

The First Record of *Cepaea nemoralis* (Linnaeus, 1758) (Stylommatophora: Helicidae) from Romania

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Abstract: The brown lipped snail, *Cepaea nemoralis*, is reported for the first time in Romania. Several individuals were found in June 2017 in central Romania, City of Sibiu. The snails were found in a hedge of *Spiraea vanhouttei* surrounding a playground area in the north-western part of the city. The location of the single habitat where *C. nemoralis* is present indicates that the species has been introduced most probably accidentally by rail or by car. This event comes a century after the deliberate introduction of *Cepaea hortensis* in Sibiu. Given the poor habitat conditions, it is questionable whether *C. nemoralis* could expand its geographical range or even survive in this area.

Key words: distribution, introduced species, Helicidae, Sibiu, Romania, urban environments.

Introduction

During the Quaternary three of the four species of the genus *Cepaea* lived on the territory of Romania. *Cepaea vindobonensis* (Pfeiffer, 1828), along with *C. hortensis* (Müller, 1774) and *C. nemoralis* (Linnaeus, 1758) were found in alluvial deposits in Dobrogea, south-eastern Romania (PETRBOK 1941). Currently, only *C. vindobonensis* has its natural range in Eastern Europe, including Romania. It ranges from northern Caucasus to eastern Austria, from Poland in the north to Greece in the south (WELTER-SCHULTES 2012). *Cepaea nemoralis* and *C. hortensis* are West-European species, with largely overlapping ranges but *C. hortensis* reaches further to the north and east (KERNEY & CAMERON 1979, GROSSU 1983, WELTER-SCHULTES 2012). In the last century, CZIKI (1918) mentioned the presence of *C. hortensis* in Romania, near the Hungarian border (Felix Baths) but the information was not confirmed later (GROSSU 1983). *Cepaea hortensis* was introduced in central Romania (Sibiu), most probably around the 1910s, and since then it has been populating different habitats throughout the city (GHEOCA 2005).

For *C. nemoralis*, the eastern limit of the natural range passes through Germany and along the south-

ern Baltic coast it extends to north-western Poland (KERNEY & CAMERON 2006). In Eastern Europe (from Hungary in the south to Latvia in the north), it inhabits almost exclusively anthropogenically modified environments (DOMOKOS 2003, SULIKOWSKA-DROZD 2008) and it has expanded its range eastwards to south-eastern Poland (OŽGO 2005), Czech Republic (DVORAK & HONEK 2004, PELTANOVA et al. 2012) and Russia (EGOROV 2008). The species was introduced overseas in the 19th Century and is currently widespread in Virginia, New York, Ontario, Massachusetts, Kentucky and Canada (RICHARDS & MURRAY 1975, CHANG & EMLÉN 1993, FORSYTH 2004, BELLIDO et al. 2002, WHITSON 2009, ÖRSTAN 2010). So far, *C. nemoralis* was not recorded in Romania.

Materials and Methods

Nine brown-lipped snails (*C. nemoralis*) and 22 empty shells in different stages of degradation were found in a playground area in the north-western part of Sibiu City, central Romania (45°48'N, 24°07'E) in June 2017 (Fig. 1). The animals were found during a survey of the non-native species *C. hortensis*. The

