Communications

The first record of parasites in *Gammarus tigrinus* Sexton, 1939 – a recent newcomer to the Gulf of Gdańsk*

OCEANOLOGIA, 47 (2), 2005.
pp. 283–287.

KEYWORDS
Southern Baltic
Non-native species
Gammarus tigrinus,
Parasitism
Maritrema subdolum

Leszek Rolbiecki[1]
Monika Normant[2]

[1] Department of Invertebrate Zoology,
University of Gdańsk,
al. Marszałka Piłsudskiego 46, PL–81–378 Gdynia, Poland;
e-mail: rolbieck@sat.ocean.univ.gda.pl

[2] Department of Experimental Ecology of Marine Organisms,
Institute of Oceanography,
University of Gdańsk,
al. Marszałka Piłsudskiego 46, PL–81–378 Gdynia, Poland

Received 13 May 2005, revised 2 June 2005, accepted 6 June 2005.

Abstract

The present paper reports for the first time on the occurrence of the parasite *Maritrema subdolum* in the amphipod *Gammarus tigrinus*, a non-native species in the Gulf of Gdańsk.

* The project has been carried out within the framework of the MarBEF Network of Excellence 'Marine Biodiversity and Ecosystem Functioning' which is funded in the (European) Community's Sixth Framework Programme (contract No GOCE-CT-2003 -505446). This paper is contribution number MPS-05009 of MarBEF.

During the last 20–30 years many new species of flora and fauna have appeared in the Baltic Sea (Leppäkoski & Olenin 2000). With its low biodiversity, this relatively young sea still offers habitats to alien species (Leppäkoski et al. 2002). The amphipod *Gammarus tigrinus* Sexton 1939, originally from the Atlantic coast of North America, is one of the latest newcomers to the Gulf of Gdańsk in the southern Baltic (Szaniawska et al. 2003). Although this species arrived in this region only recently, it has become a very numerous component of the phytal (algae of the genera *Enteromorpha*, *Cladophora* and *Pilayella*) in coastal waters. In order to start a new local population, all newcomers to environments differing from their native ones have to adapt to both biotic and abiotic factors (Krebs 1997). Parasites are regarded as a biotic factor that can significantly affect the behaviour, physiology, and, in consequence, the abundance of the host organism (Wilmer et al. 2000).

Metacercariae of *Maritrema subdolum* Jägerskiöld, 1909 were noted during morphometric studies of *G. tigrinus* collected in October 2004 in the Gulf of Gdańsk (Poland). A total of eleven encysted trematodes were noted in the trunk body cavity and the carapace of one crustacean. The cysts were double-layered, oval, and measured 229–280 × 183–301 μm. The metacercariae (Fig. 1) measured 397–408 μm in length and 181–201 μm in width. The dimensions of the oral sucker were 39–58 × 37–61 μm, the pharynx – 29–33 × 21–25 μm, and the acetabulum – 43–64 × 44–66 μm. A prepharynx was present and measured 19–23 μm in length. The metacercariae had reproductive system primordia.

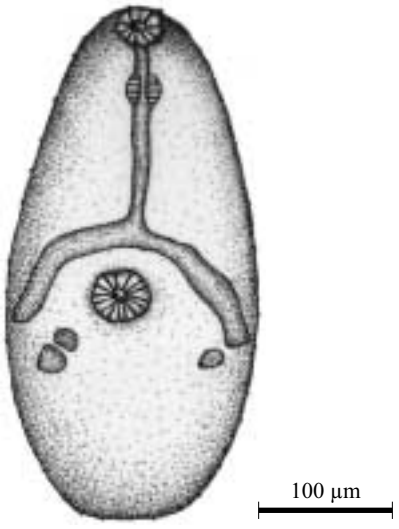

Fig. 1. General view of the metacercaria of *Maritrema subdolum*

Aquatic birds (primarily Charadriiformes) are the definitive hosts in the life cycle of *M. subdolum*; the first intermediate hosts are snails of the genera *Hydrobia* or *Paludestrina*, while the second intermediate hosts are crustaceans from the order Amphipoda (Yamaguti 1958, Reimer 1963, Dawes 1968, Sonin 1985). Adult specimens of this trematode have been noted in Poland in the Common Gull *Larus canus* from the Vistula Lagoon (Malczewski 1964) and in the Long-tailed Duck *Clangula hyemalis* from the Gulf of Gdańsk (Sulgostowska & Grytner-Zięcina 1974). Sulgostowska & Vojtková (1992) also confirmed the presence in the Gulf of Gdańsk of *M. subdolum* metacercariae, primarily in *Gammarus zaddachi*, but they did not report any other infected amphipod species. It should be borne in mind that, in addition to this species, other gammarids such as *Gammarus duebeni*, *G. inequicauda*, *G. locusta*, and *G. salinus* also occur in the Gulf of Gdańsk (Jęczmień & Szaniawska 2000). *M. subdolum* has already been reported in *G. tigrinus* from German waters in the western Baltic (Zander et al. 1994). Despite its relatively brief presence in the trophic structure of the Baltic, it is apparent that *G. tigrinus* can become infected with parasites typical of this basin. Simultaneously, as a potential food source for other hosts, *G. tigrinus* becomes an additional link in the parasitic cycle in this ecosystem. *M. subdolum* is a new parasite in the North American species *G. tigrinus*, and it can be expected to have a rather negative impact on this host, as there is often a lack of balance in host-parasite relationships that are recent on the evolutionary time scale. The literature indicates that *M. subdolum* is a parasite common only to European waters (Yamaguti 1958, Meißner & Bick 1997, Meißner 2001) and that infections of it can even lead to death among native amphipods (Lauckner 1986). However, describing the impact of *M. subdolum* on *G. tigrinus* will require detailed investigations.

The invasion or introduction of various animal species is accompanied by the problem of the simultaneous introduction of parasites (Leppäkoski 2002). The literature is rich in examples of invasive species that have been accompanied by 'additional' tenants such as parasites. In the new biotope these parasites often attack other hosts, leading to significant losses in the indigenous fauna, which can have an economic impact. Along with *G. tigrinus*, the parasite *Paratenuisentis ambiguus* has been introduced into Europe (Gollasch & Zander 1995). However, its highly specific host requirements have not allowed it to spread quickly through Europe (Taraschewski et al. 1987).

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