

SHORT COMMUNICATION

A NEW LOCALITY OF THE DEPRESSED RIVER MUSSEL
PSEUDANODONTA COMPLANATA (ROSSMÄSSLER,
1835) (BIVALVIA: UNIONIDAE) IN THE WISŁOK RIVER
(CARPATHIAN MOUNTAINS)

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ABSTRACT: This contribution describes two new sites of the depressed river mussel *Pseudanodonta complanata* (Rossmässler) in the Carpathian Mts. Empty but well preserved shells were found at two sites in the Wisłok River (Krosno and Odrzykoń). These are the second records of the species from the Polish part of the Carpathians. As only empty shells were found, it is unclear whether the species is a constant component of the river fauna of the Carpathians in Poland.

KEY WORDS: *Pseudanodonta complanata*, Unionidae, Carpathians

The depressed river mussel *Pseudanodonta complanata* (Rossmässler, 1835) is a large unionid. It can be confused with some other members of the family, especially with *Anodonta anatina* (Linnaeus, 1758). The rhomboid-shaped shell is distinctly laterally flattened (hence the species' name). The colouration is usually greenish-brown. The umbo has a spiny relief unlike the similar species of *Anodonta* occurring in Poland (PIECHOCKI & WAWRZYNIAK-WYDROWSKA 2016). The depressed river mussel is in general a riverine species (WOLFF 1968), preferring large rivers (PIECHOCKI & WAWRZYNIAK-WYDROWSKA 2016), however it is also known from stagnant waters such as postglacial lakes (STAŃCZYKOWSKA et al. 1983), oxbow lakes (JAKUBIK & LEWANDOWSKI 2013) and dam reservoirs (JURKIEWICZ-KARNKOWSKA 1989). In Poland it is regarded as a lowland species, and only one submontane record from the Carpathians is known from the Dunajec River near Rożnów Reservoir (ZAJĄC 2004, ZAJĄC K. pers. comm.). Other localities include the Wielkopolska region (KORALEWSKA-BATURA et al. 2010), Masurian Lakeland (Krutynia River; JAKUBIK & LEWANDOWSKI 2011, LEWANDOWSKI & JAKUBIK 2014), middle and

lower Odra River (ZAJĄC 2004). As in other unionids, the larvae are parasites of fish including common species such as *Gymnocephalus cernua* (Linnaeus, 1758), *Perca fluviatilis* (Linnaeus, 1758), *Pungitius pungitius* (Linnaeus, 1758), *Gasterosteus aculeatus* (Linnaeus, 1758) and *Salmo trutta fario* (Linnaeus, 1758) (BERRIE & BOIZE 1985, MCIVOR & ALDRIDGE 2007, PIECHOCKI & WAWRZYNIAK-WYDROWSKA 2016 and papers cited therein). The depressed river mussel is generally widespread across European countries. Its range includes Germany, the United Kingdom, Sweden, Finland, Austria, Switzerland, France and the Netherlands (HAAS 1969, MCIVOR & ALDRIDGE 2007, LOPES-LIMA et al. 2017). Despite its relatively wide range, the species is usually rare (declining in Europe; IUCN 2018) and is listed as Vulnerable (VU) in the IUCN Red List (IUCN 2018). In Poland it is evenly distributed across the lowlands, however many of the records are considered historical and the most recent sites are aggregated in relatively small areas, suggesting a highly fragmented (meta)population within the country (ZAJĄC 2004). The depressed river mussel is also considered the rarest unionid species in Poland (PIECHOCKI &

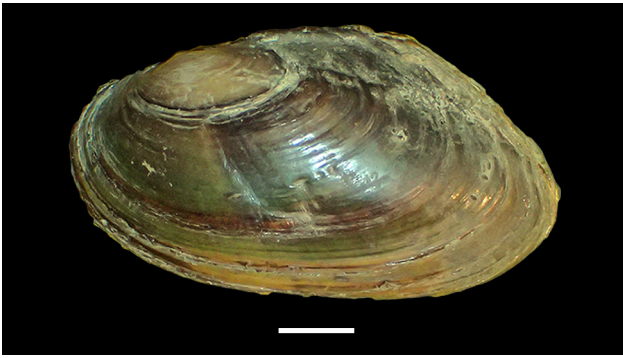


Fig. 1. Shell of *Pseudanodonta complanata* (Rossmässler, 1835) from the Wisłok river in Krosno. Scale bar 10 mm

