

CONTRIBUTION TO THE KNOWLEDGE OF THE MALACOFAUNA OF THE OJCÓW NATIONAL PARK

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ABSTRACT: The Ojców National Park malacofauna, although studied for more than a hundred years, is still insufficiently known. The paper deals with the malacofauna collected at four localities within the Ojców National Park. It comprises 73 species, out of which there are six new for the area. The authors give an ecological classification of the recorded species, the resulting check list of the malacofauna being compared with former data.

KEY WORDS: Gastropoda, land snails, ecological groups, faunistics, checklist

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ABSTRACT

The Ojców National Park malacofauna, although studied for more than a hundred years, is still insufficiently known. The paper deals with the malacofauna collected at four localities within the Ojców National Park. It comprises 73 species, out of which there are six new for the area. The authors give an ecological classification of the recorded species, the resulting check list of the malacofauna being compared with former data.

1. Introduction

It is for nearly 140 years that the malacofauna of the Ojców National Park has been studied. The first records of the occurrence of molluscs in the Ojców region are those of WAGA (1855, 1857). They are reports from naturalists' trips to Ojców, made in 1853 and 1854. Latter papers dealing with the malacofauna of the said region refer to the first reports. It was only 60 years after the studies of the malacofauna of Ojców had been initiated that POLIŃSKI (1914) published a critical review of the earlier observations on the subject. The review covered not only the published data but also unpublished ones (e.g. those collected by F. BIENIASZ). In his paper, POLIŃSKI listed 84 mollusc species he had admitted as inhabiting the area of the present Ojców National Park. Some of the species, given in earlier papers, the occurrence of which he had not confirmed, he cited with an annotation [*Chilostoma rossmaesleri* (L.PFEIFFER, 1842), *Cochlodina costata* (C.PFEIFFER, 1828), *Bythinella durkeri* (FRAUENFELD, 1856)].

The next critical review considering, from the zoogeographical point of view, new species recorded, was published by URBAŃSKI (1977) regarding the area in question as a well known one, with 85 to 90 mollusc species known to occur there.

The material that the present paper deals with was collected in September, 1988, from some localities of the Ojców National Park, to obtain as many gastropod species as possible. Some other localities of the Kraków-Wieluń Upland were also surveyed for latter comparisons to be given in a separate paper.