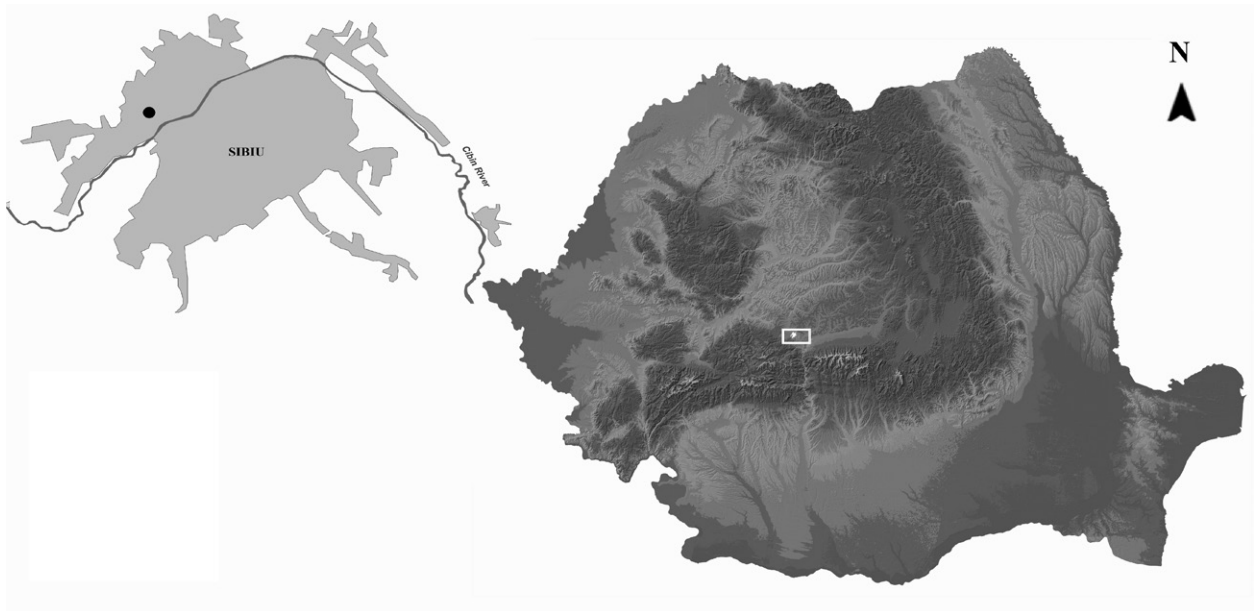


Fig. 1. Location of the habitat of *C. nemoralis* in the city of Sibiu, Romania.

playground is about 800 m² and is surrounded by a hedge of *Spiraea vanhouttei* and several specimens of *Ligustrum vulgare* and *Sambucus nigra* (Fig. 2a). Along with *C. nemoralis*, several individuals of *Helix pomatia* Linnaeus, 1758 and *Monacha cartusiana* (Müller, 1774) were the only snail species present here. None of the other two species of the genus *Cepaea* living in Sibiu, *C. vindobonensis* and *C. hortensis*, was present.

Results

The vegetation on and around the playground was highly degraded and the entire area was affected by inadequate maintenance, including an intense pedestrian traffic and discarded trash. The high anthropic pressure was partly caused by the reduced area of the playground and the immediate vicinity of a secondary railway station and a high-traffic road. As a result, the area did not offer favourable habitat conditions for land snails. Of the nine alive individuals of *Cepaea nemoralis*, three were yellow (two juveniles and one adult). The other three juvenile and three adult snails had pink shells. All the individuals were three-banded. Among the empty shells, most were yellow (17) and only five were pink. One of the empty shells, belonging to a juvenile, was five-banded. The others were three-banded, similar to the shells of the living animals. A single empty shell had the periostracum almost entirely degraded. Some of the empty shells were characteristically broken with undamaged fragments comprising the whole lip and last whorl, proving predation (Fig. 2b,c). The neighbouring habitats were also searched for snails but no

evidence of their presence was found. The species seems to be limited to the described area. The presence of empty shells in different stages of degradation may be evidence of an earlier introduction but since no totally degraded shells were found (as in the case of *H. pomatia*), probably the introduction occurred recently, possibly a few years ago.

Discussion

The question of how the species has been introduced arises. *Cepaea nemoralis* is often regarded as a “travelling species” (ROBINSON 1999), since its coloured, polymorphic shell is very attractive and people want to have it in their gardens. The snails are often confiscated at airports from the passengers going to USA from Europe (ÖRSTAN 2010). The deliberate introduction is also the way that *C. hortensis* got into Sibiu, probably introduced by a naturalist in his garden (Gheoca 2005). In the case of *C. nemoralis*, the deliberate introduction is improbable, since the surrounding area is mostly industrial and the inhabited part is an old, overpopulated area, with small gardens used mostly for car parking and storage. Two other ways may be considered. The vicinity of the railroad indicates a first possible way of dispersion. It is known that *C. nemoralis* has broad habitat requirements, in Western Europe it is found in woods, hedges and grasslands (KERNEY & CAMERON 1979) but also along roadsides and railroad banks (BOYCOTT 1934). Trains may be directly responsible for the dispersal of the snails that live near railroads when the snails climb on train cars. The second way of



Fig. 2. The habitat of *C. nemoralis* in Sibiu (a). Living specimens (b) and empty shells (c) from Sibiu (Romania).

introduction may have been by car, since next to the playground an international courier company's headquarter is located. Whichever the way of dispersal, it is interesting that both *C. hortensis* and *C.*

nemoralis got in the same place in Romania, a century apart. It remains to be seen if this small colony will be able to survive and expand throughout the city like *C. hortensis* did.

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