

Notes on distribution of the Carpathian snail *Vestia turgida* in the Bohemian Forest

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Abstract

The author summarises all known published and unpublished data on *Vestia turgida* (Rossmässler, 1836) (Gastropoda, Clausiliidae) from the Bohemian Forest, SW Bohemia. The first find of this Carpathian snail was recorded in this region at the end of 19th century. There are more than 20 localities known in the study area at the present, out of which all are situated within a small islet area of ca. 14×7 km². *V. turgida* inhabits mixed forest stands covered by white butter bur. Major part of its localities is concentrated in the Stožec Mt. and Boubín Mt. massives and their vicinities. Many typical mountain forest species live together with *V. turgida*, namely e.g. *Platyla polita* (Hartmann, 1840), *Clausilia cruciata* (Studer, 1820), *Discus ruderratus* (A. Férussac, 1821), *Macrogastera ventricosa* (Draparnaud, 1801), *Vertigo alpestris* Alder, 1838, *Semilimax kotulae* (Westerlund, 1883), *Oxychilus depressus* (Sterki, 1880), *Deroceras rodnae* Grosssu et Lupu, 1965, or *Causa holosericea* (Studer, 1820). The occurrence of *V. turgida* is not endangered in the study area because most of its localities are situated in the core zones or Nature Reserves.

Key words: Mollusca, *Vestia turgida*, localities, ecology, protection

INTRODUCTION

Vestia turgida (Rossmässler, 1836) is the Carpathian snail species (Fig. 1) whose continuous distribution in the Czech Republic is restricted to some mountain ranges of the West Carpathians (White Carpathians, Beskydy Mts., and adjacent mountains). Outside this region, one locality is known in the Rychlebské Hory Mts. and one at the Žákova Hora Mt. in the Českomoravská Vrchovina highland. A small islet area of *Vestia turgida* is placed in the Bohemian Forest (=Šumava Mts.). Resident isolated occurrence and special microhabitat requirements rank this species among the most remarkable elements of the mollusc fauna in the Bohemian Forest. The present knowledge on distribution of *Vestia turgida* in the Bohemian Forest is needed to be summarised, as well as of its close species *Macrogastera badia* (C. Pfeiffer, 1828) and *Laciniaria plicata* (Draparnaud, 1801) which were elaborated by HLAVÁČ & HORSÁK (2002).

HISTORY OF FINDS

The first record of *Vestia turgida* in the Bohemian Forest, in the Boubín primeval forest in particular, was published by KLIKA (1893). His data about two specimens were taken over by ULIČNÝ (1892–95) and FRANKENBERGER (1910, 1912). LOŽEK (1948) mentioned the same data added Brabenec's confirming of the occurrence in 1937 as well as the new locality – Stožecská Skála Mt. – of the same collector from 1948. Brabenec himself published his own finds



Fig. 1. Clausiliid snail *Vestia turgida*. Photo: M. Horsák.

later (BRABENEC 1969).

New localities were discovered in the second half of the 20th century. Three new localities – Kubova Hut', Jedlová Mt., and Chlustov Mt. – were published by LOŽEK (1959), who reported the same localities in another study (LOŽEK 1967). Five localities of *V. turgida* were known in the Bohemian Forest at the end of the 1950s. The next research in 1968 resulted in five new localities: 1) NE slope of the Radvanovický Hřbet ridge; 2) SW root of the Radvanovický Hřbet ridge; 3) peak 940 m near České Žleby; 4) N slope of the Stožec Mt., and 5) the top of the Stožec Mt. (LOŽEK & MÁCHA 1970). The number of localities increased to 10.

V. Pflieger studied systematically the Bohemian Forest from the end of the 1970s. Besides other valuable data, he published several records of *V. turgida*; other new localities in the Stožec Mt. massive (PFLEGER 1982, 1988), Spáleníště near České Žleby (PFLEGER 1994), then Jilmová Skála, Zátoňská Hora Mt., and new stands in the Boubín Mt. (PFLEGER 1995).