Malacocoenoses of the studied localities in the Ojców National Park

Ecologic group (LOZEK 1964)	Species	Locality			
		A	B	C	D
I. Closed forest	<i>Acanthinula aculeata</i> (O.F.MÜLLER, 1774)	2	2	5	
	<i>Acicula parcelineata</i> (CLESSIN, 1911)		1		
	<i>A. polita</i> (HARTMANN, 1840)		1	2	
	<i>Aegopinella pura</i> (ALDER, 1830)	6	2	31	3
	<i>Arion circumscriptus</i> (JOHNSTON, 1828)	1			
	<i>A. sibiricus</i> (LOHMANDER, 1937)		2		
	<i>Bielzia coerulans</i> (M.BIELZ, 1851)		1		
	<i>Cochlodina laminata</i> (MONTAGU, 1803)		2		1
	<i>C. orthostoma</i> (MENKE, 1830)	6	12		
	<i>Daudebardia rufa</i> (DRAPARNAUD, 1805)			1	
	<i>Discus perspectivus</i> (MÜHLFELD, 1816)			4	
	<i>Ena montana</i> (DRAPARNAUD, 1801)		17	2	
	<i>E. obscura</i> (O.F.MÜLLER, 1774)	5			
	<i>Eucobresia nivalis</i> (DUMONT et MORTILLET, 1852)				7
	<i>Chilostoma laustinum</i> (ROSSMÄSSLER, 1835)	4	28		1
	<i>Isognomostoma isognomostoma</i> (SCHROETER, 1784)		9		
	<i>Lehmanna marginata</i> (O.F.MÜLLER, 1774)		1		
	<i>Macrogastera plicatula</i> (DRAPARNAUD, 1801)		1		
	<i>Oxychilus depressus</i> (STERKI, 1880)	1	2	4	
	<i>Perforatella incarnata</i> (O.F.MÜLLER, 1774)	3	14		1
	<i>Sphyradium dolioleum</i> (BRUGUIERE, 1792)	16		4	
	<i>Trichia unidentata</i> (DRAPARNAUD, 1805)	1	3	9	2
	<i>Verigo pusilla</i> O.F.MÜLLER, 1774		7	40	
	<i>Vitrea diaphana</i> (STUDER, 1820)			2	
	<i>V. subrimata</i> (REINHARDT, 1871)	3	5		
	II. Woodland-scrub- timbered steppe	<i>Aegopinella minor</i> (STABILE, 1864)	1		3
<i>Arianta arbustorum</i> (LINNAEUS, 1758)					1
<i>Arion subfuscus</i> (DRAPARNAUD, 1805)					1
<i>Balea biplicata</i> (MONTAGU, 1803)		62	28		13
<i>Bradybaena fruticum</i> (O.F.MÜLLER, 1774)			1		
<i>Cepaea herkensis</i> (O.F.MÜLLER, 1774)			1		
<i>Discus rotundatus</i> (O.F.MÜLLER, 1774)		15	4	22	2
<i>Helix pomatia</i> LINNAEUS, 1758		1	1		
<i>Limax cinctus</i> WOLF, 1803				1	
<i>Oxychilus glaber</i> (ROSSMÄSSLER, 1835)			1		
III. Moist woodland	<i>Vitrea crystallina</i> (O.F.MÜLLER, 1774)		2	10	1
	<i>Macrogastera ventricosa</i> (DRAPARNAUD, 1801)	2			
	<i>Perforatella umbrosa</i> (C.PFEIFFER, 1828)	2	15		
IV. Steppe, xeric rocks	<i>P. vicina</i> (ROSSMÄSSLER, 1842)		4		4
	<i>Cepaea vindobonensis</i> (FÉRUSSAC, 1821)				1
	<i>Chondrina clienta</i> (WESTERLUND, 1883)	15	3	33	
	<i>Pupilla sterri</i> (VOITH, 1838)	7	4	10	
	<i>Pupilla triplicata</i> (STUDER, 1820)			1	
V. Open country in general	<i>Pyramidula rupestris</i> (DRAPARNAUD, 1801)	17	7	45	
	<i>Euomphalia strigella</i> (DRAPARNAUD, 1801)	1			1
	<i>Pupilla muscorum</i> (LINNAEUS, 1758)	6			
	<i>Truncatellina cylindrica</i> (FÉRUSSAC, 1807)	48		2	5
	<i>Vallonia costata</i> (O.F.MÜLLER, 1774)	51	53	240	
	<i>V. excentrica</i> STERKI, 1892	1			
VI. Dry habitats	<i>V. pulchella</i> (O.F.MÜLLER, 1774)	13		8	
	<i>Cochlicopa lubricella</i> (PORRO, 1838)	2	1		
VII. Mesic or diverse habitats	<i>Arion fasciatus</i> (NILSSON, 1822)				1
	<i>Clausilia dubia</i> DRAPARNAUD, 1805	16	18	31	1
	<i>C. parrula</i> FÉRUSSAC, 1807	1	22	52	
	<i>Cochlicopa lubrica</i> (O.F.MÜLLER, 1774)			10	

VII. (cont.) Mesic or diverse habitats	<i>Deroceras reticulatum</i> (O.F.MULLER, 1774)	1	1	3	
	<i>Eucornutus fulvus</i> (O.F.MULLER, 1774)	2	6	29	
	<i>Helicigona lapicida</i> (LINNAEUS, 1758)		3		
	<i>Limax maximus</i> LINNAEUS, 1758				1
	<i>Nesovireea hammonis</i> (STROM, 1765)		1	4	
	<i>Oxychilus cellarius</i> (O.F.MULLER, 1774)			1	
	<i>Punctum pygmaeum</i> (DRAPARNAUD, 1801)	25	5	18	
	<i>Vertigo alpestris</i> ALDER, 1838	1	17	45	
	<i>Vitrea contracta</i> (WESTERLUND, 1871)	1	3	4	
	<i>Vitrea pellucida</i> (O.F.MULLER, 1774)	11		7	2
VIII. Damp habitats	<i>Carychium tridentatum</i> (RISSO, 1826)	34	10	58	
	<i>Columella edentula</i> (DRAPARNAUD, 1805)			5	
	<i>Trichia villosula</i> (ROSSMASSLER, 1838)	7			4
	<i>Vertigo substriata</i> (JEFFREYS, 1833)		1		
IX. Marshes and other very moist terrestrial habitats	<i>Bythinopsis neglectissimum</i> FALNIOWSKI et STEFFEK, 1989			9	
	<i>Zonitoides nitidus</i> (O.F.MULLER, 1774)				1
X. Freshwater habitats in general	<i>Bythinella austriaca</i> (FRAUENFELD, 1856)		1		
	<i>Lymnaea truncatula</i> (O.F.MULLER, 1774)	1			

