

Molluscs of the Dürrenstein Wilderness Area

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Abstract: Research in the Dürrenstein Wilderness Area (DWA) in the southwest of Lower Austria is mainly concerned with the inventory of flora, fauna and habitats, interdisciplinary monitoring and studies on ecological disturbances and process dynamics. During a four-year qualitative study of non-marine molluscs, 96 sites within the DWA and nearby nature reserves were sampled in cooperation with the “Alpine Land Snails Working Group” located at the Natural History Museum of Vienna. Altogether, 84 taxa were recorded (72 land snails, 12 water snails and mussels) including four endemics and seven species listed in the Austrian Red List of Molluscs. A reference collection (empty shells) of molluscs, which is stored at the DWA administration, was created. This project was the first systematic survey of mollusc fauna in the DWA. Further sampling might provide additional information in the future, particularly for Hydrobiidae in springs and caves, where detailed analyses (e.g. anatomical and genetic) are needed.

Key words: Wilderness Dürrenstein, Primeval forest, Benign neglect, Non-intervention management, Mollusca, Snails, Alpine endemics.

Introduction

In concordance with the IUCN guidelines, research is mandatory for category I wilderness areas. However, it may not disturb the natural habitats and communities of the nature reserve. Research in the Dürrenstein Wilderness Area (DWA) focuses on providing inventories of flora and fauna, on interdisciplinary monitoring as well as on ecological disturbances and process dynamics. Projects are carried out in cooperation with scientific and specialist committees, such as universities and other authorities. The research statement 2013–2022 (FISCHER 2013, 2014) outlines the main concerns of the DWA research program:

- **Inventory** of flora, fauna and habitats
- **Monitoring** of indicator species, management measures, forest development, weather, game population, alien species and human visitors
- Research on **process dynamics and ecological disturbances** in the mountainous primeval forest

The results of these studies, besides providing important data for basic research, may be used for a number of purposes: as an objective foundation for the ecological assessment of the wilderness area, as criteria for decision-making and controlling the management measures, as well as for public relations and educational work.

This article describes the main features of the DWA and summarizes the alpine land snails survey, which exemplifies our effort to gather information about the

manifold species living in the wilderness area – many of them “refugees”, whose natural habitats have almost disappeared in today’s over-cultivated landscape.

The Dürrenstein Wilderness Area (DWA)

The Dürrenstein Wilderness Area (DWA) was established between 1997 and 2001, during a LIFE-project. It is located in the southwest of Lower Austria, in the Northern Limestone Alps. It currently covers 35 km² (8,650 acres) and is embedded in the Natura 2000 area “Ötscher-Dürrenstein”. In 2003 it was recognized as the first category I (1a & 1b) wilderness area in Austria, according to the criteria of the International Union for Conservation of Nature (IUCN). In 2017 it became Austria’s first UNESCO World Natural Heritage – together with Kalkalpen National Park. Although DWA is one of the smallest wilderness areas of its kind, for Central Europe the quality of the natural assets and the size must be considered exceptional. One reason for this is the largest remnant of primeval forest in the Alps, the Rothwald, which has not been cultivated or managed since the last ice age (Fig. 1). It represents a forest stand from the Alpic beech forest region and covers about 400 hectares on the southern slope of the Dürrenstein (the highest peak with an altitude of 1,878m). Old trees with astonishing proportions like silver firs with more than 60 meters of height are growing in this unique forest. The initial cause for creating the DWA was to protect this ancient mixed beech

Fig. 1: The „Rothwald“ is the largest remnant of primeval forest in the Alps and the core of the Dürrenstein Wilderness Area (IUCN **Category Ia**); Photo: Reinhard Pekny.



Fig. 2: In the primeval forest Rothwald unusually high quantities of deadwood lead to a wide variety of organisms that depend on wood in its different stages of decay; Photo: Reinhard Pekny.



forest (Norway spruce, silver fir and beech) and to mitigate impacts from outside. The Rothwald is surrounded by near-natural woodland that was last used for timber about 200–250 years ago (KOHL & PEKNY 2011, PEKNY & LEDITZNIG 2015).

A detailed management plan is the basis for the work of the DWA administration (FISCHER et al. 2013),

which seeks to protect the ancient forests, endangered organisms and habitats and provides the frame for rewilding formerly managed forests. The most important aims and tasks can be summarized as follows:

- The protection of the DWA. Rather than trying to maintain a specific condition, the natural processes are allowed to unfold with as little human interven-

tion as possible (benign neglect). Measures taken to secure the natural environment or restore impaired habitats are limited both spatially and temporally.

