

Report of an excursion in the course of the 1st Meeting of the Society Mollusc Research Austria (MoFA) in the Untersberg area, Salzburg

Stefan Kwitt¹, Rita Schrattenecker-Travnitzky¹, Michael Duda², Marco T. Neiber³ & Robert A. Patzner¹

¹ Malakologische Arbeitsgemeinschaft am Haus der Natur, Museumsplatz 5, 5020 Salzburg, Austria

² 3rd Zoological Department, Museum of Natural History Vienna, Burgring 7, 1010 Vienna, Austria

³ Centrum für Naturkunde (CeNak), Universität Hamburg, Martin-Luther-King-Platz 3, 20146 Hamburg, Germany

Correspondence: stefan.kwitt@gmx.at & robert.patzner@sbg.ac.at

Abstract: The results of the excursion in the Landscape and Plant Protection Area Untersberg, which was held during the 1st Meeting of the Mollusc Research Society Austria (MoFA) in Salzburg, is presented and supplemented by data from a preliminary excursion in 2018. Altogether, 47 terrestrial and six aquatic mollusc species were detected at four sites.

Key words: Gastropoda, Bivalvia, Salzburg, Landscape and Plant Protection Area Untersberg, excursion

Zusammenfassung: Das Ergebnis der Exkursion in das Landschafts- und Pflanzenschutzgebiet Untersberg, die während der ersten Tagung des Vereins Molluskenforschung Austria (MoFA) in Salzburg abgehalten wurde, wird vorgestellt und durch Daten einer Vorexkursion aus dem Jahr 2018 ergänzt. An vier Standorten konnten insgesamt 47 terrestrische und sechs aquatische Molluskenarten nachgewiesen werden.

Introduction

As part of the 1st conference of the „Molluskenforschung Austria“ (MoFA) association, which was held in Salzburg on 26th and 27th June 2019, an excursion to the Untersberg area took place on the second day.

The Austrian part of the Untersberg belongs to the “Landscape and Plant Protection Area Untersberg”. This protection area comprises pastures, wet meadows and forests (Land Salzburg 2019a, 2019b). The snail fauna of the Untersberg area has been studied relatively well in the past (e.g. Uhl 1926, Mahler 1946, Klemm 1951, 1974). The slug fauna is less well known, only Reischütz (1986) provided any reliable data.

In 2018, one of the authors (S.K.) visited the area within the scope of a preliminary excursion. On June 27, 2019 at temperatures far above 30° C the northern foot of the Untersberg was climbed by 26 MoFA-members starting from the Untersberg Museum to the Fürstenbrunn Spring (“Wasserschloss”). In the early afternoon the flat terrain northwest of Fürstenbrunn along the “Salzweg” was investigated.

Sampling sites (Fig. 1):

1. Fürstenbrunn, Grödig: above Fürstenbrunn Spring (“Wasserschloss”) 47° 44' 18,9" N 12° 59' 39,7" E: inclined slope with mixed forest with deadwood and rock structures at 580 m above sea level (Fig. 2A).
2. Fürstenbrunn, Grödig: abandoned stone quarry (“Mayr-Bruch”) 47° 44' 12,3" N 12° 59' 43,4" E: open and dry location with rocks, ruderal vegetation and tendencies of forest succession. Altitude: 680 m (Fig. 2B).
3. Fürstenbrunn, Grödig: Pond south of “Streuwiese am

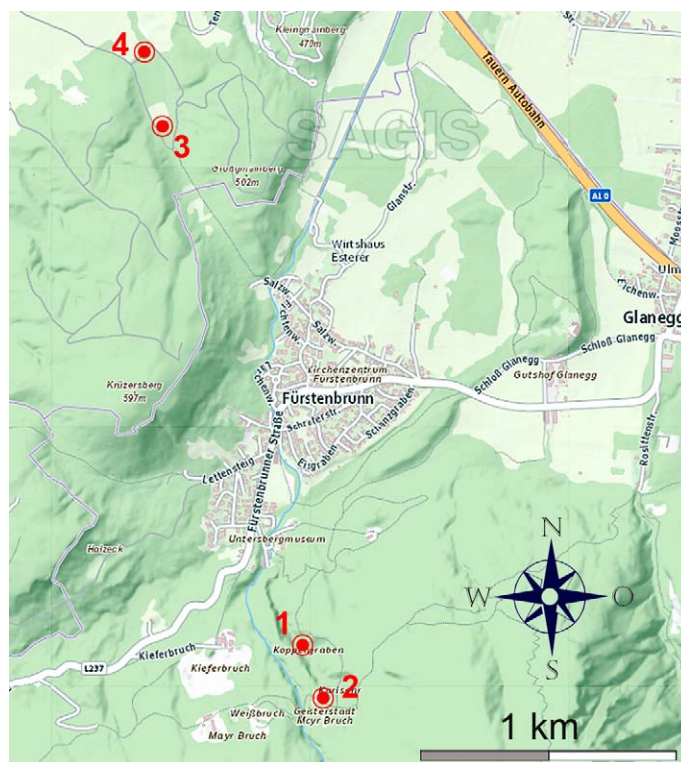


Fig. 1. Sampling sites of the MoFA excursion: 1 = Fürstenbrunn Spring, 2 = Mayr Bruch, 3 = Salzweg Pond, 4 = Glanfeldbach. Map: SAGIS.