Locality: A - Castle of Ojców, limestone rocks and rubble in the forest; B - Krakowska Brama, an old forest on rocky substrate; D - Pieskowa Skała, boulders in forest.

2. Study area

The Ojców National Park is situated in the southern part of the Kraków-Wieluń Upland. It covers the middle, 5 km long section of the valley of the Pradnik stream and the adjacent area of the Jurassic upland. The total area of the Park is 1590 ha. It is formed of Jurassic limestone. Along the valley there are separate limestone rocks, 12...40 m high, which are fragments of earlier terraces. There are about 200 caverns in the rocks. The mean annual temperature of the area is 7.5°C, the rainfall reaching 800 mm. It is known that man settled in the area as early as 120,000 to 115,000 years ago (the cave Jaskinia Ciemna). Hence, the Ojców region is considerably changed by man, which also concerns the composition of the malacofauna (URBAŃSKI 1977).

A mosaic of different biotopes covering a relatively small area provides suitable conditions for a rich variety of species of molluscs from various ecologic groups (*sensu* LOŹEK 1964), which was shown by earlier studies.

The reason why the natural conditions of the said area have aroused so much interest is that it is part of one of the most interesting lands of Poland - the vicinities of Kraków, in particular. Kraków has for a long time been a cultural and scientific centre, with distinguished malacologists who did a lot to extend the knowledge of the region. Last but not least, the Ojców region is formed of Jurassic limestones which create a favourable substrate for malacofauna.

The material was collected as for a study of land snails. The freshwater species found in the collection were subfossil ones [*Bythinella austriaca* (FRAUENFELD, 1856), *Galba truncatula* (O.F.MÜLLER, 1774)] The nomenclature we have adopted is after KERNEY, CAMERON & JUNGBLUTH (1983).