- Maintenance and, if possible, improvement of the conservation status, by implementation of the management plan.
- Research and interdisciplinary monitoring, as described in the introduction.
- Guided tours for visitors. Large areas of the nature reserve are not open to individual visitors, who are restricted to designated hiking trails. Therefore, the DWA administration offers a diverse visitor program with botanical, zoological and geological excursions as well as hikes that seek to convey an experience of unspoiled nature and a better understanding of wilderness.

Concerning the natural assets, the fauna of the DWA consists of species generally native to areas north of the Alps, e.g. common species such as red deer, chamois and alpine hares, but also the occasional lynx. Other typical species are the alpine newt, the alpine salamander, the European adder and the white-backed woodpecker. Golden eagles and all four types of grouse native to Austria (wood-, black-, hazel grouse and ptarmigan) and also Bechstein's bat, a rare tree-dwelling species associated with old growth woodland, live in the nature reserve.

In the primeval forest Rothwald incomparably high shares of deadwood of up to 400 m³ per hectare lead to a wide variety of organisms that depend on wood in its different stages of decay (Fig. 2), e.g. fungi, lichens, mosses, woodpeckers, beetles. It is a fact that near-natural forests are hot spots for fungi (KRISAI-GREILHUBER 2018): so far, 720 "higher fungi" and 180 "fungus-like organisms" have been catalogued – and many more of the latter still await their detection (DÄMON & KRISAI-GREILHUBER 2017). This is also true for the lichen flora in Rothwald. Although – after investigations in 2015 – the list of epiphytic taxa has grown to 273, the whole spectrum of lichen diversity has not been encountered yet (BERGER et al. in press). ZECHMEISTER & KÖCKINGER (2014) found 280 species of mosses within the DWA, including four species listed in Annex II of the Habitats Directive and 33 species red listed in Austria. A survey of the six woodpecker species living in the DWA indicates the importance of old-growth forests for the conservation of these birds (HOCHBNER et al. 2015). Similarly, the DWA is an important refuge for endangered saproxylic beetles, which have high requirements with regard to dead wood quality and quantity or even require primeval habitat features and continuous habitat availability. In forests managed for timber produc-

tion these species became extinct or were severely diminished, like the „FFH species“ Rosalia Longicorn (*Rosalia alpina*) and the Red Flat Bark Beetle (*Cucujus cinnaberinus*). Following a first survey (ZABRANSKY 2001), a detailed study of the DWA saproxylic beetles focusing on primeval forest relict beetles (ECKELT et al. 2018) is planned.

The results of research and monitoring projects are published in "Silva Fera", the scientific magazine of the DWA administration, and in other scientific journals. The volumes of Silva Fera can be downloaded for free at the DWA website, which also offers a searchable literature database and more information about the DWA in general: www.wildnisgebiet.at.

Inventory of molluscs

Better knowledge of the biodiversity or, in other words, the variety of life (in particular species and habitats) in the DWA is one of the main goals of our research program. Attractive and conspicuous animals, fungi or plants are destined to catch the interest of taxonomists first, especially if they have a proper size and distinct features for determination. Molluscs, however, normally don't have the advantage of appealing looks (at least at first sight), they have a negative reputation because of some introduced invasive species which can wreak havoc in gardens and agriculture, and their systematic biology is often rather difficult and still under discussion. Probably mostly due to the latter, the interest in molluscs has declined over the last decades and the state of knowledge is quite dissatisfactory (REISCHÜTZ & REISCHÜTZ 2009). On top of that, the steady decline of taxonomists and appropriate jobs – nationally and internationally – is disastrous for conservation work, because the taxonomic expertise is needed to properly monitor species or to implement conservation plans.

Conscious of the need to collect data on "less popular" invertebrate groups, a meeting with the "Alpine Land Snails Working Group" located at the Natural History Museum of Vienna (NHMW) was arranged in summer 2015 and, subsequently, a proposal for a survey of the land snails of the DWA was submitted and accepted for funding by the European Agricultural Fund for Rural Development and the Provincial Government of Lower Austria. In cooperation with the malacologists of the NHMW, a three-year qualitative study of land snail species was started, which was soon extended to water snails and mussels as well. In addition, four smaller nature reserves in the vicinity were included in the survey, because they are administered by the DWA (these are: Seebachlacke, Kothbergtal, Leckermoor and Lechnergraben).