L. Dvořák has partly studied the area of occurrence of *Vestia turgida* in the Bohemian Forest from the half of the 1990s and discovered (partly together with M. Horsák) several new localities.

All known published and unpublished data are listed bellow. Published data are listed in order: code of faunistic mapping grid of the Czech Republic (PRUNER & MÍKA 1996), locality, and source (in parenthesis). Unpublished data: code of faunistic mapping grid, locality, biotope, geographical coordinates, date of collection, and collector.

Published data

7048: Boubín Mt. (KLIKA 1893, ULIČNÝ 1892–95, FRANKENBERGER 1910, 1912, LOŽEK 1948, 1956, 1959, 1967, LOŽEK & MÁCHA 1970, BRABENEC 1969, PFLEGER 1995), Chlustov Mt., Kubova Hut' surrounding (LOŽEK 1959, 1967, LOŽEK & MÁCHA 1970), Radvanovický Hřbet ridge (LOŽEK & MÁCHA 1970), Jilmová Skála, Zátoňská Hora Mt. (PFLEGER 1995). **7049:** Jedlová Mt. (LOŽEK 1959, 1967, LOŽEK & MÁCHA 1970). **7148:** Stožec and Stožecká Skála mounts

(LOŽEK 1956, 1959, 1967, BRABENEC 1969, LOŽEK & MÁCHA 1970, PFLEGER 1982, 1988), České Žleby surrounding (LOŽEK & MÁCHA 1970), Radvanovický Hřbet ridge (LOŽEK & MÁCHA 1970), Spáleníště Mt. (PFLEGER 1994).

Unpublished data

7048: Idina Pila, shrubby bank of Kaplický stream under reserve (48°58' 8.8" N, 13°49'25.4" E), 9 Aug 1986, G. Körnig lgt. – Zátoň-Dubí, bank of Kaplický stream (48°57'0.5" N, 13°48'55" E), 20 May 2002, L. Dvořák et M. Horsák lgt. – Jilmová Skála, mixed forest and swamp (48°57'08.1" N, 13°48'00.8" E), 20 May 2002, L. Dvořák et M. Horsák lgt. – Lenora, ruderal site near iron-plate garages in S part of village (48°55'16.4" N, 13°47'56.1" E), 30 Sep 2002, L. Dvořák lgt. – Šeravský Les, rocky debris forest on slope ca. 1 km NNW of Kubova Huť (48°59'11.9" N, 13°45'42.6" E), 13 Aug 2003, L. Dvořák lgt. **7148:** České Žleby, by house ca. 1 km SE of village (48°52'26" N, 13°47'18.5" E), 28 Aug 2001, L. Dvořák lgt.

RESULTS AND DISCUSSION

Distribution

As mentioned above, *V. turgida* is the Carpathian element distributed in the Czech Republic continuously in the Beskydy Mts. and in adjacent mountain ranges from the Slovak frontiers up to Oderské Vrchy Mts. (LOŽEK 1956). The find from the Hoštické valley in the Rychlebské Hory Mts. (BRABENEC 1954, LOŽEK 1956) is completely isolated as well as that from the Žákova Hora Mt. in the Žďárské Vrchy Mts. (LOŽEK 1976). One locality near Paczków (East Sudetes Mts., S Poland) is probably close to locality Hoštické valley (see RIEDEL 1988).

In the Bohemian Forest, *Vestia turgida* inhabits only a small islet (ca. 14×7 km) in the phytogeographical subdistrict Boubínsko-Stožecká Hornatina highland (see Fig. 2). The view on the map of distribution and continuous forest areas suggests that, according to the present knowledge, the occurrence of *V. turgida* forms three areas in the Bohemian Forest. The largest and the most compact area is that in surroundings of the Stožec and Stožecká Skála mounts complemented by the localities at Spáleníště Mt. and Radvanovický Hřbet ridge. The localities in the Boubín massif – Šeravský Les, southern parts of the Boubín Mt., Jilmová Skála, Zátoňská Hora, and Jedlová mounts are apparently more scattered. A solitary occurrence is that on the Chlustov Mt.