Check-list of recent molluscs of Ojców

Ecological groups (LZK)	Species	POL	URB	*
1. Closed forest	<i>Acanthinuta aculeata</i> (O.F.MÜLLER, 1774)	+	+	+
	<i>Apicula parcolineata</i> (CLESSIN, 1911)	+	+	+
	<i>A. polita</i> (HARTMANN, 1840)	+	DZ	+
	<i>Aegopinella pura</i> (ALDER, 1830)	+	+	+
	<i>Arion circumscriptus</i> JOHNSTON, 1828	+	W	+
	<i>A. silvaticus</i> LOHMANDER, 1937	-	W	+
	<i>Bielzia coerulans</i> (M.BIELZ, 1851)	+	+	+
	<i>Bulgarica cana</i> (HELD, 1836)	+	+	-
	<i>Cochlodina laminata</i> (MONTAGU, 1803)	+	+	+
	<i>C. orthostoma</i> (MENKE, 1830)	+	+	+
	<i>Doudebardia rufa</i> (DRAPARNAUD, 1805)	+	+	+
	<i>Discus perspectivus</i> (MÜHLFELD, 1816)	+	+	+
	<i>D. ruderalis</i> (FERUSSAC, 1821)	-	+	-
	<i>Ena montana</i> (DRAPARNAUD, 1801)	+	+	+
	<i>E. obscura</i> (O.F.MÜLLER, 1774)	+	+	+
	<i>Chilostoma laustinum</i> (ROSSMÄSSLER, 1835)	+	+	+
	<i>Isognomostoma isognomostoma</i> (SCHROTTER, 1784)	+	+	+
	<i>Lehmannia marginata</i> (O.F.MÜLLER, 1774)	-	+	+
	<i>Eucobresia nivalis</i> (DUMONT et MORTILLET, 1852)	-	-	+
	<i>Macrogastrea plicatula</i> (DRAPARNAUD, 1801)	+	+	+
	<i>Malacolimax tenellus</i> O.F.MÜLLER, 1774	+	W	-
	<i>Oxychilus depressus</i> (STERKI, 1880)	-	+	+
	<i>Perforatella incarnata</i> (O.F.MÜLLER, 1774)	+	+	+
	<i>Ruthenica filigrana</i> (ROSSMÄSSLER, 1836)	+	-	-
	<i>Sphyradium dolium</i> (BRUGUIERE, 1792)	+	+	+
	<i>Trichia unidentata</i> (DRAPARNAUD, 1805)	+	+	+
	<i>Vertigo pusilla</i> O.F.MÜLLER, 1774	+	+	+
	<i>Vitrea diaphana</i> (STUDER, 1820)	+	+	+
	<i>V. subrimata</i> (REINHARDT, 1871)	-	-	+
	2. Woodland-scrub- timbered steppe	<i>Aegopinella minor</i> (STABILE, 1864)	+	+
<i>Arion subfuscus</i> (DRAPARNAUD, 1805)		+	+	+
<i>Arianta arbustorum</i> (LINNAEUS, 1758)		+	DZ	+
<i>Balea biplicata</i> (MONTAGU, 1803)		+	+	+
<i>Bradybaena fruticum</i> (O.F.MÜLLER, 1774)		+	+	+
<i>Cepaea hortensis</i> (O.F.MÜLLER, 1774)		+	+	+
<i>Discus rotundatus</i> (O.F.MÜLLER, 1774)		+	+	+
<i>Helix pomatia</i> LINNAEUS, 1758		+	+	+
<i>Oxychilus glaber</i> (ROSSMÄSSLER, 1835)		+	+	+
<i>Vitrea crystallina</i> (O.F.MÜLLER, 1774)		+	DZ	+
<i>Limax cinereoniger</i> WOLF, 1803		-	W	+
3. Moist woodland		<i>Macrogastrea ventricosa</i> (DRAPARNAUD, 1801)	+	DZ
	<i>Perforatella bidentata</i> (GMELIN, 1788)	+	-	-
	<i>P. vicina</i> (ROSSMÄSSLER, 1842)	+	+	+
	<i>P. umbrosa</i> (C.PFEIFFER, 1828)	+	+	+
4. Steppe, xeric rocks	<i>Helicella obvia</i> (MENKE, 1826)	+	+	-
	<i>Cepaea vindobonensis</i> (FERUSSAC, 1821)	+	+	+
	<i>Chondrina clienta</i> (WESTERLUND, 1883)	+	+	+
	<i>Chondrula tridens</i> (O.F.MÜLLER, 1774)	+	-	-
	<i>Pupilla sterri</i> (VOITH, 1838)	+	+	+
	<i>P. triplicata</i> (STUDER, 1820)	-	-	+
	<i>Pyramidula rupestris</i> (DRAPARNAUD, 1801)	+	+	+
<i>Truncatellina claustralis</i> (GREDLER, 1856)	-	+	-	
5. Open country in general	<i>Euomphalia strigella</i> (DRAPARNAUD, 1801)	+	+	+
	<i>Pupilla muscorum</i> (LINNAEUS, 1758)	+	+	+
	<i>Truncatellina cylindrica</i> (FERUSSAC, 1807)	+	+	+
	<i>Vallonia costata</i> (O.F.MÜLLER, 1774)	+	+	+
	<i>V. excentrica</i> STERKI, 1892	-	-	+