Fig. 3: Sampling for molluscs in the marshes of the nature reserve Leckermoor near Göstling/Ybbs, Lower Austria; Photo: Sabine Fischer.



Fig. 4: Members of the “Alpine Land Snails Working Group” (Natural History Museum of Vienna) search for molluscs close to the summit of Dürrenstein (1,878 m); Photo: Sabine Fischer.

From 2015 until 2018, excursions – several of them accompanied by members of the Alpine Land Snails Working Group – were performed (Fig. 3, 4). In the course of these surveys specimens were collected at 96 sites within the DWA and the above-mentioned nature reserves. These sites are distributed all over the DWA, although not evenly since – due to the rough, steep terrain (dolomite rock) – some parts are hardly accessible. As much as possible, we tried to include distinct habitats, sampled at different altitudes from about 360 m (Seebachlacke) to 1878 m (Dürrenstein peak) and at different times of the year. Snails were mostly collected by hand, determined on site and released, while some specimens were collected for various purposes (see below). Furthermore, from several locations soil, litter or moss samples were taken and dried later or flushed out and sieved. For the collection of water snails and mussels, mud and fine sediments deposited on the bot-

tom of brooks, springs, pools and ponds were sieved and the drift line examined.

Since slugs need to be dissected for reliable identification, a few “promising” adult specimens were conserved and later examined at the NHMW. Also, individual specimens of some rare species were conserved and made available to the project “Barcoding of Austrian molluscs” within the ABOL (Austrian Barcode of Life) initiative. Furthermore, a reference collection of empty shells for future determination and conservation tasks of the DWA administration was created. It includes one or more shells of almost all detected species except slugs.

Altogether 84 taxa were found (72 land snails, 12 water snails and mussels) (Table 1). The complete species list and the final report will be published in 2019 in “Silva Fera” (FISCHER & DUDA in prep.). Some noteworthy species to be mentioned are the four endemics *Cylindrus obtusus* (Fig. 5), *Orcula austriaca*, *Trochulus oreinos oreinos* and *Orcula gularis* which are – apart from *O. gularis* – species of the high mountains found in the DWA at altitudes of 1500 m and above. *Cylindrus obtusus* and *Trochulus oreinos oreinos* are endemic to the Northern Calcerous Alps. *Cylindrus obtusus* dwells on several communities of plants, it seems to be bound to unconsolidated stony ground, whereas *T. oreinos oreinos* is a specialist restricted to open dry subalpine and alpine boulder societies and *Caricetum firmae* grassland (DUDA et al. 2010). It occurs only in the federal provinces of Styria and Lower Austria.

During the land snail-surveys, also water snails and mussels were collected. Since the DWA is rather poor in surface waters, only 12 species were recorded. Of the genus *Pisidium*, which contains the smallest freshwater mussels, three species live in the small ponds and pools. Among them *Pisidium globulare* is an interesting finding, since it has only recently been elevated from a form to a full species and therefore, the distributional data is limited (IUCN Red List). Various springs in the DWA are habitats of *Bythinella* sp., a genus of tiny freshwater snails living in springs and sometimes caves or groundwater. In this genus taxonomic assignment at the species level is very difficult. Yet, genetic analyses (DNA barcoding) at the NHMW revealed two distinct haplotypes implying that two species (*Bythinella conica* and *B. austriaca*) might occur within the DWA. However, further analyses are needed to confirm this assumption. Additional springs and caves will be sampled for *Bythinella* and other Hydrobiidae in the future.

Among the species detected, the following are listed in the Austrian Red List of Molluscs (REISCHÜTZ & REISCHÜTZ 2007):

- as “Vulnerable” (VU): *Vertigo substriata*,
- as “Nearly Threatened” (NT): *Arion rufus*, *Caucasotachea vindobonensis*, *Fusulus interruptus*, *Helicigona lapicida*, *Bythinella austriaca* s.str.,
- as “Data Deficient” (DD): *Pisidium globulare*.

At the time of publication, no species listed in Annex II of the Habitats Directive were detected. However, KLEMM (1974) mentioned *Vertigo geyeri* and *V. angustior* in Lunz am See, in the immediate vicinity of the DWA. These findings could not be confirmed by a recent investigation (DUDA 2015).

