Hygromia cinctella (Draparnaud, 1801) (Mollusca: Gastropoda: Hygromiidae), a New Snail Species for the Fauna of Bulgaria

Ivailo K. Dedov, Ulrich E. Schneppat, Fabia Knechtle Glogger

Abstract: The girdled snail Hygromia (Hygromia) cinctella (Draparnaud, 1801) is recorded for the first time from Bulgaria from the city area of Sofia. This species belongs to a genus that is newly recorded for the Bulgarian fauna, too. The species as considered as introduced to the country.

Keywords: Hygromia cinctella, Gastropoda, new record, Bulgaria

Introduction

In the course of collecting samples in the city area of Sofia in autumn 2014, a snail belonging to a genus, hitherto not known to be a member of the Bulgarian malaco fauna, was detected. Hygromia cinctella had not been found previously in Sofia regardless of the collecting efforts within the same region in previous years (2012-2013 – U. E. Schneppat, F. Knechtle Glogger, I. K. Dedov).

The shell of H. cinctella is whitish-gray to horny-brown, slightly translucent, finely and rather regularly striated with 5-6 flattened whorls with shallow suture. Last whorl sharply keeled with a light spiral band at its periphery, emphasizing the keel. Aperture simple without lip inside. Fully-grown shells (diameter 10-12 mm) with narrow and almost covered by the reflected columellar margin umbilicus, not well-marked. Animals light-greyish or with yellowish hue, often with darker greyish or brownish head and neck (Kerney et al. 1983, Řihová, Juríčková 2011, Welter-Schultes 2012). The Girdled Snail lives typically in open habitats, among low shrubs and herbs, often in small water currents or in river valleys and on river banks, in cool and humid habitats (Italy), cultivated habitats, rarely natural forests (Switzerland), road-sides, under stone walls and in gardens (England and Switzerland), disturbed habitats and gardens of densely populated regions (Netherlands, Germany) (Mienis 2006, 2008 a, Göllnitz 2008, Welter-Schultes 2012).

Material and Methods

The materials were hand collected in autumn (September, October 2014) from the following locations:

1. N42.65757°, E023.23511°, 670 m, on Ranunculus, 19.X.2014, 2 spm., leg. I. K. Dedov.  
2. N42.65741°, E023.23511°, 670 m, on Clematis vitalba, 19.X.2014, 1 spm., leg. I. K. Dedov; other gastropods on the spot: Fruticicola fruticum (O. F. Muller, 1774).  
3. N42.65730°, E023.23462°, 671 m, on Clematis vitalba, 19.X.2014, 6 spm., leg. I. K. Dedov; other gastropods on the spot: Helix lucorum Linnaeus, 1758.
4. N42.656444°, E023.231525°, 675 m, synanthropic habitat, near a little bridge. *Urtica dioica*, Syringa vulgaris, Clematis vitalba, Fallopia japonica, Artemisia vulgaris, only little grass. Habitat heavily littered. 27–29 IX. 2014: specimens were found almost exclusively on leaves of *Syringa vulgaris* (0.3–1.5 m above ground) with some attached to a nearby wall, leg. U. E. Schneppat and F. Knechtle Glogger, about 50 spm. (five adults in the collection of I. K. Dedov, Sofia, five adults in the collection D. Georgiev, Plovdiv); 13–14.X. 2014, 11 spm. Other gastropods on the spot: Deroceras cf. reticulatum (O.F. Müller, 1774), Deroceras cf. turicum (Simroth, 1894), *H. lucorum* Linnaeus, 1758, Limacus flavus (Linnaeus, 1758), Limax sp., Tandonia kusceri (H. Wagner, 1931).

**Results and Discussion**

**Distribution**


The species was firstly recorded from NW France in the 1940s and spread rapidly, today almost in the entire country (Defossez, Maurin 1995, Welter-Schultes 2012, http://animalbase.org/). The species is also considered to be introduced (in chronological order) to France, Pyrenees-Atlantiques (Prieto, Puente 1992) in the outermost southwestern part of the country as well as in South Tyrol, Italy (Kierdorf-Traut 2006); to England, Cornwall before 1950 with nurseries or garden plants (Comfort 1950), and still spreading rapidly, reaching Devon and the London area (the IUCN Red List of Threatened Species, http://animalbase.org/).


