

## RARE SPECIES OF MICROMOLLUSCS IN THE CITY OF POZNAŃ (W. POLAND) WITH SOME NOTES ON WINTERING OF *VERTIGO MOULINSIANA* (DUPUY, 1849)

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**ABSTRACT:** Two new sites of rare snail species were found on the northern edge of Poznań. *Vertigo moulinsiana* (Dupuy) and *Vallonia enniensis* (Gredler) occurred on the northern, marshy shore of a pond, *Vertigo angustior* Jeffreys was found on its southern, moderately moist shore. Counting of *V. moulinsiana* on plants in January 2016 showed that 92.8% of wintering specimens were adult and occurred in higher numbers within drooping tussocks of sedges than on single sedge blades. The greatest number of individuals was found attached to the underside of a leaf of *Alliaria petiolata*.

**KEY WORDS:** molluscs, habitats, conservation, *Vertigo angustior*, *Vertigo moulinsiana*, *Vallonia enniensis*

*Vertigo moulinsiana* (Dupuy, 1849) (Fig. 1), *Vertigo angustior* Jeffreys, 1830 (Fig. 2) and *Vallonia enniensis* (Gredler, 1856) (Fig. 3) are micromolluscs that occur mainly in Europe (e.g. MOLLUSC SPECIALIST GROUP 1996, POKRYSZKO 2004, KILLEEN et al. 2012) and usually inhabit calcareous, moist habitats (e.g.

POKRYSZKO 1990, MYZYK 2004, 2011, WIKTOR 2004, KSIĄŻKIEWICZ 2010, KSIĄŻKIEWICZ & LEMKE 2012, KSIĄŻKIEWICZ et al. 2015).

*V. moulinsiana* and *V. angustior* are listed in Annex II of the EU Habitats Directive (EEC 1992) and in the Polish Red Data Book of Animals (POKRYSZKO



Fig. 1. *Vertigo moulinsiana* – crawling individual and shell (specimen from site 1)



Fig. 2. *Vertigo angustior* – crawling individual and shell (specimen from site 2)

2004): *V. moulinsiana* as critically endangered (CR category), *V. angustior* as endangered – (EN). Both species are also included in the Red List of Threatened Animals in Poland (WIKTOR & RIEDEL 2002). In the IUCN Red List of Threatened Species *V. moulinsiana* is classified as vulnerable (VU category) while *V. angustior* is near threatened (NT) (KILLEEN et al. 2012, MOORKENS et al. 2012). Around 50 records of *V. moulinsiana* and over 120 records of *V. angustior*

have been made in Poland to date (POKRYSZKO 1990, KSIĄŻKIEWICZ 2009, 2010, KSIĄŻKIEWICZ & LEMKE 2012, KSIĄŻKIEWICZ et al. 2012, 2015, LIPIŃSKA et al. 2012). Some groups of these records, however, occur within 10 km<sup>2</sup> and may represent one metapopulation (see KSIĄŻKIEWICZ et al. 2015). Localities of *V. moulinsiana* are scattered across lowland Poland while *V. angustior* occurs also at lower altitudes in the mountains (KSIĄŻKIEWICZ et al. 2012,

3



4



Figs 3–4. Specimens of *Vallonia* from the new sites: 3 – *V. enniensis* (specimen from site 1), 4 – *V. costata* (specimen from site 2)



Table 1. List of species recorded in the studied sites

Species	Site 1	Site 2
<i>Carychium minimum</i> O. F. Müller, 1774	+	
<i>Carychium tridentatum</i> (Risso, 1826)		+
<i>Succinea</i> cf. <i>putris</i> (Linnaeus, 1758)	+	+
<i>Cochlicopa lubrica</i> (O. F. Müller, 1774)	+	
<i>Columella edentula</i> (Draparnaud, 1805)		+
<i>Truncatellina cylindrica</i> (Férussac, 1807)		+
<i>Vertigo moulinsiana</i> (Dupuy, 1849)	+	
<i>Vertigo angustior</i> Jeffreys, 1830		+
<i>Vallonia costata</i> (O. F. Müller, 1774)		+
<i>Vallonia enniensis</i> (Gredler, 1856)	+	
<i>Nesovitrea hammonis</i> (Strøm, 1765)		+
<i>Zonitoides nitidus</i> (O. F. Müller, 1774)	+	+
<i>Eucomulus alderi</i> (Gray, 1840)	+	
<i>Fruticicola fruticum</i> (O. F. Müller, 1774)		+
<i>Trochulus hispidus</i> (Linnaeus, 1758)	+	
<i>Helix pomatia</i> Linnaeus, 1758		+

Table 2. Number of juveniles, adults and total number of individuals of *V. moulinsiana* in individual study plots (10 × 10 cm)

Plot no.	Juveniles	Adults	Total
1	1	5	6
2	0	4	4
3	1	4	5
4	0	1	1
5	0	2	2
6	0	6	6
7	0	2	2
8	0	2	2
9	0	1	1
10	0	5	5
11	0	8	8
12	0	2	2
13	3	20	23
14	0	1	1
15	0	1	1

LIPÍŃSKA et al. 2012). Eight localities of *V. moulinsiana* and nine records of *V. angustior* have been discovered in Wielkopolska so far (KSIĄŻKIEWICZ 2010, KSIĄŻKIEWICZ et al. 2015).