In general it has to be said, that among the forest-dwelling species in Austria none are specialized on specific forest conditions and only a few are red list species. This might be caused by the fact that large parts of Austria are covered by different types of forest – many of them providing good habitat conditions because of extensive forestry. Thus, there are no “primeval forest relict species” among the molluscs or, in other words, none who are restricted to old growth (beech) forests – at least in Austria. Still, some species are typical “forest dwellers” on a Central European scale that indicate structural qualities (especially forest soil qualities and supply of dead wood) and habitat tradition. KAPPES (2013) gives ten examples of “forest snails”, nine occur in the DWA: Clausiliidae, *Arion silvaticus*, *Arion rufus*, *Eucobresia diaphana* (Fig. 6), *Cepaea hortensis*, *Discus rotundatus*, *Punctum pygmaeum*, *Arianta arborum* (although this is a real generalist) and *Isognomostoma isognomostomos*. The latter is described as an indicator for well-structured forests with much deadwood (KAPPES 2013).

Furthermore, two species, which are classified as “Nearly Threatened” in Austria, should also be highlighted. The door snail *Fusulus interruptus* is considered to be comparably common in Austria, but this is only true for near-natural forests. Because this species has its main distribution in Austria, where it occurs only scattered (SLAPNIK 2017), it deserves closer attention. *Helicigona lapicida* was once a common forest species, but intense forestry repressed it to rock habitats in many areas (REISCHÜTZ & REISCHÜTZ 2007). For this species, areas like the DWA act as a refuge area, as mentioned in the introduction.

Additionally, *Pseudofusulus varians* appears to be a common, “Least Concern” forest species in Austria, while it is a “R” species [extremely rare] in Germany (WIESE 2016) and “Critically Endangered” in the Czech republic, where it is restricted to a few near-natural forest areas (HORSÁK et al. 2013, BERAN et al. 2017)



Fig. 5: The endemic *Cylindrus obtusus* lives in high alpine limestone habitats; Photo: Michaela Sonnleitner.

This year the DWA administration published a brochure (FISCHER 2018) mainly directed at visitors and lay readers, that portrays more than 20 land and water snail species as well as the mussels of the genus *Pisidium*. Since „we only see what we know” it is important to direct people’s attention also to the smaller forms of wildlife, which are easily overlooked and can only be appreciated in their “hidden beauty” when regarded closely. Many visitors think that only three or four snail species exist in their surroundings. For them, it is a real eye-opener to learn that dozens of mollusc species live in a small area like the Wilderness Dürrenstein and that, to fully appreciate nature’s amazing diversity, attentiveness and a deliberate slowing down is needed.



Fig. 6: *Eucobresia diaphana* has a very delicate, translucent shell, into which the animal can not retreat; Photo: Michaela Sonnleitner.