WAWRZYNIAK-WYDROWSKA 2016). It is listed in the Polish Red Data Book of Animals as Endangered (EN; ZAJĄC 2004) and legally protected. This contribution describes two new sites of the species from the Wisłok river (Carpathian Mts).

The mussels were detected incidentally during crayfish inventories in Carpathian rivers. Fieldwork was based on visual search at night using torches. On 28.08.2018 and 07.09.2018, two 200 m sections of the Wisłok river were searched. The water level was low at this time (according to www.pogodynka.pl), with no disrupting water turbidity. Empty shells were collected and taken for identification. Empty shells including specimens with both valves connected with ligament were found at two sites: Krosno: 49°41'14.25"N, 21°47'6.33"E, 267 m a.s.l., (three specimens) and Odrzykoń: 49°44'20.86"N, 21°43'20.39"E, 249 m a.s.l. (four specimens). No live

specimens were found, however; in the first site a viable population of the thick-shelled river mussel *Unio crassus* (Philipsson, 1788) was found, and in Odrzykoń the thick-shelled river mussel and *Unio tumidus* (Philipsson, 1788) were present. In both sites, shells of the depressed river mussel were 5+ years old (Fig. 1). The sites represent typical submontane Carpathian rivers (Fig. 2). The river width is 12 m in Krosno and 15 m in Odrzykoń. In both sites the river is riprapped, however parts of the examined sections remain semi-natural or have spontaneously re-naturalised. The substratum of the river bed within these sites consists mostly of stones and gravel, with sand patches and organic matter deposits. Vegetation is poor and consists mostly of *Potamogeton* species and water mosses. Despite similar control with similar effort of another section of the Wisłok river in Besko and the Sieniawa-Besko Reservoir, no other depressed river mussels were found.

In Poland, as well as in other parts of its range, the depressed river mussel is rare in the mountains or submontane areas. However, it reaches upland and mountainous regions in Europe (LOPES-LIMA et al. 2017), for example in the Carpathian parts of the Tisa River in Ukraine (SÁRKÁNY-KISS 1999). The sites described in this study are the second depressed river mussel localities from the Polish part of the Carpathians. It is uncertain whether the population in the Wisłok river is stable. Notably, records of empty shells may indicate a population that is already extinct, as shells may be preserved in water for decades. Moreover, the presence of the species may be a result



Fig. 2. Habitat of *Pseudanodonta complanata* (Rossmässler, 1835) in the Wisłok river near Krosno



of a single, occasional colonisation, as glochidia of the species may be spread by fish. The mussels may have colonised the Wisłok river naturally and/or by introduction of larvae-carrying fish. On the other hand, the depressed river mussel is sensitive to water pollution and low water quality in general (ZAJĄC 2004, PIECHOCKI & WAWRZYŃIAK-WYDROWSKA 2016 and papers cited therein) which is a probable reason for the disappearance of the species from several localities in Poland (LEWANDOWSKI & STAŃCZYKOWSKA 1975, PIECHOCKI 1981, JURKIEWICZ-KARNKOWSKA 1989, 1998, 2001, LEWANDOWSKI 1991, ZAJĄC 2004). Thus, the empty shells recorded in the Wisłok may be the consequence of mortality associated with pollution episodes. In such case, future colonisation of the area is possible. Adult depressed river mussels live almost entirely buried in the sediments with only siphons visible. This habit makes the species

difficult to detect without thorough field surveys; the fieldwork in this study was not aimed at mollusc detection and thus the observations remain anecdotal. Further mollusc-oriented investigations of the Wisłok and similar rivers in the Carpathians could answer the question whether the depressed river mussel is a constant component of the Carpathian fauna.

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