The occurrence of *Vestia turgida* in the Bohemian Forest forms a relatively compact islet area. This area is exposed far westward from the Rychlebské Hory Mts. and Žďárské Vrchy Mts. and more westward from the area of its continuous distribution in the West Carpathians (see Fig. 3). *V. turgida* was not found in the Quaternary of the Bohemian massif. This fact maybe indicates that Bohemian Forest forms residue of former distribution in the Interglacials and *V. turgida* can survive here during the glacial phase (see LOŽEK 1967). The area Boubín-Stožec-Radvanovický Hřbet-Chlustov contents relatively highest number of old forests, which are close to primeval forests. According to LOŽEK & MÁCHA (1970), *V. turgida* does not live in other parts of the Bohemian Forest because of absence of similar stands. In comparison, the occurrence of *V. turgida* is sharply separated from the occurrence of other Carpathian clausiliid *Macrogastera tumida* in the Bohemian Forest. This species has similar requirements and both species live together in the Carpathians (LOŽEK 1998).

Only three localities of *V. turgida* are known in the neighbouring Bavarian Forest (HÄSSLEIN 1966). Those localities are situated more to the southwest towards the Danube River and they are separated from all localities in the Bohemian Forest. At present, forest stands between the Czech and Bavarian localities are not suitable for *V. turgida* – almost