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Land Snails			
	Species/Subspecies/Authorship	German common name	Red List Austria
1	<i>Abida secale</i> (DRAPARNAUD, 1801)	Roggenkornschncke	LC
2	<i>Acanthinula aculeata</i> (O.F. MÜLLER, 1774)	Stachelschncke	LC
3	<i>Acicula lineata</i> (DRAPARNAUD, 1801)	Gestreifte Mulmadel	LC
4	<i>Aegopinella nitens</i> (MICHAUD, 1831)	Weitmündige Glanzschncke	LC
5	<i>Aegopinella pura</i> (ALDER, 1830)	Kleine Glanzschncke	LC
6	<i>Aegopis verticillus</i> (LAMARCK, 1822)	Riesenglanschncke	LC
7	<i>Alinda biplicata</i> (MONTAGU, 1803)	Gemeine Schließmundschncke	LC
8	<i>Arianta arbustorum</i> (LINNAEUS, 1758)	Gefleckte Schnirkelschncke	LC
9	<i>Arion distinctus</i> (MABILLE, 1868)	Gemeine Gartenwegsncke	LC
10	<i>Arion fuscus</i> (O.F. MÜLLER, 1774)	Braune Wegsncke	LC
11	<i>Arion rufus</i> (LINNAEUS, 1758)	(Große) Rote Wegsncke	NT
12	<i>Arion cf. silvaticus</i>	Wald-Wegsncke	LC
13	<i>Arion obesoductus</i> P. REISCHUTZ, 1979	Alpen-Wegsncke	LC
14	<i>Arion vulgaris</i> MOQUIN-TANDON, 1858	Spanische Wegsncke	NE
15	<i>Carychium minimum</i> O.F. MÜLLER, 1774	Bauchige Zwerghornsncke	LC
16	<i>Carychium tridentatum</i> (RISSO, 1826)	Schlanke Zwerghornsncke	LC
17	<i>Caucasotachea vindobonensis</i> (C. PFEIFFER, 1828)	Gerippte Schnirkelschncke	NT
18	<i>Causa holosericea</i> (S. STUDER, 1820)	Genabelte Maskenschncke	LC
19	<i>Cepaea hortensis</i> (O.F. MÜLLER, 1774)	Garten-Schnirkelschncke	LC
20	<i>Chilostoma achates</i> ssp. ⁽¹⁾	Fischäugige Felsenschncke	–
21	<i>Chondrina avenacea</i> (BRUGUIERE, 1792)	Haferkornsncke	LC
22	<i>Clausilia dubia</i> ssp. ⁽²⁾	Gitterstreifige Schließmundschncke	–
23	<i>Cochlicopa lubrica</i> (O.F. MÜLLER, 1774)	Gemeine Glattschncke	LC
24	<i>Cochlodina laminata</i> (MONTAGU, 1803)	Glatte Schließmundschncke	LC
25	<i>Columella edentula</i> (DRAPARNAUD, 1805)	Zahnlose Windelschncke	LC
26	<i>Cylindrus obtusus</i> (DRAPARNAUD, 1805)	Zylinder-Felsenschncke	LC
27	<i>Deroceras agreste</i> (LINNAEUS, 1758)	Einfarbige Ackerschncke	LC
28	<i>Discus perspectivus</i> (MEGERLE VON MÜHLFELD, 1816)	Gekielte Schüsselschncke	LC
29	<i>Discus rotundatus</i> (O.F. MÜLLER, 1774)	Gefleckte Schüsselschncke	LC
30	<i>Ena montana</i> (DRAPARNAUD, 1801)	Berg-Turmschncke	LC
31	<i>Eucobresia diaphana</i> (DRAPARNAUD, 1805)	Ohrförmige Glasschncke	LC
32	<i>Eucobresia nivalis</i> (DUMONT & MORTILLET, 1854)	Alm-Glasschncke	LC
33	<i>Euconulus fulvus</i> (O.F. MÜLLER, 1774)	Helles Kegelchen	LC
34	<i>Fruticola fruticum</i> (O.F. MÜLLER, 1774)	Genabelte Strauchsncke	LC
35	<i>Fusulus interruptus</i> (C. PFEIFFER, 1828)	Spindel-Schließmundschncke	NT
36	<i>Helicigona lapicida</i> (LINNAEUS, 1758)	Steinpicker	NT
37	<i>Helix pomatia</i> LINNAEUS, 1758	Weinbergschncke	LC
38	<i>Isognomostoma isognomostomos</i> (SCHROTER, 1784)	Maskenschncke	LC
39	<i>Lehmannia marginata</i> (O.F. MÜLLER, 1774)	Baumchnegel	LC
40	<i>Limax cinereoniger</i> WOLF, 1803	Schwarzer Schnegel	LC

