

Present distribution of *Lehmannia macroflagellata* (Mollusca: Gastropoda) in the Czech Republic

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A b s t r a c t: The slug *Lehmannia macroflagellata* Grossu et Lupu, 1962 is known from mountains of the northern and northeastern territory of the Czech Republic. Only several findings of this species have been published from the Czech Republic and the last one has been known 15 years ago. This paper summarises all findings of this species from the territory of the Czech Republic.

Key words: *Lehmannia macroflagellata*, Czech Republic, distribution, list of localities

Introduction

The slug *Lehmannia macroflagellata* Grossu et Lupu, 1962 is the species excluded from the species *Lehmannia marginata* (O.F. Müller, 1774) according to specimens found in Romania. The first data from the Czech Republic were published from the Jizerské hory Mts., where this species was discovered on three localities in 1964, and from the Králický Sněžník Mts., where was discovered on two localities in 1965 (Hudec & Brabeneč 1965). Further it was found in the Hrubý Jeseník Mts. in 1966 (Mácha 1970, Vater 1970) and in Giant Mts. in 1966 and 1967 (Brabeneč 1978). Other Mácha's (1987) findings were published from the three stands in the Moravskoslezské Beskydy Mts. from years of 1984-86 without more precise localisation. These findings were exactly located according to the deposit material. Also other findings deposited in zoological collections of some Czech museums were located as precise as possible and summarised in the list of localities from the territory of the Czech Republic.

The slug *Limax arborum* var. *dianae* Kimakowicz, 1884 was reported by Uličný (1892-95) from the Ore Mountains (Krušné hory Mts.); its body colour was black with lighter spots. To V. Hudec's opinion, *L. arborum* var. *dianae* is maybe identical with *L. macroflagellata* and the finding from the Ore Mountains probably represents the first finding of *L. macroflagellata* from the territory of the Czech Republic (Hudec & Brabeneč 1965). However, a detail review is impossible because the genital structure was not considered in the original Kimakowicz's description and the type material has been probably lost (Wiktor 1973). Thus the first verified localities from the territory of the Czech Republic are those above mentioned from the Jizerské hory Mts. (Hudec & Brabeneč 1965).

Description

Lehmannia macroflagellata is a naked slug with the maximum body length 43 mm, in most cases only 26-30 mm, that is probably the length of sexually adult specimens. The body is conspicuously slender with the low domed keel which is optically prolonged by lighter stripe. The colouring is quite variable: on the light cream-coloured ground are dark cream-coloured

spots with non-sharp edges which often fuse. Numbers of these spots are very variable and for this reason light coloured (little spotted) and dark coloured specimens can be found. Infrequently the spots fuse into stripes. Mantle has two lateral bands joining posteriorly. Mostly in the middle between them a little lighter central stripe goes through. The pale keel and the central paler band extending from keel to mantle, flanked by dark bands, give the body a light and dark stripy appearance. The spots by the body side mingle into one another leaving round light surfaces among them. No other representative of this genus has similar colouring but all specimens of *L. macroflagellata* are not coloured like this. Some lighter striped specimens remind of the mountainous melanistic form of *L. marginata*. In this case the only reliable character is the different form of the reproductive organs, especially the form of the flagellum which is in minimum as long as penis (often longer) in specimens of *L. macroflagellata* (Fig. 1). On the contrary the flagellum of *L. marginata* is almost always shorter than one third of the penis length. The other typical character of *L. macroflagellata* is a strongly glandular swollen, globular prostate gland (Fig. 1).

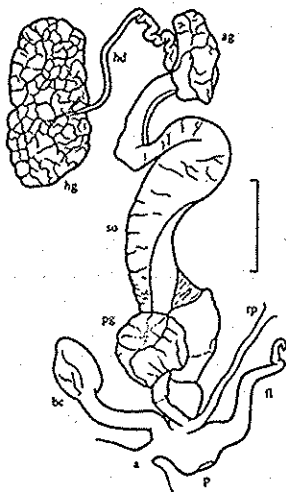


Fig. 1 - Genital system of *Lehmannia macroflagellata* Grossu et Lupu, 1962 from the Mazák National Nature Reserve (greater details in the list of localities), a - atrium, ag - albumen gland, bc - bursa copulatrix, fl - flagellum, hd - hermaphrodite duct, hg - hermaphrodite gland, p - penis, pg - prostate gland, rp - penial retractor, so - spermoviduct. Scale = 2 mm. Orig. M. H o r s á k

Ecology and distribution

This species occurs most commonly in mountain forests over 900 m a.s.l. (Kerney et al. 1983). In Poland the majority of findings are reported from altitudes between 900-1000 m a.s.l. The lowest situated finding is from the altitude of 500 m a.s.l. in the Pieniny Mts. and the highest at 2000 m a.s.l. in the Tatra Mts. (Wiktor 1973). The previous specimens reported from the Czech Republic were observed in similar altitudes between 800-1000 m a.s.l. (Hudec & Brabeneč 1965, Vater 1970). An altitude of up-to-date known deposits shows that *L. macroflagellata* is a typical mountainous species. By this reason it is necessary to rate it as the leading species of oreophyticum for dividing published by Ložek (2000). *L. macroflagellata* often occupies trees, mostly deciduous ones (beech is preferred), but common is on spruce trees too. Individual specimens used to be found mostly under bark of stumps or fallen trunks. In biotopes above the upper forest line lives on stony debris with needed hiding places. It is likewise the reason for classifying *L. macroflagellata* into subgroup of petrophilous species in the group of strictly woodland species (Lisický 1991).