*V. enniensis* (Gredler, 1856) is rare in Poland; to date it has been recorded from a few isolated sites scattered across the country but never found in Wielkopolska (the records come from Ziemia Lubuska, Mazowsze, Podlasie, Wyżyna Lubelska, Wyżyna Małopolska and Dolny Śląsk; WIKTOR 2004). The species is included in the Red List of Threatened Animals in Poland (WIKTOR & RIEDEL 2002). In the IUCN Red List of Threatened Species, *V. enniensis* is assigned to DD (data deficient) category (MOLLUSC SPECIALIST GROUP 1996).

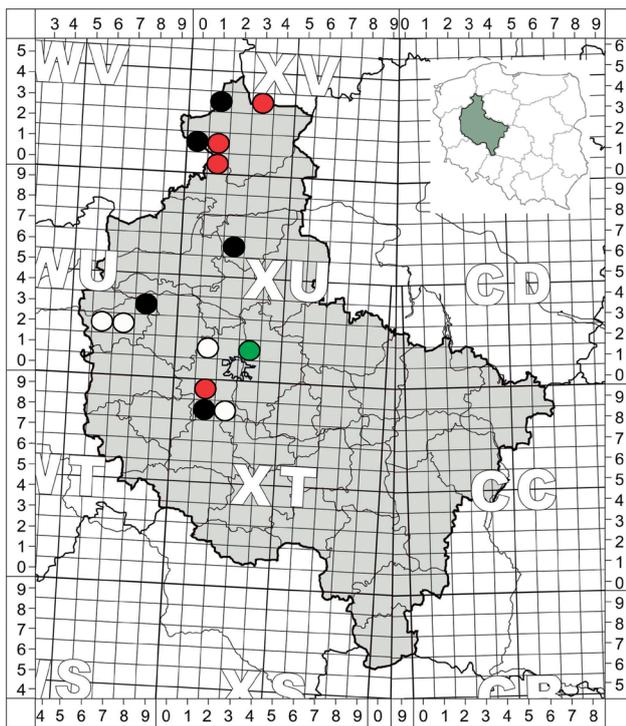
Here we report on new localities of *V. moulinsiana*, *V. angustior* and *V. enniensis* in Wielkopolska. The three species were found near one of the two Moraskie Ponds, in the environs of the Adam Mickiewicz University campus in Morasko, on the northern edge of the city of Poznań (W. Poland). They were discovered in June 2015, during exploration of sedge and reed beds at the pond. Snails were collected visually in soil and litter as well as on leaves and stems of plants and transported to the laboratory for identification.

**Site 1.** *V. moulinsiana* and *V. enniensis* were found on the northern shore of the pond (52°28'07.05"N, 16°56'02.18"E), where they co-occurred with six other species of terrestrial snails (Table 1). The site, which covers ca. 500 m<sup>2</sup>, is marshy, partially shaded by alder trees and covered in sedges and reed. In July we found four individuals of *V. enniensis* (1 adult and 3 juveniles) and 14 individuals of *V. moulinsiana* (3 juveniles and 11 adults). The nearest site of *V. moulinsiana* is 13 km away and was partially destroyed dur-

ing the building of the western bypass of Poznań in 2013. The nearest locality of *V. enniensis* is about 100 km away, in Ziemia Lubuska (RIEDEL 1988, WIKTOR 2004).

In January 2016, after two weeks of frosty temperatures (mean minimum temperature: -5.5°C; mean maximum temperature: -1.7°C; <http://www.weatheronline.pl>), we searched for wintering places of *V. moulinsiana* in the site. According to earlier observations (KILLEEN 2003) the species usually spent winter attached to leaves and stems of monocot and dicot plants. Therefore, we counted individuals of *V. moulinsiana* attached to plants. Fifteen plots were searched visually, using a 10 × 10 cm frame. We recorded a total of 69 individuals; 92.8% of them were adult (Table 2). *V. moulinsiana* occurred in all of the studied plots; we did not notice any other snail species wintering on plants. The greatest number of *V. moulinsiana*, i.e. 23 individuals (3 juveniles and 20 adults), was found in plot no. 13 on the underside of a leaf of *Alliaria petiolata* (M. Bieb.). *V. moulinsiana* occurred in higher numbers within drooping sedge tussocks than on single sedge blades.

**Site 2.** *V. angustior* was found at the southern edge of the pond, in a moderately moist habitat, ca. 300 m<sup>2</sup> in area (52°28'01.48"N, 16°55'59.19"E). The nearest record of the species is ca. 20 km away, in the Wielkopolski National Park. In the studied site *V. angustior* co-occurred with nine other species of terrestrial snails (Table 1). The site is open but surrounded by alder trees and covered mostly in reed and sedges. In July we found nine individuals of *V. angustior* in the litter (1 juvenile and 8 adults). Since in site 2 we recorded *Vallonia costata*, which is similar to *V. enniensis* from site 1, we present shells of both species in Figures 3 and 4.



Finally, we add UTM map of Wielkopolska showing distribution of the studied species in the region (Fig. 5).

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Fig. 5. UTM map of Wielkopolska showing distribution of the studied species in the region: red circles – *V. moulinsiana* and *V. angustior*; white circles – *V. moulinsiana*; black circles – *V. angustior*; green circle – new record of *V. moulinsiana*, *V. angustior* and *V. enniensis*

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