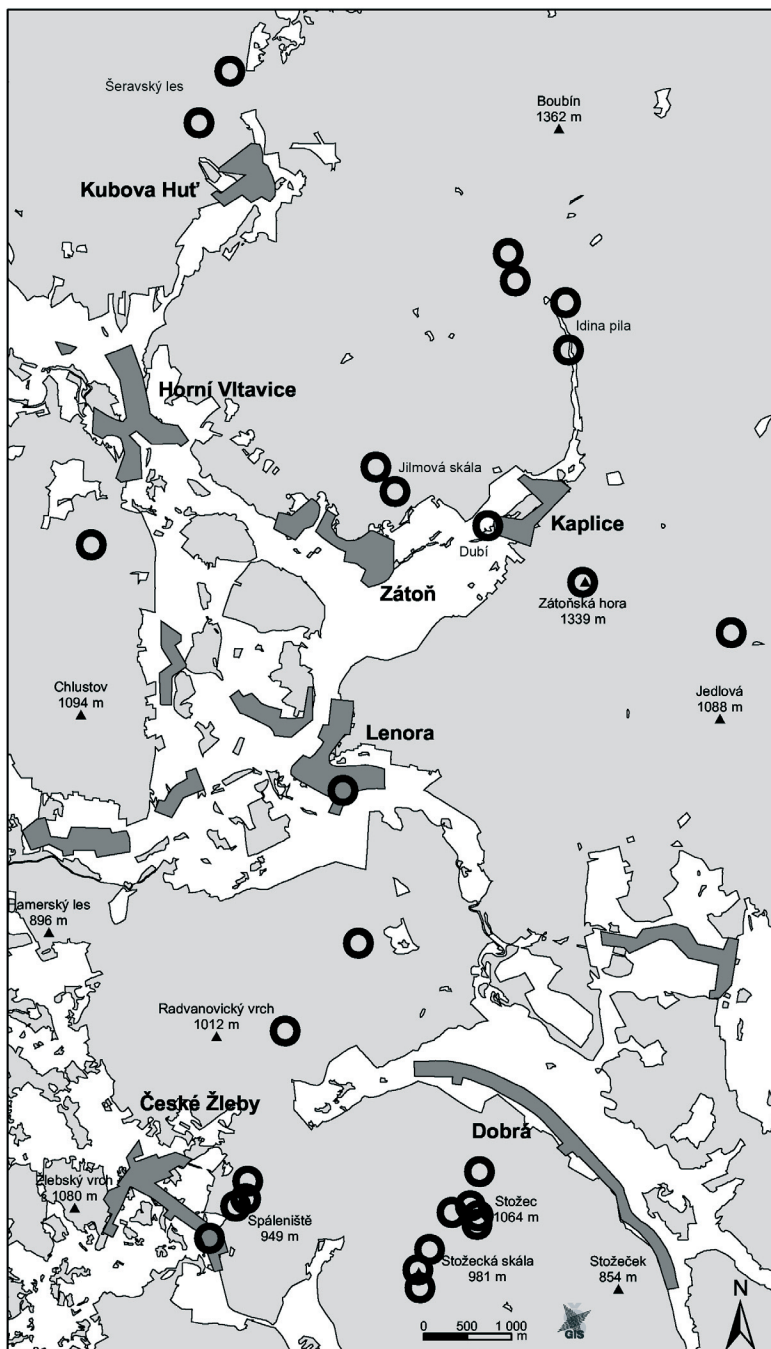


Fig. 2. Distribution of *Vestia turgida* in the Bohemian Forest (circles). Explanations: light grey – forest areas, dark grey – urban areas.

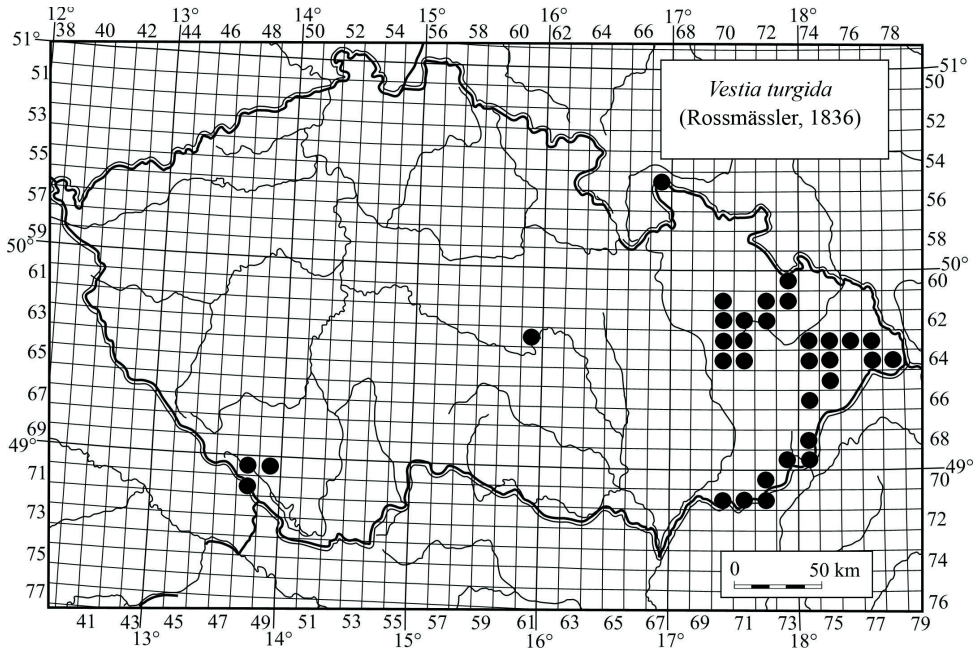


Fig. 3. Grid map of distribution of *Vestia turgida* in the Czech Republic.

whole area is covered by spruce and small beech enclaves lack damp microsites with the presence of white butter bur (*Petasites albus*).

Ecology

Vestia turgida lives on the soil surface at the stands with quick humification. It can be found under rotting vegetation or under objects laying on the soil – smaller stones, bark, and branches. It does not climb on trunks. It almost entirely inhabits very damp stands covered by lush vegetation, in the Bohemian Forest predominantly by white butter bur. Except one locality near České Žleby (LOŽEK & MÁCHA 1970), *V. turgida* occurs only in mountainous stands with domination of beech, fir, and spruce with sycamore and/or elm. The herbal floor is formed by the phytocoenological unit of *Dentario enneaphylli-Fagetum*. The Bohemian Forest localities lie at the altitudes between ca. 900–1065 m a.s.l.

V. turgida inhabits practically the same stands and biotopes in the Moravian Carpathians. Its occurrence differs only in the altitude. Its optimum is between 745–900 m a.s.l. but the range of occurrence is broader, between 300 and 1120 m a.s.l. (HORSÁK, pers. comm.).