5. (cont.)	<i>V. pulchella</i> (O.F. MÜLLER, 1774)	+	-	+
	<i>Vertigo pygmaea</i> (DRAPARNAUD, 1801)	-	+	-
6. Dry habitats	<i>Cochlicopa lubricella</i> (PORRO, 1838)	-	+	+
	<i>Arion fasciatus</i> (NILSSON, 1822)	-	W	+
	<i>Clausilia dubia</i> DRAPARNAUD, 1805	+	+	+
	<i>C. parvula</i> FERUSSAC, 1807	+	+	+
	<i>Cochlicopa lubrica</i> (O.F. MÜLLER, 1774)	+	+	+
	<i>Deroceras reticulatum</i> (O.F. MÜLLER, 1774)	-	W	+
	<i>D. agreste</i> (LINNAEUS, 1758)	+	DZ	-
	<i>D. rodnae</i> GROSSU et LUPU, 1965	-	W	-
	<i>D. sturanyi</i> (SIMROTH, 1894)	-	W	-
7. Mesic or diverse habitats	<i>Euconulus fulvus</i> (O.F. MÜLLER, 1774)	+	DZ	+
	<i>Lehmanna nictelia</i> (BOURGUIGNAT, 1861)	-	W	-
	<i>Limax maximus</i> LINNAEUS, 1758	+	+	+
	<i>Helicigona lapicida</i> (LINNAEUS, 1758)	+	+	sf
	<i>Laciniaria plicata</i> (DRAPARNAUD, 1801)	+	-	-
	<i>Nesovireta hammonis</i> (STROM, 1765)	-	DZ	+
	<i>Punctum pygmaeum</i> (DRAPARNAUD, 1801)	+	+	+
	<i>Oxychilus cellarius</i> (O.F. MÜLLER, 1774)	+	-	+
	<i>Trichia lubomirskii</i> (SŁOSARSKI, 1881)	+	+	-
	<i>Vertigo alpestris</i> ALDER, 1838	+	+	+
	<i>Vitrea contracta</i> (WESTERLUND, 1871)	-	-	+
	<i>Vitrea pellucida</i> (O.F. MÜLLER, 1774)	+	DZ	+
8. Damp habitats	<i>Carychium tridentatum</i> (RISSO, 1826)	-	DZ	+
	<i>Columella edentula</i> (DRAPARNAUD, 1805)	-	-	+
	<i>Succinea oblonga</i> DRAPARNAUD, 1801	+	-	+
	<i>Trichia villosula</i> (ROSSMÄSSLER, 1838)	+	+	+
	<i>Vertigo substriata</i> (JEFFREYS, 1833)	-	+	+
9. Marshes and other very moist terrestrial habitats	<i>Bythiospeum neglectissimum</i> FALNIOWSKI et STEFFEK, 1989	-	-	+
	<i>Carychium minimum</i> O.F. MÜLLER, 1774	+	-	-
	<i>Oxydoma elegans</i> (RISSO, 1826)	+	-	-
	<i>Succinea putris</i> (LINNAEUS, 1758)	+	+	-
	<i>Zonitoides nitidus</i> (O.F. MÜLLER, 1774)	+	+	+
	<i>Ancylus fluviatilis</i> O.F. MÜLLER, 1774	-	+	-
10. Freshwater habitats in general	<i>Bythinella austriaca</i> (FRAUENFELD, 1856)	+	+	+
	<i>Lymnaea peregra</i> (O.F. MÜLLER, 1774)	+	+	-
	<i>L. auricularia</i> (LINNAEUS, 1758)	+	-	-
	<i>L. stagnalis</i> (LINNAEUS, 1758)	+	-	-
	<i>L. truncatula</i> (O.F. MÜLLER, 1774)	+	+	+
	<i>L. palustris</i> (O.F. MÜLLER, 1774)	+	-	-
	<i>Planorbis corneus</i> (LINNAEUS, 1758)	+	-	-
	<i>Viviparus contectus</i> (MILLET, 1813)	+	-	-
	<i>Pisidium personatum</i> MALM, 1855	-	+	-

Explanatory notes: + - present, - - absent, DZ - DZIĘCZKOWSKI (1972), W - WIKTOR (1973), sf - subfossil, POL - POLIŃSKI (1914), URB - URBAŃSKI (1977), LZK - LOŹEK (1964), * - present authors

3. Studied localities

A - the castle of Ojców - a hill with a ruin of a castle, overgrown with maple (*Acer pseudoplatanus* L.), hazel (*Corylus avellana* L.) and lime (*Tilia platyphyllos* SCOP.). A rich malacofauna biotope is the large foot of limestone walls at the gate of the castle. The tops of the limestone rocks are inhabited by a typical xerophilous malacofauna. It is from here that the species *Vallonia excentrica* STERKI, 1892 and *Vitrea contracta* (WESTERLUND, 1871) were found for us, which was its first record from the Ojców region.