Salzweg” 47° 45' 24,8" N 12° 59' 12,6" E: small pond with reed and open habitat conditions. Altitude: 446 m (Fig. 2C).

4. Fürstenbrunn, Grödig: part of “Glanfeldbach” 47° 45' 34,3" N 12° 59' 09,1" E: small stream parallel to the Salzweg with reed. More shady conditions. Altitude: 442 m.

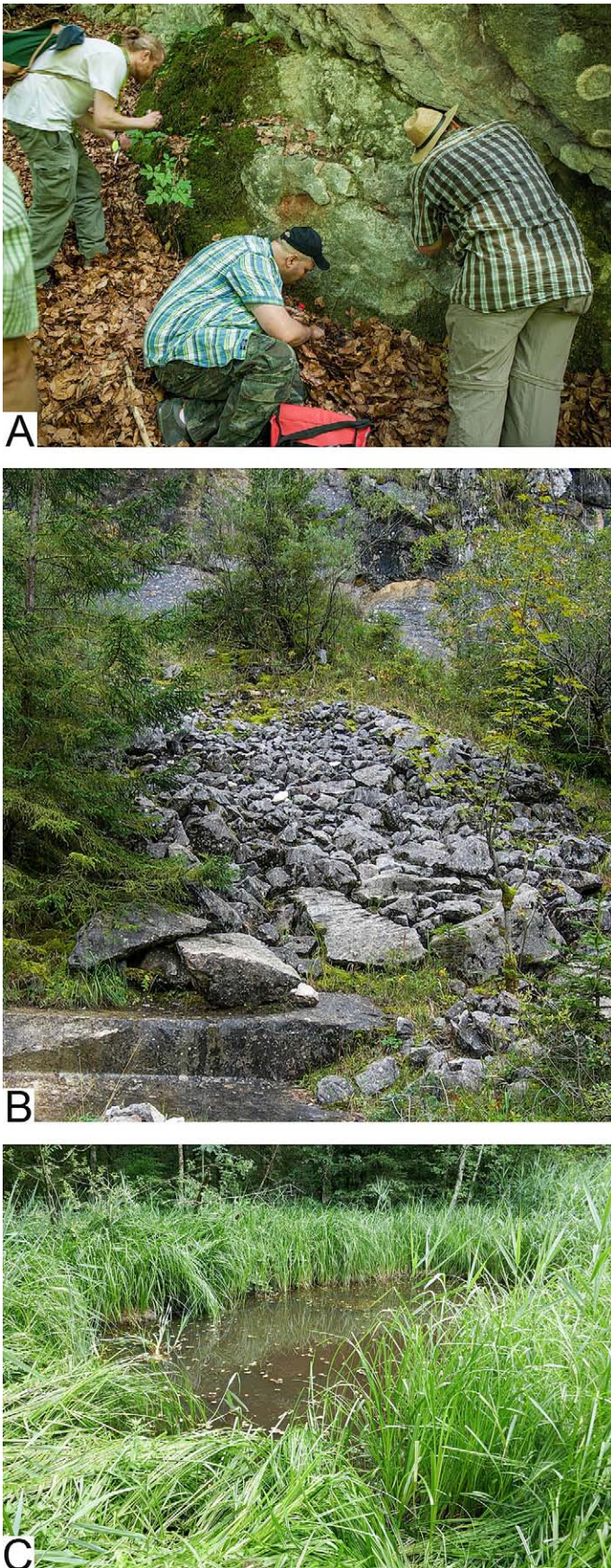


Fig. 2. Sampling sites: **A.** Site 1: above spring with three of the authors (S.K., M.T.N. & M.D.), photo: Hubert Blatterer, **B.** Site 2: stone quarry ("Mayr-Bruch"), **C.** Site 3: pond at "Salzweg".