Small populations can be found on shrubby banks of streams or in synanthropic habitats. This stands can be also typical for the species – compare with e.g. data from the Polish Tatra Mts. (DYDUCH-FALNIEWSKA 1991).

Coenology

The most frequent species on the Bohemian Forest localities of *V. turgida* are strictly and/or predominantly forest species: *Platyla polita* (Hartmann, 1840), *Acanthinula aculeata* (O.F. Müller, 1774), *Vertigo pusilla* O.F. Müller, 1774, *Macrogastera plicatula* (Draparnaud, 1801), *Clausilia cruciata* (Studer, 1820), *Discus ruderatus* (A. Férussac, 1821), *Vitrea subrimata* (Reinhardt, 1871), *Aegopinella nitens* (Michaud, 1831), *Petasina unidentata* (Draparnaud,

1805), *Monachoides incarnatus* (O.F. Müller, 1774), *Discus rotundatus* (O.F. Müller, 1774), *Eucobresia diaphana* (Draparnaud, 1805), and *Arianta arbustorum* (Linnaeus, 1758). A typical assemblage is complemented by one damp forest species *Macrogastrea ventricosa* (Draparnaud, 1801), species of damp habitats *Carychium tridentatum* (Risso, 1826), *Columella edentula* (Draparnaud, 1805), *Vertigo substriata* (Jeffreys, 1833) and several euryecious species – *Cochlicopa lubrica* (O.F. Müller, 1774), *Punctum pygmaeum* (Draparnaud, 1801), *Euconulus fulvus* (O.F. Müller, 1774), and *Vitrina pellucida* (O.F. Müller, 1774). At suitable stands, *V. turgida* lives together with *Vertigo alpestris* Alder, 1838, *Semilimax kotulae* (Westerlund, 1883), *Oxychilus depressus* (Sterki, 1880), *Deroceras rodnae* Grosssu et Lupu, 1965, *Isognomostoma isognomostomos* (Schröter, 1784) or *Causa holosericea* (Studer, 1820). A similar assemblage with *V. turgida* is known from the Bavarian Forest (HÄSSLEIN 1966). Its assemblage is complemented by *Discus perspectivus*, *Aegopis verticillus*, and even *Macrogastrea lineolata* at one southernmost situated locality.

Along Kaplický stream, where it can be drifted, this species lives among others with *Succinea putris* (Linnaeus, 1758), *Deroceras laeve* (O.F. Müller, 1774) or *Trichia hispida* (Linnaeus, 1758). After occasional transport with wood into villages adjoined to the Boubín Mt., *V. turgida* can provisionally survived in an assemblage with euryecious species *Arion fasciatus* (Nilsson, 1823), *Deroceras reticulatum* (O.F. Müller, 1774), and *Boettgerilla pallens* Simroth, 1912.

Protection

V. turgida is ranked into the category endangered (EN) species according to the newest checklist of Czech molluscs (JUŘIČKOVÁ et al. 2001). All known localities in the Bohemian Forest lie in the Šumava National Park and/or Protected Landscape Area. The major part of localities in the NP is situated in the core zones: all stands at Spáleníště, almost all stands at Stožec and Stožecká Skála mounts, and NE slope of the Radvanovický Hřbet ridge. On the other hand, some localities in the PLA, such as Zátoňská Hora Mt., Jilmová Skála, and several stands at Boubín Mt., are situated in Nature and/or National Nature Reserves.

CONCLUSIONS

- i) *Vestia turgida* inhabits small and relatively compact area islet in the Bohemian Forest.
- ii) Its localities do not overlap with localities of other Carpathian clausiliid snail *Macrogastrea tumida*.
- iii) *V. turgida* occurs at damp habitats, with white butter bur in a mixed forest which are close to the primeval forest at the altitudes between ca. 900–1065 m a.s.l.
- iv) *V. turgida* lives in the snail assemblage typical for the mountain mixed forest stands with damp micro-stands.
- v) The species is not endangered in the Bohemian Forest because most of the localities are situated in the core zones of the National Park and/or in the Nature Reserves.

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