presence of numerous water birds, as well as frequent cases of swimmers’ itch (most frequently in children) is a sufficiently strong argument for research on biological possibilities of disturbing the life cycle of bird schistosomes.



Fig. 1 “Swimmers’ itch” on the hand of a three-year-old girl after wading in Water Valley in Koszalin (Poland)

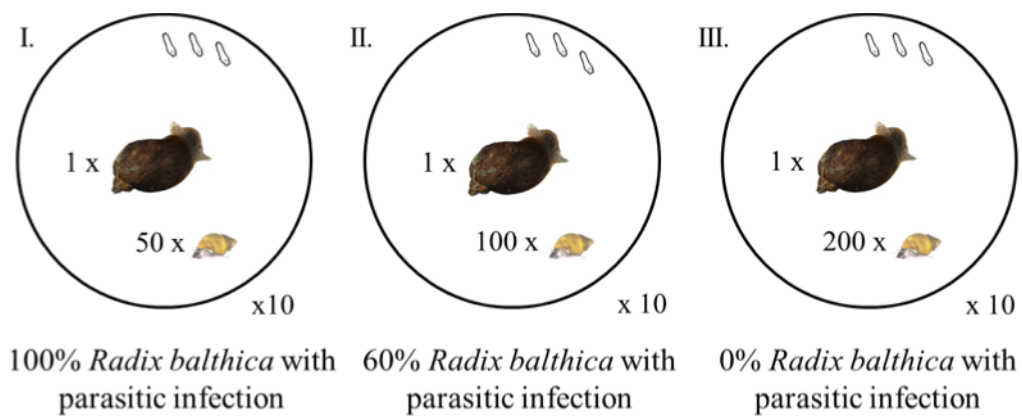


Fig. 2 Experimental infection variants of *Radix balthica* with bird schistosomes miracidia in the presence of increasing *Potamopyrgus antipodarum* density

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