The distribution of *L. macroflagellata* is concentrated in the higher parts of the Carpathians and Sudetes. The deposit in the eastern Carpathians (Czarnohora) indicated that this species lives in the Ukraine too (Wiktor 1973). This species was usually confused with *L. marginata* in the past.

Results

The two recent findings of *L. macroflagellata* from the Czech Republic came from the Moravskoslezské Beskydy Mts. (M. Horsák lgt. & det., greater details in the list of localities). On both localities *L. macroflagellata* was found together with the mountainous form of *L. marginata* under bark of spruce trunks and stumps at altitudes higher than 1000 m a.s.l. After rain events, the specimens of *L. macroflagellata*, being almost invisible owing to their dark colour, were creeping in considerable numbers on the spruce trunks and branches.

The occurrence area of *L. macroflagellata* in the Czech Republic forms more or less continuous strip from northern Bohemia (the Jizerské hory Mts. and Giant Mountains) across the Sudetes up to borders with the Slovak Republic (Fig. 2). The distribution in eastern Germany, southwestern Poland and northwestern Slovakia make contact with the Czech localities (Kerney et al. 1983).

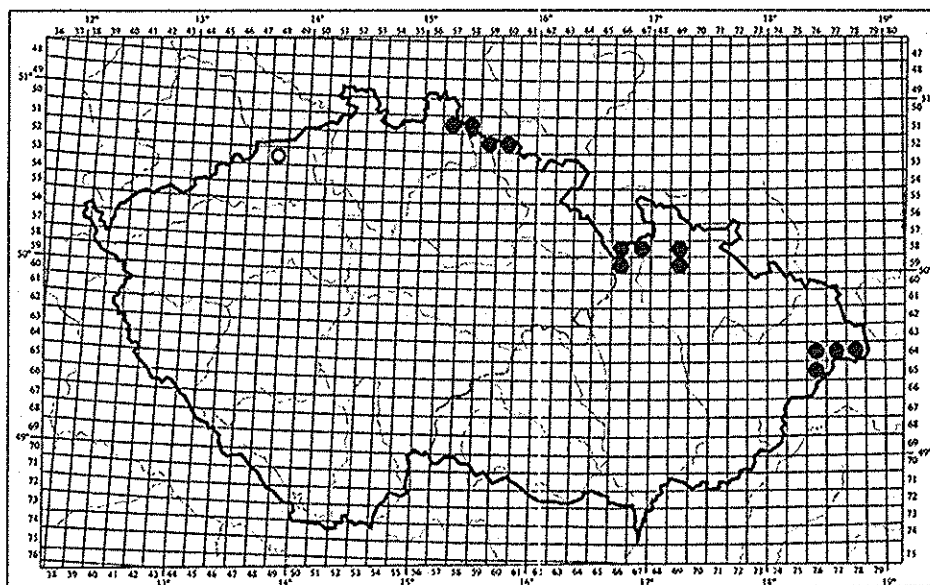


Fig. 2 - Distribution of *Lehmannia macroflagellata* Grossu et Lupu, 1962 in the Czech Republic. Black points - verified localities, circle - not verified locality.

The distribution of *Lehmannia macroflagellata* in the Czech Republic

All findings of *L. macroflagellata* from the territory of the Czech Republic are summarized (see also Fig. 2). Numbers in parentheses marked codes of mapping squares (Pruner & Míka 1996). Abbreviations of museum collections: NMP - Národní muzeum Praha (National Museum Prague), SZMO - Slezské zemské muzeum v Opavě (Silesian Museum in Opava).

Krušné hory Mts. (Ore Mountains)

- vicinity of the village of Nové Město near Hrob (5348a), Simroth lgt. (Uličný 1892-95), anatomically not verified finding moreover published as other species, identified later after Uličný's description of colouring (Hudec & Brabeneč 1965)

Jizerské hory Mts.