41	<i>Macrogastera ventricosa</i> (DRAPARNAUD, 1801)	Bauchige Schließmundschnecke	LC
42	<i>Macrogastera plicatula</i> ssp. ⁽¹⁾	Gefältelte Schließmundschnecke	–
43	<i>Monachoides incarnatus</i> (O.F. MÜLLER, 1774)	Rötliche Laubschnecke	LC
44	<i>Neostyriaca corynodes</i> (HELD, 1836)	Kalkfelsen-Schließmundschnecke	LC
45	<i>Nesovitrea hammonis</i> (STRÖM, 1765)	Braune Streifenglanzschnecke	LC
46	<i>Noricella oreinos oreinos</i> (A.J. WAGNER, 1915)	Runde Ostalpen-Haarschnecke	LC
47	<i>Orcula austriaca</i> S. ZIMMERMANN, 1932	Österreichische Fässschnecke	LC
48	<i>Orcula dolium</i> (DRAPARNAUD, 1801)	Große Fässschnecke	LC
49	<i>Orcula gularis</i> (ROSSMÄSSLER, 1837)	Schlanke Fässschnecke	LC
50	<i>Oxychilus cellarius</i> (O.F. MÜLLER, 1774)	Keller-Glanzschnecke	LC
51	<i>Oxychilus draparnaudi</i> (BECK, 1837)	Große Glanzschnecke	LC
52	<i>Oxyloma elegans</i> (RISSO, 1826)	Schlanke Bernsteinschnecke	LC
53	<i>Pagodulina pagodula principalis</i> KLEMM, 1939	Feingestreifte Pagodenschnecke	LC
54	<i>Petasina edentula subleucozona</i> (WESTERLUND, 1889)	Zahnlose Haarschnecke	LC
55	<i>Petasina unidentata</i> ssp. ⁽¹⁾	Einzähnlige Haarschnecke	–
56	<i>Pseudofusus varians</i> (C. PFEIFFER, 1828)	Gedrungene Schließmundschnecke	LC
57	<i>Punctum pygmaeum</i> (DRAPARNAUD, 1801)	Punktschnecke	LC
58	<i>Pyramidula pusillalsaxatila</i> ⁽³⁾	Felsen-Pyramidenschnecke	–
59	<i>Semilimax semilimax</i> (J. FERUSSAC, 1802)	Weitmündige Glasschnecke	LC
60	<i>Succinea putris</i> (LINNAEUS, 1758)	Gemeine Bernsteinschnecke	LC
61	<i>Trochulus hispidus</i> (LINNAEUS, 1758)	Gemeine Haarschnecke	LC
62	<i>Urticicola umbrosus</i> (C. PFEIFFER, 1828)	Schatten-Laubschnecke	LC
63	<i>Vallonia excentrica</i> STERKI, 1893	Schiefe Grasschnecke	LC
64	<i>Vertigo alpestris</i> ALDER, 1838	Alpen-Windelschnecke	LC
65	<i>Vertigo substriata</i> (JEFFREYS, 1833)	Gestreifte Windelschnecke	VU
66	<i>Vertigo pusilla</i> O.F. MÜLLER, 1774	Linksgewundene Windelschnecke	LC
67	<i>Vitrea contracta</i> (WESTERLUND, 1871)	Weitgenabelte Kristallschnecke	LC
68	<i>Vitrea crystallina</i> (O.F. MÜLLER, 1774)	Gemeine Kristallschnecke	LC
69	<i>Vitrea diaphana</i> (STUDER, 1820)	Ungenabelte Kristallschnecke	LC
70	<i>Vitrea subrimata</i> (REINHARDT, 1871)	Enggenabelte Kristallschnecke	LC
71	<i>Vitrina pellucida</i> (O.F. MÜLLER, 1774)	Kugelige Glasschnecke	LC
72	<i>Zonitoides nitidus</i> (O.F. MÜLLER, 1774)	Glänzende Dolchschncke	LC
Water Snails			
1	<i>Ancylus fluviatilis</i> O.F. MÜLLER, 1774	Flussnapfschnecke	LC
2	<i>Bythinella austriaca</i> s.str. (FRAUENFELD, 1857)	Österreichische Quellschnecke	NT
3	<i>Galba truncatula</i> (O.F. MÜLLER, 1774)	Kleine Sumpfschnecke	LC
4	<i>Lymnaea stagnalis</i> (LINNAEUS, 1758)	Spitzhornschnecke	LC
5	<i>Physella acuta</i> (DRAPARNAUD, 1805)	Spitze Blasenschnecke	NE
6	<i>Pisidium personatum</i> MALM, 1855	Quell-Erbsenmuschel	LC
7	<i>Pisidium globulare</i> CLESSIN, 1873	Sumpf-Erbsenmuschel	DD
8	<i>Pisidium casertanum</i> (POLI, 1791)	Gemeine Erbsenmuschel	LC
9	<i>Planorbis planorbis</i> LINNAEUS, 1758	Gemeine Tellerschnecke	LC
10	<i>Radix balthica</i> (LINNAEUS, 1758)	Eiförmige Schlamm-schnecke	LC
11	<i>Stagnicola corvus</i> (GMELIN, 1791)	Schlamm-schnecke	LC
12	<i>Valvata piscinalis</i> (O.F. MÜLLER, 1774)	Gemeine Federkiemenschnecke	LC

⁽¹⁾ As the subspecific classification of *Chilostoma achates*, *Macrogastera plicatula* and *Petasina unidentata* is not yet clarified, no subspecies are designated.

⁽²⁾ According to KLEMM (1974) the subspecies „*obsoleta*“ inhabits the investigated area. As the subspecific classification of *C. dubia* is not yet clarified, no subspecies are designated.

⁽³⁾ Until now, *Pyramidula pusilla* and *P. saxatila* cannot be differentiated anatomically.

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