Parvatrema affinis (Jameson et Nicoll, 1913) James, 1964 in the Baltic clam Macoma balthica (Mollusca: Bivalvia) in the Gulf of Gdańsk

Leszek Rolbiecki¹, Gerard Kanarek¹ and Magdalena Stachnik²

¹University of Gdańsk, Department of Invertebrate Zoology, Al. Marsz. Piłsudskiego 46, 81-378 Gdynia, Poland; E-mail: lrolbiecki@sat.ocean.univ.gda.pl,
²University of Gdańsk, Laboratory of Estuarine Ecology, Institute of Oceanography, Al. Marsz. Piłsudskiego 46, 81-378 Gdynia, Poland

Corresponding author: Leszek Rolbiecki, University of Gdańsk, Department of Invertebrate Zoology, Al. Marsz. Piłsudskiego 46, 81-378 Gdynia, Poland; E-mail: lrolbiecki@sat.ocean.univ.gda.pl

ABSTRACT. Background. Macoma balthica is the major zoobenthic species in the Gulf of Gdańsk. Material. Two (4.2%) of the 48 M. balthica specimens collected in 2002 from the depth of 40 m were found to harbour metacercariae-containing sporocysts of Parvatrema affinis (Jameson et Nicoll, 1913) James, 1964. Results. The paper reports morphoanatomical dimensions of 30 sporocysts and metacercariae. Due to the common occurrence of the intermediate (Macoma balthica) and definitive (anseriform and charadriiform birds) hosts of P. affinis in the Gulf of Gdańsk, the trematodes are regarded as a constant component of the local biocoenose.

Key words: Baltic clam, Gulf of Gdańsk, Macoma balthica, Parvatrema affinis.
cercariae develop into the metacercariae inside the sporocyst, without leaving the intermediate host [6,7]. It is worth adding that a reduction of the cycle (skipping the stage of free-living cercariae), i.e., the simultaneous occurrence of sporocysts, cercariae, and metacercariae in an intermediate host boosts the parasite’s reproductive success. In addition, maturation of the metacercariae in the bivalves results in a faster maturation in the definitive hosts (birds): according to Zelikman [6], the parasites are mature as soon as in 48 hours.

The geographic range of *P. affinis* covers the Palaearctic [4]. In Poland, the adult trematodes had earlier been reported from the common Eider (*Somateria mollissima*), velvet scoter (*Melanitta fusca*) and common scoter (*Melanitta nigra*) near Górkì Wschodnie and Hel [8] as well as from the long-tailed duck (*Clangula hyemalis*) in the Gulf of Gdańsk [9]. In addition Wenne and Klusek [10] reported finding the metacercariae in 1.4–3.7% of the Baltic clams from the Gulf of Gdańsk they examined. Furthermore, Markowski [11] found flukes in a Baltic clam (0.7%) which he described as belonging to a new species *Metacercaria morula*. However, as Zelikman [6] later pointed out Markowski’s *M. morula* belonged to a known species *Gymnophallus affinis*, which was subsequently transferred by James [12] to the genus of *Parvatrema*. Flukes found by other authors [1, 13] also had features that correspond with those of *M. morula*. While recently found metacercariae are also similar in their structure to *M. morula*, questions are raised by the fact that the reproductive opening in *M. morula* metacercariae is oval, while in recent specimens it is crescent-shaped, which fits Zelikman’s [6] description. Moreover, according to Markowski [11] the sporocysts (cysts) were unattached, whereas in the present specimens they are found to be fixed to the internal organs of the molluscs. Other authors do not specify the way that *P. affinis* sporocysts attach themselves to their host, but only their location, which suggests that they were in fact attached. For comparison, in the Wadden Sea in Denmark, the *M. balthica* infection prevalence was 4.3% [14] and 4.4–44% [15], 7.5% in the North Sea [13], and 0.2% [16] and 20–100% [17] off the Finnish coasts in the Baltic, higher prevalences being usually observed in larger clams.

It is worth adding that *P. affinis* affect the Baltic clam’s behaviour. The infected bivalves do not burrow as deep as do healthy specimens. They frequently crawl upon the sediment surface and migrate, leaving visible crawling trails [14,15,18], thereby becoming visible to predators, including birds, the definitive hosts of the parasite.

Despite the low degree of infection in the bivalves, *P. affinis* should be considered a constant
component of the Gulf of Gdańsk biocoenose because both the intermediate hosts — *M. balthica* (more than 94% of the zoobenthos biomass at depths larger than 20 m in the Gulf of Gdańsk; [19]) and the definitive hosts — the Charadriiformes and Anseriformes [20] are common in the area.

References


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