- Černý vrch Mt. (1024.6 m) near the settlement of Smědava (5157c), 4. X. 1965, J. Brabeneč lgt., NMP coll.
- Jelení stráž Mt. (1018.2 m) near the settlement of Jizerka (5158c), perhaps 900 m a.s.l., 10.-17. IX. 1964, J. Brabeneč lgt. (Hudec & Brabeneč 1965), 2. X. 1965, J. Brabeneč lgt., SZMO coll., NMP coll.
- Jizera Mt. (1122.0 m) (5157d), about 1000 m a.s.l., 10.-17. IX. 1964, J. Brabeneč lgt. (Hudec & Brabeneč 1965), 3. X. 1965, J. Brabeneč lgt., NMP coll.
- Jizera river valley, near the Bukovec Mt. (5158c), 8. X. 1970, I. Flasar lgt. (Flasar 1998)
- Smrk Mt. (1124.1 m) (5157b), perhaps 800 m a.s.l., 10.-17. IX. 1964, J. Brabeneč lgt. (Hudec & Brabeneč 1965)

Krkonoše Mts. (Giant Mountains)

- Valley of the Bílé Labe brook (5259d, 5260c), 3. VII. 1966, J. Brabeneč lgt., NMP coll. (Brabeneč 1978)
- Valley of the Hřímavý potok brook (today Hřímavá bystřina brook) (5259), 9. VIII. 1967, J. Brabeneč lgt., NMP coll. (Brabeneč 1978)
- Valley of the Tichý potok brook (today Jelení potok brook) (5260), 30. VII. 1967, J. Brabeneč lgt., NMP coll. (Brabeneč 1978)

Králický Sněžník Mts.

- Jeřáb Mt. (1002.8 m) near village of Králky (5966b), 26. IX. 1965, J. Brabeneč lgt. (Hudec & Brabeneč 1965), NMP coll.
- Klepáč Mt. on the southwestern crest of massif of the Králický Sněžník (5866b), 27. IX. 1965, J. Brabeneč lgt. (Hudec & Brabeneč 1965), NMP coll.
- Tvarohné díry, vicinity of a cave near the Morava river source (5867a), 11. VI. 1966, J. Brabeneč lgt., NMP coll.

Hrubý Jeseník Mts.

- headwater of the Divoká Desná river (5969a), 25. IX. 1966, S. Mácha & J. Brabeneč lgt. (Mácha 1970, in litt.), SZMO coll., NMP coll.
- Praděd Mt. (1491.3 m), on the northern slope (5869c), perhaps 900 m a.s.l., 25. X. 1966, G. Vater & S. Mácha lgt. (Vater 1970).

Moravskoslezské Beskydy Mts.

- Burkov Mt. (1031.7 m) southern of village of Horní Lomná (6477d), 25. VI. 1968, S. Mácha lgt., SZMO coll.
- Mionší primeval forest near the village of Horní Lomná (6477d, 6478c), 28. VI. 1968, J. Brabeneč lgt., NMP coll.
- Smrk Mt. (1276.3 m), southern part (6576a), 23. VII. 1985, S. Mácha lgt., SZMO coll.
- Smrk Mt. (1276.3 m), northeastern part (6476c), 23. VIII. 1985, S. Mácha lgt., SZMO coll.
- Smrk Mt. (1276.3 m), southeastern part - Smrk Nature Reserve (6476c), 1080 m a.s.l., 26. VIII. 2000, M. Horsák lgt.
- Lysá hora Mt. (1323.4 m), southwestern part - Mazák National Nature Reserve (6476d), 1050 m a.s.l., 26. VIII. 2000, M. Horsák lgt.

Conclusions

The naked slug species *Lehmannia macroflagellata* is known in the Czech Republic from the mountains in northern and northeastern parts of the country. As a typical species of mountain forests lives at altitudes from 800 m a.s.l. up to more than 1000 m a.s.l. From the territory of the Czech Republic, there are not too many findings but most likely this species commonly occurs at suitable biotopes of the regions where it has been discovered hitherto. Unfortunately, informations about sensitivity of this naked slug towards antropogenous interferences in his stand

are missing still. It seems that *L. macroflagellata* isn't noticeably endangered species in the meantime, firstly owing to repairing of the majority of known stands. Not too big number of finding places is, however, reason for ranking this species to the category Near Threatened (NT) in the Czech molluscs' Check List (Juříčková et al. 2001).

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Současné rozšíření podkornatky karpatské (*Lehmannia macroflagellata*) (*Mollusca: Gastropoda*) v České republice

Podkornatka karpatská (*Lehmannia macroflagellata* Grossu et Lupu, 1962) je nahý plž z čeledi slimákovití (*Limacidae*), který byl na našem území poprvé spolehlivě zjištěn v Jizerských horách a Králickém Sněžníku (Hudec & Brabeneč 1965). Od té doby bylo zaznamenáno jen několik dalších výskytů sousředěných v horách severní a severovýchodní části našeho státu. Jedná se o horský druh, který byl u nás nalezen převážně v nadmořské výšce nad 800 m a je možné tento druh zařadit mezi typické plže oreofytika do členění, které uveřejnil Ložek (2000). V příspěvku je uveden podrobný popis tohoto druhu a jeho základní rozlišovací znaky. Práce shrnuje poznatky o stávajícím rozšíření tohoto plže a jeho ekologii. Dále je uveden seznam všech známých nálezů na našem území, doplněný sítovou mapou (Fig. 2).

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