Methods

Terrestrial molluscs were collected by hand or by sieving substrate and leaf litter. Aquatic habitats were sampled with a sieve by stripping off macrophytes and the muddy bottom. Species identification was carried out directly in the field or if necessary in the laboratory. All data were included in the Biodiversity Databank of Salzburg. Some samples are kept in the mollusc collections of the Haus der Natur Salzburg and the Museum of Natural History Vienna. All observed individuals of the genus *Pyramidula* were not determined at species level because the taxonomy of *Pyramidula* in the Eastern Alps is still under discussion (see Kirchner et al. 2016, Razkin et al. 2016).

Results

Altogether, 47 terrestrial (Tab. 1) and six aquatic (Tab. 2) mollusc species were observed at four sites. The highest number of species were collected in the area of the old spring capture and the surrounding forest with rocks. Mussels and aquatic snails were only found at the "Salzweg", location 3 and 4.

Discussion

Due to the hot and dry weather conditions, it was difficult to observe living snails and especially slugs. The Clausiliidae fauna of the investigated area seems to be relatively species-rich. A total of nine taxa could be detected. Especially *Cochlodina orthostoma* (Menke, 1828) is worth mentioning: the species inhabits deciduous woods in humid and shady rocky habitats in Central and Eastern Europe. Its distribution is relictual, the scattered populations are separated by large distances (Welter-Schultes 2012). In Austria it seems to be rare in the northern and eastern parts and is completely absent in the south (Klemm 1974). Consequently, it is listed as NT (near threatened) in the Red Lists of Austria and Europe (Reischütz & Reischütz 2007, Neubert et al. 2019). Reischütz (2000a) even proposes its inclusion in Appendix 2 of the FFH Directive.

According to Reischütz & Reischütz (2007) six of the here recorded species are considered in Austria as V (vulnerable): *Hippeutis complanatu* or NT (nearly threatened): *Truncatellina cylindrica*, *Cochlodina orthostoma*, *Erjavecina bergeri*, *Helicigona lapicida* and *Bythinella conica conica* (Tab. 1, 2).

Species numbers for forests show high variation ranging from 21 to 57 in Northern Europe (Pokryszko & Cameron 2005) and from five to 66 in Bavaria (Strätz & Müller 2008). Pokryszko & Cameron (2005) detected for 46 locations in forests in Northern Europe eleven universal species (without slugs): *Euconulus fulvus*, *Punctum pygmaeum*, *Carychium tridentatum*, *Acanthinula aculeata*,

Columella edentula, *Aegopinella pura*, *Cochlicopa lubrica*, *Vitrina pellucida*, *Nesovitrea hammonis*, *Cochlodina laminata* and *Vitrea crystallina*. Five of them were recently

Table 1. List of species and subspecies of terrestrial gastropods identified. The column numbers refer to the location numbers mentioned in the text. L: living animal, S: only shell, RL: Red List Status: LC: Least Concern, NT: Near Threatened, NE: Not Evaluated: 1 spring, 2 stone quarry, 3 pond, 4 stream area

