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COCHLODINA COSTATA (C. PFEIFFER, 1828) (GASTROPODA: PULMONATA: CLAUSILIIDAE) IN POLAND

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ABSTRACT: An endangered species, *Cochlodina costata* (C. Pfeiffer), believed to be extinct in Poland, was found on Mt. Miłek (Kaczawskie Mts, SW. Poland).

Cochlodina costata (C. Pfeiffer, 1828) is an East Alpine-Dinaric species, with insular localities in Franconian Jura, and through the Czech-Moravian Upland to the Sudetes. Allegedly it was recorded from the Transcarpathian part of Ukraine (cf. LIKHAREV 1962, RIEDEL 1988), but it is not included in the recent, unpublished check-list of Ukrainian terrestrial gastropods (SVERLOVA personal communication). It was always regarded as very rare in Poland. Nineteenth and early twentieth century authors recorded it from several localities in the Kaczawskie Mts (W. Sudetes): Mt. Połom near Wojcieszów – type locality for *C. silesiaca* A. Schmidt (SCHOLTZ 1845, SCHMIDT 1868, REINHARDT 1874, CLESSIN 1882, 1884, MERKEL 1887, 1894), Mt. Miłek near Wojcieszów (MERKEL 1894), vicinity of Wojcieszów (EHRMANN 1933), Płonina near Wojcieszów (SCHMIDT 1868, CLESSIN 1882, MERKEL 1894, EHRMANN 1933), and vicinity of Jelenia Góra [most probably also the Kaczawskie Mts] (MERKEL 1894, EHRMANN 1933). SCHOLTZ (1843) and PAX (1921) recorded it from the Ślęża mountain near Wrocław. Imprecise mentions of its occurrence: "Silesia" (SCHOLTZ 1843, 1852, O. BOETTGER 1878, MERKEL 1884, WESTERLUND 1884, C. R. BOETTGER 1926), "mountains of Silesia" (GEYER 1909, 1927), "Silesia and the Sudetes" (URBAŃSKI 1947), "Sudetes" (URBAŃSKI 1957, LIKHAREV 1962) refer to the localities in the Kaczawskie Mts and/or Ślęża mountain. According to WIKTOR (1956, 1964, 2004) in the first half of the 20th c. it became extinct on Mt. Ślęża and Mt. Połom, and later also on Mt. Miłek. No specimens from any of the sites in the Kaczawskie Mts or on Ślęża mountain could be found in MERKEL's and PAX's collections at the Natural History Museum, Wrocław University, but SCHOLTZ's collection contains two lots, one from Płonina, labelled "*Clausiliastra commutata*" [= *Cochlodina costata*], another from Mt. Połom, labelled "*Clausiliastra commutata* f. *silesiaca*". The last record from Mt. Miłek was from 1962 (WIKTOR 1964), and 20 shells are in the collection of the Natural History Museum in Wrocław. Later, repeated attempts, by several persons, to re-find it in any of the sites in the Kaczawskie Mts (POKRYSZKO 1984, PAKIET 1993) or Mt. Ślęża failed, though numerous subfossil shells were found on Mt. Miłek, in deposits dated as Atlantic climatic optimum. PAKIET (1993) attributed its extinction to climatic reasons which view, in his opinion, was "supported by the parallel extinction of *Helicodonta obvoluta*", another species found in the site as subfossil.

In July 2003 we visited Mt Miłek (Fig. 1) to sample terrestrial malacocoenoses of Sudetic beech forests.

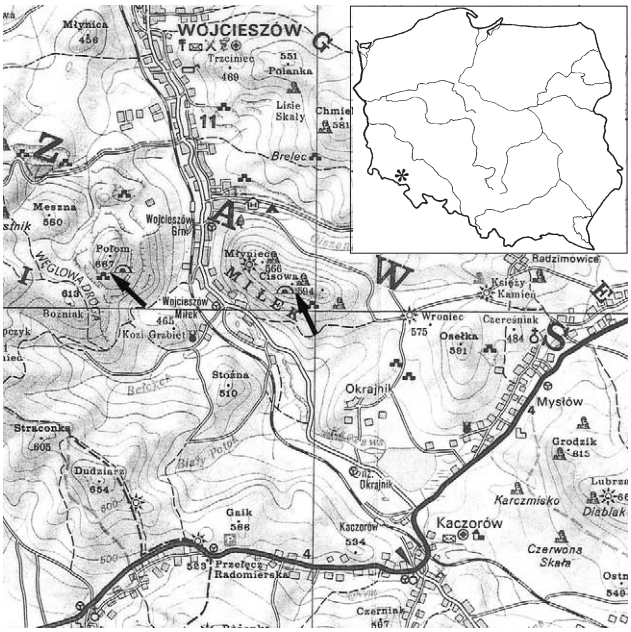

Fig. 1. Map showing the location of the Kaczawskie Mts (asterisk), the exact location of the site and the type locality of *C. commutata silesiaca* (arrows)

In a litter sample we found seven live specimens of *C. costata* (Fig. 2), two fresh and two very much damaged but identifiable shells. The material is in the collection of the Natural History Museum, Wrocław University (5 entire and 3 damaged shells) and in the collection of RADC (3 shells).