In Switzerland the species has rapidly spread over the last decades (Beat 2007, Beckmann, Kobialka 2008). Our unpublished observations show that in Switzerland *H. cinctella* has reached sites of much higher altitude than in almost any other parts of Europe (Grisons, Tinizong-Rona, 2009, 1250 m, CSCF; Grisons, Bergün-Bravuogn, 2008, 1360 m, http://animalbase.org/).

**Fig. 1.** Habitats of Hygromia cinctella along river Vladayska River, Sofia city area, Bulgaria. A - localities № 1 and 2, B - locality 3, C - locality 4.
Hygromia cinctella (Draparnaud, 1801) (Mollusca: Gastropoda: Hygromiidae), a New Snail

**Fig. 2.** External view of adult Bulgarian specimens

**Fig. 3.** Sexual system of *Hygromia cinctella*. A – Bulgarian specimen, photo; B – after Prieto and Puente 1992, Fig. 13. Abbreviations: G – genital pore; ♂: P – penis, PR – penial retractor, EP – epiphalus, F – flagellum, VD – Vas deferens; ♀: DS – dart sac, MG – mucus glands, SO – spermoviduct, AG – albumen gland; BC – bursa copulatrix

CSCF; Grisons, Churwalden-Malix, 2004, 1240 m, private data US-BNM; Ticino, Fusio, 2013, 1300 m, CSCF; Valais, Icogne, 2003, 1020 m, CSCF; Valais, Saint-Martin, 2012, 1400 m, CSCF). Further, the spread of the species has happened independently of the substrate quality. For example in Canton Ticino, Southern Switzerland, all populations were found on sour substrate with granites and gneisses.

In Bulgaria, we found *H. cinctella* also in non-limestone areas. Currently, its Bulgarian population is by far the easternmost known locality of the species in Europe. Considering the wide and rapid spread of *H. cinctella* in Europe as a result of introductions, their recent finding and spot-distribution in Bulgaria, we consider the occurrence of *H. cinctella* as a new introduction and, therefore, this is an al-
Habitat

The Bulgarian population of the species was found in and around gardens along the Vladayska River (Fig. 1) in overbuilt, synanthropic and partly polluted habitats with herbaceous and shrub vegetation. Such type of habitat is typical for other European populations of the species (Mienis 2006, 2008 a; Göllnitz 2008, Welther-Schultes 2012). For accompanying plant and gastropod species, see Material and Methods.

Morphology

The shell of the Bulgarian population of *H. cinctella* shows typical characters of the species – from whitish-grey to horny-brown, slightly translucent. The last whorl is weakly keeled. The aperture is simple, without lip inside. The size of the fully-grown specimens corresponds to the typical size with largest diameter of 10-12 mm. Animals vary from yellowish to light-greyish, often with darker greyish or brownish head and neck (Fig. 2 A – C; Kerney et al. 1983, Řihová, Juríčková 2011, Welther-Schultes 2012, present work).

Anatomy

The anatomy of the Bulgarian specimens corresponds to the anatomy of the species given by Gittenberger (1970) and Prieto, Puente (1992). Male: Penis and epiphalus well developed and long, separated by wide penial retractor. Penis not much wider than epiphallus, flagellum relatively short. Female: Dart sac with two lobes (not always very prominent in some specimens). Mucus glands eight, relatively long. Spermophore-receiving organ very long, without clearly separated bursa copulatrix (Fig. 3 A-B). The shape of the love-darts in the Bulgarian specimens are like in Fig. 17 in Prieto, Puente (1992) and Koene, Schultenburg (2005). According to Gittenberger (1970), the love-darts of *H. cinctella* show clearly two apical crests. He believed that this feature was very characteristic among the species in the genus, but was not found by Prieto, Puente (1992), neither by Koene, Schultenburg (2005), nor for the love dart structures in the specimens found in Sofia, Vladayska River.

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