Species/Sampling sites	1	2	3	4	RL
<i>Platyla gracilis</i> (Clessin, 1877)*	L	-	-	-	LC
<i>Renea veneta</i> (Pirone, 1865)	S	S	-	-	LC
<i>Carychium tridentatum</i> (Risso, 1826)	L	S	-	-	LC
<i>Succinea putris</i> (Linnaeus, 1758)	-	-	-	L	LC
<i>Truncatellina cylindrica</i> (A. Férussac, 1807)*	-	L	-	-	NT
<i>Vertigo alpestris</i> Alder, 1838*	-	S	-	-	LC
<i>Orcula dolium</i> (Draparnaud, 1801)	S	-	-	-	LC
<i>Abida secale</i> (Draparnaud, 1801)	L	-	-	-	LC
<i>Chondrina arcadica clienta</i> (Westerlund, 1883)	-	L	-	-	LC
<i>Pyramidula</i> sp.	L	L	-	-	-
<i>Vallonia costata</i> (O.F. Müller, 1774)*	-	S	-	-	LC
<i>Ena montana</i> (Draparnaud, 1801)	L	-	-	-	LC
<i>Cochlodina laminata</i> (Montagu, 1803)	S	-	-	-	LC
<i>Cochlodina orthostoma</i> (Menke, 1828)	S	-	-	-	NT
<i>Erjavecia bergeri</i> (Rossmässler, 1836)	L	-	-	-	NT
<i>Macrogastra ventricosa</i> (Draparnaud, 1801)	L	L	-	-	LC
<i>Macrogastra plicatula</i> (Draparnaud, 1801)	L	L	-	-	LC
<i>Clausilia rugosa parvula</i> A. Férussac, 1807*	L	-	-	-	LC
<i>Clausilia dubia</i> Draparnaud, 1805	L	L	-	-	LC
<i>Neostyriaca corynodes</i> (Held, 1836)	L	-	-	-	LC
<i>Alinda biplicata</i> (Montagu, 1803)	L	-	-	-	LC
<i>Punctum pygmaeum</i> (Draparnaud, 1801)*	-	S	-	-	LC
<i>Discus rotundatus</i> (O.F. Müller, 1774)*	-	L	-	-	LC
<i>Discus perspectivus</i> (Megerle von Mühlfeld, 1816)	L	S	-	-	LC
<i>Aegopinella nitens</i> (Michaud, 1831)	L	-	-	-	LC
<i>Euconulus fulvus</i> (O.F. Müller, 1774)*	-	S	-	-	LC
<i>Vitrea crystallina</i> (O.F. Müller, 1774)*	S	-	-	-	LC
<i>Vitrea contracta</i> (Westerlund, 1871)*	-	S	-	-	LC
<i>Vitrea subrimata</i> (Reinhardt, 1871)	S	-	-	-	LC
<i>Vitrea diaphana</i> (S. Studer, 1820)	S	-	-	-	LC
<i>Lehmannia</i> sp. juv.	-	L	-	-	-
<i>Semilimax semilimax</i> (J. Férussac, 1802)	S	S	-	-	LC
<i>Eucobresia diaphana</i> (Draparnaud, 1805)	S	-	-	-	LC
<i>Arion vulgaris</i> Moquin-Tandon, 1855	L	-	-	-	NE
<i>Arion fuscus</i> (O.F. Müller, 1774)*	L	-	-	-	LC
<i>Arion silvaticus</i> Lohmander, 1937	L	-	-	-	LC
<i>Fruticicola fruticum</i> (O.F. Müller, 1774)	-	-	L	L	LC
<i>Monachoides incarnatus</i> (O.F. Müller, 1774)	L	-	-	L	LC
<i>Urticicola umbrosus</i> (C. Pfeiffer, 1828)	S	-	-	L	LC
<i>Trochulus hispidus</i> (Linnaeus, 1758)	-	-	L	-	LC
<i>Petasina unidentata</i> (Draparnaud, 1801)	L	L	-	-	LC
<i>Arianta arbustorum</i> (Linnaeus, 1758)	L	-	-	L	LC
<i>Helicigona lapicida</i> (Linnaeus, 1758)	L	-	-	-	NT
<i>Isgonomostoma isgonomostomos</i> (Schröter, 1784)	L	-	-	-	LC
<i>Causa holosericea</i> (S. Studer, 1820)*	S	-	-	-	LC
<i>Cepaea nemoralis</i> (Linnaeus, 1758)	-	-	-	L	LC
<i>Cepaea hortensis</i> (O.F. Müller, 1774)	-	-	-	L	LC
Number of taxa (47)	33	18	2	7	

*only collected during pre-excursion in 2018 (leg. S. Kwitt)

Systematic order according to Wiese (2016)

found on the northern foot of the Untersberg, according to Klemm (1974) another four are known to live in the area. For protected areas in Bavarian forests Strätz & Müller (2008) defined a group of similar ecological requirements with *Macrogastra attenuata*, *Helicigona lapicida* and *Cochlodina orthostoma*. They found four factors which mainly determine the mollusc fauna: annual temperature, sea level, rainfall and calcium content.

Arion fuscus (O.F. Müller, 1774) (= *A. subfuscus* auctt. non Draparnaud, 1805, partim) was only collected during the preliminary excursion in 2018. The animal showed intense orange back mucus and was also dissected. The ovotestis was small and brownish, which correlates with the characteristics of *Arion fuscus* in Pinceel et al. (2004). A confusion with the more Western European *Arion subfuscus* (Draparnaud, 1805), re-described by Garrido et al. (1995), can be excluded. The Austrian forms of *Arion fuscus* probably consist of an aggregate of several species (Reischütz 2000b). This requires further research.

Table 2. List of species of aquatic molluscs identified. Legend as in Tab. 1. Red List Status: VU: Vulnerable, DD: Data Deficient

Species/Sampling sites	1	2	3	4	RL
<i>Bythinella conica conica</i> Clessin, 1910	-	-	-	L	NT
<i>Gyraulus laevis</i> (Alder, 1838)	-	-	L	-	DD
<i>Hippeutis complanatus</i> (Linnaeus, 1758)	-	-	L	-	VU
<i>Ancylus fluviatilis</i> O.F. Müller, 1774	-	-	-	L	LC
<i>Sphaerium ovale</i> (Férussac, 1807)	-	-	L	-	DD
<i>Musculium lacustre</i> (O.F. Müller, 1774)	-	-	L	-	LC
Number of taxa (6)	0	0	4	2	

Systematic order according to Glöer (2017)

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