B – the Krakowska Brama rocks – an old forest of beech (*Fagus sylvatica* L.), lime (*Tilia platyphyllos* SCOP.) and maple (*Acer pseudoplatanus* L.) growing on a rocky substrate. The locality is humid enough to be inhabited by a considerable number of snail species (53). Alternatively, the limestone rocks are a habitat of a xerophilous malacofauna. From this locality, we recorded for the first time for the said region the following species: *Columella edentula* (DRAPARNAUD, 1805), *Vitrea subrimata* (REINHARDT, 1871), and *Pupilla triplicata* (STUDER, 1820). We also recorded there a few subfossil specimens of *Helicigona lapicida* (LINNAEUS, 1758). Despite a thorough search, we could not find a living specimen at the time of study. However, it was only two years later (August 1990) that we had found one living adult.

C – the Krakowska Brama rock (a small cave) – a slit in the slope of the valley, behind the gate of rocks. Among the snail species found there there were representatives of the family *Mitessieriidae*. They were described as a new species, under the name *Bythiospeum neglectissimum* FALNIOWSKI et ŠTEFFEK, 1989 (FALNIOWSKI & ŠTEFFEK 1989). The other species found there are: *Vitrea subrimata*, *V. contracta* (WESTERLUND, 1871), and *Nesovitrea hammonis* (STROM, 1765).

D – Pieskowa Skala – a forest growing on a rocky substrate, below the walls of the castle. The forest consists of maple (*A. pseudoplatanus*), lime (*T. platyphyllos*), and others. From this locality we recorded *Eucobresia nivalis* (DUMONT et MORTILLET, 1852), which was for the first time from the said region.

Snail species and their respective localities are listed in Tab. 1.

4. Remarks on species

A comparative list of the malacofauna of Ojców (Tab. 2) covers 100 recent species of molluscs recorded so far from the area of the Ojców National Park. According to POLIŃSKI (1914) and URBANSKI (1977) we have not considered the species which were erroneously recorded from the Ojców region by either confused labels [*Macrogaster latestriata* (A.SCHMIDT, 1857), *Cochlodina costata* (C. Pfeiffer, 1828)] or an erroneous determination [*Aegopinella nitens* (MICHAUD, 1831), *Chilostoma rossmaestri*, *Trichia hispida* (LINNAEUS, 1758), *T. plebeia* (DRAPARNAUD, 1805), *Bythinella cylindrica* (FRAUENFELD, 1856), *B. dunkeri*, *Arion hortensis* FERUSSAC, 1819]. Similarly, we have not distinguished *Lymnaea peregra* f. *ovata* (DRAPARNAUD) whose systematical position remains still open (FALNIOWSKI, 1980, 1981, 1983).

In the present study we have recorded the occurrence of 73 species, out of which there are six new for the area of the Park (*Vitrea subrimata*, *V. contracta*, *Pupilla triplicata*, *Vallonia excentrica*, *Eucobresia nivalis*, *Bythiospeum neglectissimum*). Furthermore, the species *B. neglectissimum* has not been known so far (FALNIOWSKI & ŠTEFFEK 1989).

We have not sampled some biotopes as, for instance, xeric slopes overgrown with grass and marshes and other very moist terrestrial habitats. It is the reason why we have not recorded

either *Helicella obvia* and *Chondrula tridens*, or *Carychium minimum*, *Oxytoma elegans* and *Succinea putris*, the latter three having recently been recorded by RIEDEL (1988).

The most numerous ecologic group is the one comprising forest and prevailingly forest snails (ecologic groups 1 and 3 in the sense of LOŽEK 1964). The group consists of 44 species. The second group as to the number of species is that covering 20 indifferent species (ecologic group 7). Tab. 3 presents numbers of species, according to ecologic groups (sensu LOŽEK 1964), recorded by particular authors.

Table 3

Ecologic group	POLIŃSKI	URBAŃSKI et al.	present paper	Σ
1	23	26	25	29
2	10	11	11	11
3	4	3	3	4
4	6	6	5	8
5	5	5	6	7
6	0	1	1	1
7	13	17	14	20
8	2	3	5	5
9	4	2	2	5
10	8	5	2	10
Species	75	79	74	100

The above list proves the character of the studied area to be predominantly forest and indicates that the region has never been completely deforested. This is mainly confirmed by the presence of some species of ecologic group 1., which are sensitive to deforestation (*Acicula parcelineata*, *Bulgarica cana*, *Discus perspectivus*, *D. ruderatus*, *Ruthenica filigrana*, *Vitrea subrimata*).