Fig. 2. *Cochlodina costata* (left) and *C. laminata* (right) from Mt. Miłek. Photo J. MACIĄŻEK

The site (Fig. 1) is the eastern peak of Miłek, Cisowa (594 m a.s.l.), one of the two peaks of the mountain, and the area just below it, south-west-facing. It is a beechwood, with a slight admixture of old sycamore and ash trees, with limestone crags, a thick litter layer and rather many pieces of rotting timber. The herb layer includes mainly *Mercurialis perennis* and *Convallaria majalis*.

The snail community in the site is rich and typical of undisturbed forests on calcareous substratum. It includes the following species (the list based on POKRYSZKO 1984 and the 2003 sample): *Carychium tridentatum* (Risso), *Cochlicopa lubrica* (O. F. Müller), *Columella edentula* (Draparnaud), *Vertigo pusilla* O. F. Müller, *Acanthinula aculeata* (O. F. Müller), *Orcula doliolum* (Bruguière), *Ena montana* (Draparnaud), *E. obscura* (O. F. Müller), *Punctum pygmaeum* (Draparnaud), *Discus rotundatus* (O. F. Müller), *Arion rufus* (Linnaeus),

Table 1. Shell measurements of specimens from Mt Miłek

	1962 population	2003 population
Shell height [mm]	13.60–16.00	14.07–14.87
	mean 14.91	mean 14.58
	SD 0.634	SD 0.240
Shell width [mm]	2.93–3.33	2.93–3.33
	mean 3.11	mean 3.14
	SD 0.108	SD 0.157
Aperture height [mm]	3.20–3.60	3.20–3.47
	mean 3.43	mean 3.34
	SD 0.131	SD 0.083
Aperture width [mm]	2.27–2.67	2.20–2.47
	mean 2.50	mean 2.34
	SD 0.121	SD 0.090
Body whorl height [mm]	**5.60–6.40**	**5.33–5.60**
	mean 5.95	**mean 5.47**
	SD 0.195	**SD 0.094**
Number of whorls	10.2–11.8	10.5–11.2
	mean 11.11	mean 10.94
	SD 0.361	SD 0.239
Height/width ratio	4.38–5.36	4.34–5.02
	mean 4.79	mean 4.65
	SD 0.255	SD 0.276
Aperture height/width ratio	1.30–1.48	1.32–1.52
	mean 1.37	mean 1.43
	SD 0.051	SD 0.058
Relative height of body whorl	0.37–0.43	0.37–0.39
	mean 0.40	mean 0.38
	SD 0.016	SD 0.008

A. subfuscus (Draparnaud), *A. silvaticus* Lohmander, *Vitrina pellucida* (O. F. Müller), *Semilimax semilimax* (Férussac), *Vitrea diaphana* (Studer), *Aegopinella pura* (Alder), *Ae. minor* (Stabile), *Nesovitrea hammonis* (Ström), *Oxychilus cellarius* (O. F. Müller), *Daudebardia rufa* (Draparnaud), *Tandonia rustica* (Millet), *Limax cinereoniger* Wolf, *Limax tenellus* (O. F. Müller), *Lehmannia marginata* (O. F. Müller), *Boettgerilla pallens* Simroth, *Euconulus fulvus* (O. F. Müller), *Cochlodina laminata* (Montagu), *Clausilia parvula* Férussac, *Alinda biplicata* (Montagu), *Perforatella incarnata* (O. F. Müller), *Arianta arbustorum* (Linnaeus), *Helicigona lapicida* (Linnaeus), *Isognomostoma isognomostoma* (Schröter), *Cepaea hortensis* (O. F. Müller), *C. nemoralis* (Linnaeus), *Helix pomatia* Linnaeus.

The shells found in the site in 2003 do not differ morphometrically from those of 1962, except for the height of body whorl which is significantly smaller in the "new" population (Table 1: bold).

PAKIET (1993), based on 37 subfossil shells from a cave on Mt Miłek, gave the shell height range as 14.5–17 mm, and stated that "single shells from the remaining localities do not seem to depart from typical condition". Our shells vary from 13.60 to 16.00 mm but may not represent the whole range of variation.

Our site is very close to Mt. Połom, the type locality of *C. commutata silesiaca* (A. Schmidt, 1868). The form differs from typical shells in having its spiral lamella shorter than the lower lamella (equally long or longer in typical shells) (MERKEL 1894). In four of our and eight of WIKTOR's shells (we were reluctant to damage all the shells) the spiral lamella is very long, much longer than the lower lamella, and thus our population seems to represent the typical form. Similarly, in SCHOLTZ's lot from Płonina (three of seven shells) the spiral lamellae are long. SCHOLTZ's lot from Mt. Połom contains four shells: two are brown-coloured like the typical form, and their spiral lamellae are long, the other two are very light, almost cream-coloured, with markedly shorter spiral lamellae, thus corresponding to *silesiaca*. Because they occurred syntopically with typical shells, *silesiaca* should not be regarded as subspecies.

C. costata is legally protected in Poland (strict species protection). In the latest Red List of Threatened Animals in Poland (WIKTOR & RIEDEL 2002) it is ranked as critically endangered (CR). In the Red Data Book (GŁOWACIŃSKI in press) it is referred to as "probably extinct but preventively under legal protection". Its population from Mt. Miłek does not seem to be threatened: the limestone quarry situated below the site closed down a few years ago, and the forest itself is a nature reserve and is not managed.

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