



First occurrence of *Melanoides tuberculata* (O. F. Müller, 1774) in an open environment in the Czech Republic

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The invasive species *Melanoides tuberculata* (O. F. Müller, 1774) is reported from the open environment from the Czech Republic for the first time. An abundant population was found in the artificially heated Skryjský potok, a stream which flows from the cooling reservoir below the Dukovany nuclear power plant. The species is unlikely to occur outside the heated water due to its affinity for warm water.

Key words: invasive species, non-indigenous species, Gastropoda, Prosobranchia, red-rimmed melania

Melanoides tuberculata is a freshwater prosobranch mollusc belonging to the family Thiariidae. Its native range likely spans from East Africa through Middle East to Southeastern Asia and Northern Australia where it inhabits various kinds of habitats such as rivers, streams, wetlands and ponds (FACON et al. 2003; VÖGLER et al. 2012). However, the species currently occurs in all pantropical regions in various kinds of water habitats (FACON & POINTIER 2022) and elsewhere in greenhouses and thermal and artificially heated waters (FACON & POINTIER 2022). Its high potential to invade new areas is caused by its ability to reproduce through parthenogenesis (JACOB 1958) and by its ability to inhabit various habitat types such as rivers, lakes, ponds, marshes, artificial habitats, and brackish waters (DE KOCK & WOLMARANS 2009). The main means of its spread seems to be the aquaculture trade (FACON & POINTIER 2022). The species represents a threat to native ecosystems by competition for trophic resources and by displacing native gastropods (GUIMARÃES et al. 2001; POINTIER & McCULLOUGH 1989; ROESSLER et al. 1977). Outside tropical areas, the species is known to occur in greenhouses (e. g. HORSÁK et al. 2004; ŠTEFFEK 2007; ČILIAK et al. 2016; BERAN 2022) and natural thermal waters or artificially heated waters (e. g. VARGA 1976; MÁJSKY 2000; LIPTÁK et al. 2018).

This invasive species was first found in the Czech Republic in 1970 in the greenhouse in Olomouc (MÁCHA 1971) and later reported by HORSÁK et al. (2004) from a greenhouse in Prague. Recently, BERAN (2022) reported the spe-

cies from zoological houses and greenhouses in zoological and botanical gardens in several Czech cities. Nevertheless, no reports from unconstrained and open habitats have been published.

In 2013, empty shells of *M. tuberculata* were found in a cooling water reservoir below the Dukovany nuclear power plant. In 2023, living individuals of *M. tuberculata* were found in the Skryjský potok (49.0949N, 16.1535E), a small stream that flows out of the abovementioned cooling water reservoir (Fig. 1, 2). In addition to *M. tuberculata*, only one other invasive species, *Physa acuta* Draparnaud, 1805, was present during both surveys in high population densities. This stream was also a subject to a malacological survey in 2013, and no shells or living individuals were found; therefore, the species probably established after that. In April 2023, a high abundance of the species was found, with dozens of individuals per square meter. The stream provides optimal conditions for this originally tropical species as the water temperature does not drop below 14 °C (unpubl. data). The species was reported to competitively exclude native species of gastropods (GUIMARÃES et al. 2001; POINTIER & McCULLOUGH 1989; ROESSLER et al. 1977). However, it is unlikely that it would survive outside the artificially heated waters. Therefore, *M. tuberculata* probably does not present a threat to native species because it is not able to inhabit natural waters and is not present in the Skryjský potok after its confluence with another small stream Luhy, with a lower temperature.

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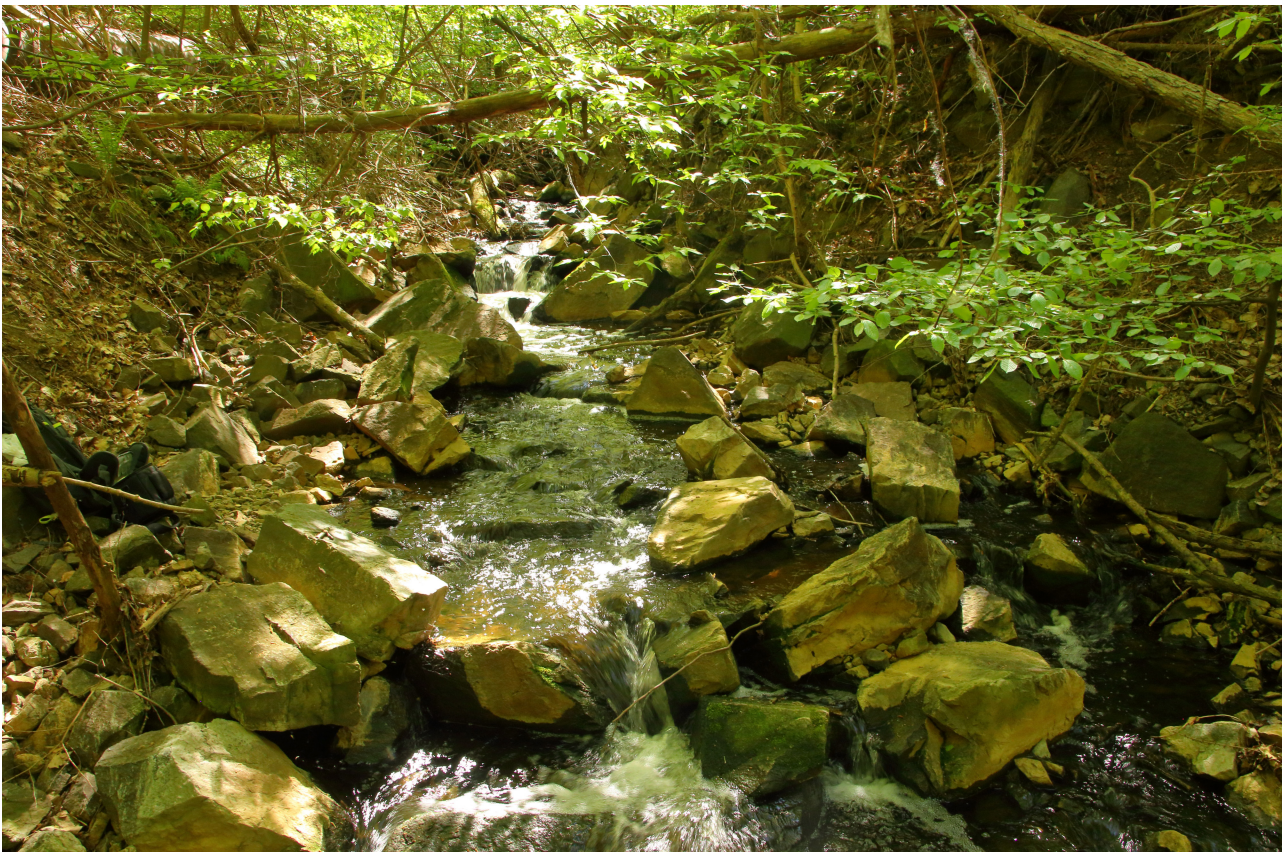


Fig. 1. Skryjský potok during sampling in April 2023 with an abundant population of *M. tuberculata* (Fig. 2). Photo: R. Coufal.



Fig. 2. A shell of *M. tuberculata* from Skryjský potok (Fig. 1).
Height: 38 mm. Photo: R. Coufal.