We do not pretend to claim that the present list of the snail species of the Ojców National Park is complete. A thorough study of the remaining biotopes (meadows, freshwater habitats, xeric slopes, alluvia) may reveal other species that are known to occur in the close vicinity, namely the Kraków-Wieluń Upland (POLIŃSKI 1914, WIKTOR 1973, URBAŃSKI 1977, RIEDEL 1988). These are the species: *Vertigo antivertigo* (DRAPARNAUD, 1801), *V. angustior* JEFFREYS, 1830, *Deroceras laeve* (O.F.MÜLLER, 1774), *Clausilia pumila* C.PFEIFFER, 1828, *Cecilioides acicula* (O.F.MÜLLER, 1774), *Perforatella rubiginosa* (A.SCHMIDT, 1853). It is also probable that the West-European species *Arion ater* (LINNAEUS, 1758) whose distribution range is extending

eastward, occurs in the Ojców National Park area. The latter species, for instance, is numerous in the vicinity of Krynica (ŠTEFFEK unpublished data).

5. Nature conservation aspect: discussion and conclusions

As it has been mentioned above, the studied area comprises the north or, in some cases, the east distribution border of the majority of mainly Alpine and Carpathian species (c.f. URBAŃSKI 1977). On the other hand, some Carpathian species of the family *Clausiliidae* which have been found in the Pieniny Mountains, Holy Cross Mountains, and at the Bukowa Mountain (*Macrogastera latestriata*, *M. tumida* (ROSSMÄSSLER, 1836), *Balea fallax* (ROSSMÄSSLER, 1836), *Vestia elata* (ROSSMÄSSLER, 1836), *V. turgida* (ROSSMÄSSLER, 1836) do not occur here. Hence, as concerns the zoogeography of molluscs, the Ojców National Park can be regarded as a unique area, since no parallel to it can be found all over Poland.

Considering the recent data on the distribution pattern of particular snail species on the area of Poland, we put forward the proposal to classify selected species of the Ojców National Park to four groups, using the criteria "endangered" and "rare" (sensu ŠTEFFEK 1987a):

1. Critically endangered species - very rare everywhere in Poland, single localities in the Park; the species very sensitive to, for instance, deforestation: *Helicigona lapicida*, *Acicula parcelineata*, *Truncatellina claustralis*, *Pupilla triplicata*, *Bulgarica cana*, *Discus ruderalis*, *Bythiospeum neglectissimum*.

2. Endangered species - quite rare all over Poland; a few localities in the area of the Ojców Park; their distribution is getting more and more limited by man: *Pyramidula rupestris*, *Vitrea subrimata*, *Helicella obvia*, *Helix pomatia*, *Vertigo substriata*, *Pupilla sterri*.

3. Rare species - very rarely found in the Park area, the majority of the species have the distribution border here: *Vertigo pygmaea*, *V. alpestris*, *Chondrina clienta*, *Valtonia excentrica*, *Discus perspectivus*, *Vitrea diaphana*, *Daudebardia rufa*, *Lehmannia myctelka*, *Bielzia coerulans*, *Ruthenica filigrana*, *Clausilia parvula*, *Laciniaria plicata*.

4. Extinct species - species that probably have already died out in the area of the Park: *Cepaea nemoralis* (LINNAEUS, 1758), *Helix lutescens* ROSSMÄSSLER, 1837.

Finally, it must be said that the area of the Ojców National Park fully deserves more protection owing to the occurrence of such malacocenoses that, from the point of view of zoogeography, are very important in the whole Europe. As the so far unique area of the occurrence of the newly described species *Bythiospeum neglectissimum*, it should be regarded as a locality of an international significance (ŠTEFFEK 1987b).

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STRESZCZENIE

Materiały do znajomości malakofauny Ojcowskiego Parku Narodowego

Malakofauna Ojcowskiego Parku Narodowego, choć będąca obiektem badań od ponad stu lat, jest nadal niedostatecznie poznana. Praca omawia mięczaki zebrane na czterech stanowiskach w obrębie Ojcowskiego Parku Narodowego. Stwierdzono 73 gatunki, w tym sześć nowych dla tego terenu. Autorzy zamieszczają ekologiczną klasyfikację stwierdzonych gatunków, a także porównują listę stwierdzonych gatunków z wynikami wcześniejszych badań tego terenu.