



## FIRST RECORDS OF THE TERRESTRIAL SLUG *DEROCERAS TURCICUM* (SIMROTH, 1894) IN POLAND

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**ABSTRACT:** *Deroceras turcicum* (Simroth) is reported from six woodland sites around Wałbrzych in southwest Poland. This extension of the species' range to Poland was expected given the number of reports from adjacent areas of the Czech Republic. We collate these reports as well as local records of *Deroceras praecox* Wiktor, which is found in similar habitats. We briefly discuss the difficulty of distinguishing *D. turcicum* from *Deroceras reticulatum* (O. F. Müll.), with which it may also co-occur.

**KEY WORDS:** Agriolimacidae, Czech Republic, *Deroceras*, distribution, first record, Poland, slug

Recently REISE & HUTCHINSON (2001) established the occurrence of *Deroceras turcicum* (Simroth, 1894) in the Czech Republic and Slovakia, further north than previously recognised. They argued that this was most likely the result of it being hard to identify, rather than to a recent range extension. This has subsequently been supported by re-examination of the BRABENEC collection (mostly from the 1960s) in the National Museum of Natural History Prague: HR found that 11 out of 21 samples labelled as *Deroceras praecox* Wiktor, 1966 contained at least some *D. turcicum*, and M. HORSÁK (personal communication) found 6 samples of *D. turcicum* misidentified as *Deroceras agreste* (L., 1758). These records are mainly from the northeast quarter of the Czech Republic; ourselves and others have now found *D. turcicum* elsewhere in the Czech Republic (BERAN et al. 2002, HLAVÁČ 2002, HORSÁK 2002 and personal communication) and in Slovakia (ČEJKA et al. 2004). The species was already known from Italy, Hungary, Austria, throughout the Balkan peninsula, and Turkey, and has recently been reported from the Ukraine (BAIDASHNIKOV 2002).

REISE & HUTCHINSON (2001) suggested that *D. turcicum* might also have been overlooked in Germany and Poland. Similarly WIKTOR (2004) included *D.*

*turcicum* in his guide book to the terrestrial molluscs of Poland even though the species had not yet been reported there. Here we report that in spring 2005 we indeed found *D. turcicum* at six sites around the city of Wałbrzych in southwest Poland, in the foothills of the Sudeten Highlands. See Table 1 and Fig. 1 for details. The sites lie up to 19 km from the Czech border. We were specifically seeking *D. turcicum*, and so collected mostly from wet spots in deciduous woodland, but the species is known to occur also in more synanthropic habitats elsewhere (WIKTOR 2000).

Specimens are in the collection of the State Museum of Natural History Görlitz, except for one specimen from Site 1 deposited in the Museum of Natural History Wrocław. All specimens were reproductively mature, which is necessary to confirm identification (WIKTOR 2000 and REISE & HUTCHINSON 2001 explain and illustrate the critical characters). This implies that April and May are a good time to survey for the species; and besides the maturity issue, frosts and drought often make finding slugs more difficult earlier and later in the year.

Fig. 1 includes nearby sites, of similar habitat, where we and others have found the externally very similar congener *D. praecox*. REISE & HUTCHINSON (2001) had found that *D. turcicum* often co-occurred

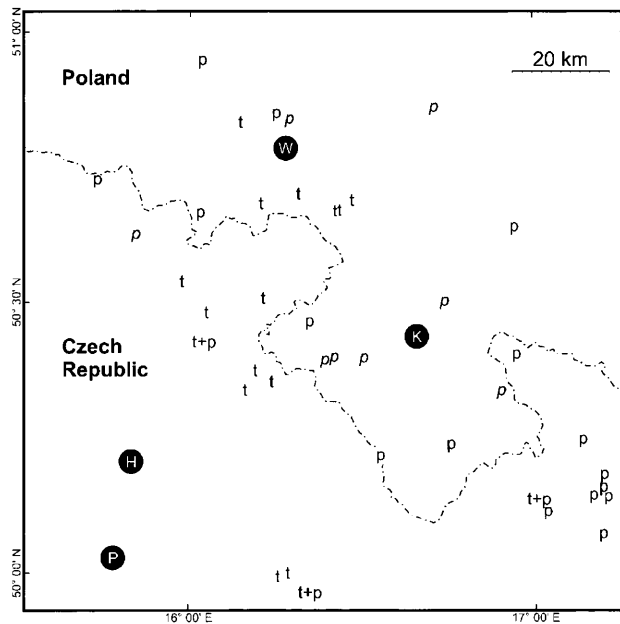


Fig. 1. Distribution of *Deroceras turcicum* (t) and *D. praecox* (p) around the Kłodzko region. Records marked with an italicised *p* are based only on literature reports (HUDEC 1967 and WIKTOR 1973). All other records are based on material that HR or M. HORSÁK have examined in the National Museum of Natural History Prague (collected by BRABENEC) and in the State Museum of Natural History Görlitz (collected by the authors or VATER 1970). Samples containing both species are marked t+p. Also shown are the Polish-Czech border and the cities of Wałbrzych, Kłodzko, Hradec Kralové and Pardubice (each labelled with its initial letter)

with *D. praecox*, so that one should dissect several specimens from a sample. They considered that although *D. turcicum* is closer anatomically to *Deroceras*

*reticulatum* (O. F. Müller, 1774), *D. turcicum* might more often have been confused with *D. praecox* and *Deroceras rodnae* Grossu et Lupu, 1965 because these are the species typical of woodland, whereas *D. reticulatum* is usually synanthropic, avoiding woodland (WIKTOR 2000). One of our Polish samples (Site 6) is also mixed, but consists of *D. turcicum* and *D. reticulatum*; this was from a disturbed, partially open, slope below a track in predominantly beech forest, c. 100 m from its margin.

Distinguishing *D. turcicum* from *D. reticulatum* can be difficult because of the variability in their genitalia (REISE & HUTCHINSON 2001), although an allozyme study has confirmed their distinctiveness (REISE 2001). We felt confident of identifying the single specimen of *D. turcicum* amongst the five *D. reticulatum* found at Site 6, but in a sample of six *D. reticulatum* from near Jarkowice (50°43.56'N 15°53.47'E) we could not be sure about the identity of one specimen. REISE & HUTCHINSON (2001) discussed the size of the ovotestis as a character distinguishing *D. reticulatum* from *D. turcicum*. At Site 6 the single *D. turcicum* indeed had a considerably smaller ovotestis than the five *D. reticulatum*. However at the site near Jarkowice, the unambiguous *D. reticulatum* specimens showed a wide range of ovotestis size, and included one in which it was as small as in *D. turcicum*. In laboratory cultures of *D. reticulatum* from England, ovotestis size seems to depend strongly on reproductive stage (HR, personal observation).

The number of Polish localities for *D. turcicum* and the number of specimens found at some of them (Table 1) suggest that these are established populations. The sites are all near roads or affected by forestry, but this reflects where we sampled, and should

Table 1. Collection details of *Deroceras turcicum* from the neighbourhood of Wałbrzych. Collection numbers are those of the State Museum of Natural History Görlitz

Site, collection number	Location	Location, altitude	Collection date	Habitat description	Specimens
1 p14101	Just N of Kowalowa, N of Mieroszów	50°41.19'N 16°12.44'E 530 m	1/5/05	Strip between road and beech wood	5 <i>turcicum</i>
2 p14104	Just W of Rybnica Mała, 3 km SW of Jedlina Zdrój	50°42.27'N 16°18.88'E 535 m	1/5/05	Wet ground under <i>Acer</i> <i>platanoides</i>	1 <i>turcicum</i>
3 p14092	Just W of Osówka mine, 1.6 km ENE of Kolce	50°40.26'N 16°25.00'E 580 m	1/5/05	Open ground, by stream, below beech wood	1 <i>turcicum</i>
4 p14091	NE of Osówka mine, 2.7 km S of Walim	50°40.54'N 16°25.74'E 650 m	1/5/05	Very wet ground above stream at margin of mixed wood	1 <i>turcicum</i>
5 p14102 p14103	Sharp curve of road, by stream, 1.5 km E of Walim	50°41.71'N 16°28.02'E 630 m	1/5/05	Deep beech litter in mixed wood	5 <i>turcicum</i>
6 p14076 p14077	S of Nowe Bogaczowice, 9 km NE of Kamienna Góra	50°50.09'N 16°08.45'E 480 m	15/5/05	Steep slope above stream in deciduous wood	1 <i>turcicum</i> + 5 <i>reticulatum</i>



not be taken as evidence of a synanthropic distribution. Given that the species is not straightforward to recognise, and that it already occurred in adjacent parts of the Czech Republic in the 1960s, *D. turcicum* is not unlikely to be native in this part of Poland. The best evidence against an expansion northwards from the Czech Republic over the last century, whether naturally or with the help of man, would be a demonstration of genetic diversity comparable with that in more southern populations. Checking earlier collections

from the area could provide additional evidence; even if dissections have identified a few specimens from a sample as other *Deroceras* species, it is quite possible that other specimens are *D. turcicum*. Our limited collections elsewhere do not allow us to judge how much further the range of *D. turcicum* extends in southern Poland and Germany, so careful checking of old and new samples of *Deroceras* from these regions is also desirable.

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