THE GENUS VERRUCARIA (VERRUCARIACEAE) IN BULGARIAN COLLECTIONS

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ABSTRACT

In the collections of the Institute of Botany (Bulgarian Academy of Sciences), the Faculty of Biology (Sofia University “St. Kliment Ohridski”) and the National Museum of Natural History (Bulgarian Academy of Sciences) are housed many lichen specimens, collected in Bulgaria by different scientists. Among them 10 species of Verrucaria are represented. Foreign specimens, kept in SO and SOMF have been studied for comparison with the Bulgarian ones. Recent data on the distribution of some Verrucaria species is given also.

Keywords: Bulgaria, lichens, pyrenocarpous species

Introduction

The first note about the occurrence of species of Verrucaria Schrad. in Bulgaria date back from the turn of the 19th century when Kazandzhiev published the first Lichen flora of Bulgaria (2). In several publications are included additional records of Verrucaria species (3), (8), (10), etc. Later, after the research activity of Zhelezova (9), for a long period of time only the checklist of the lichenized and lichenicolous fungi of Bulgaria (5) contains summarised data for Verrucaria species. One contribution (4) includes new data obtained during the revision of the Bulgarian specimens from the lichen collection in Krakow, Polish Academy of Sciences (KRAM-L). However, this genus is still poorly studied in Bulgaria. Our work is an attempt to clarify the specimens, housed in the cited Bulgarian collections up to date.

Materials and methods

This study is based on the collections of Verrucaria lichens gathered mainly by Sava Kazandzhiev, Atanas Popnikolov, Bozhana Zhelezova and several recent findings from Bulgaria. They are housed in the Mycological collection of the Institute of Botany, Bulgarian Academy of Sciences (SOMF), the lichen collection of the Faculty of Biology, Sofia University “St. Kliment Ohridski” (SO) and the lichen collection of the National Museum of Natural History, Bulgarian Academy of Sciences (Natl. Hist. Mus.). The specimens were collected from the Black Sea coast region, Forebalkan, Stara Planina Mts, Vitosha Mt, Slavyanka Mt, Pirin Mts and Rhodopi Mts. Microscopic observations were done on Amplival Carl Zeiss and Boeco BM-180/T/SP microscopes using standard methods. Collector abbreviations used – AP (Atanas Popnikolov), SK (Sava Kazandzhiev), BZ (Bozhana Zhelezova) and DS (Dimitar Stoykov).

Distribution of Verrucaria species is presented following the Checklist of the lichenized and lichenicolous fungi of Bulgaria (5). New data for the country is designated in the text by an asterisk. Some foreign specimens were examined for comparison with the Bulgarian ones.

Results and Discussion

Within the examined collection of pyrenocarpous lichens from Bulgaria 10 species of Verrucaria were revealed. Three species are reported from new localities in the country: V. baldensis, V. macrostoma and V. marmorea. Below the list of determined species is provided short information of its ecology and distribution.

Verrucaria baldensis A. Massal. (Syn. V. parmigera J. Steiner f. circumarata J. Steiner)

This species is distinguished by flat, lid-like and ray-like opening involucrellum, white or grayish thallus with black prothallus, enclosing the thallus. Very variable, in general occurs on hard limestones in the country (8). For the account of the distribution see (4).

Specimens examined: Forebalkan, on the limestones of Vratcata, near the town of Vratca, alt. 300 m, 28 July 1934, AP (SO); Vratschanski Balkan, along the road to Milanovo, on limestones, 7 July 2006, DS (SOMF 27226); Vratschanski
Verrucaria marmorea (Scop.) Arnold

With characteristic light peach-like colored thallus and dark prothallus, lined on the edges. Perithecia completely immersed. Typical for Southern part of Europe. Known in Bulgaria from the Black Sea coast, Forebalkan, Stara Planina Mts, Znepole region, Rhodopi Mts (10). According to (8) widespread in the lower parts of the country, mostly at alt. 350-600 m.

Specimens examined: Black Sea coast, on the limestones of Pomorie, as V. marmorea Scop. var. purpurascens A. Massal., Leg. SK, Ident. AP, no date (SO 15) and ibid., as V. marmorea var. rosea (SO 14); Forebalkan, as V. purpurascens (Hoffm.) Körb. var. hoffmanni Körb., on limestones of Vratcata, near the town of Vratsa, 28 July 1934, AP, no date (SO); *Along the road between Dolno Ozirovo and Stoyanovo village, on slope with Carpinus orientalis Mill., on exposed rocks, in the open, 7 July 2006, DS (SOMF 26794); *Vratschanski Karst reserve, along the road from Cheloped to Okoltchitsa peak, below Vezhdata, 15 August 2006, Leg. B. Assyov, Ident. DS (SOMF 27223); *On exposed rocks, above Pavoltsche village, Krouchova Bara, 15 August 2006, DS (SOMF 25457); *Znepole region, Berende and Berende Izvor villages, in both sunny and semishady places, 24 April 2006, DS (SOMF 27225). Reported from the Black Sea coast (2), Vratcata pass by Popnikolov (6) along with V. nigrescens.

Additional Specimen examined: Hungary, Montium Bükk, Nosgyor in Yugo m., N. Komázsza, on calcareous rocks, alt. 370 m, 15 April 1934, F. Fóriss (SO 13), ex Herb. F. Fóriss.

Distribution: Europe (Albania, Bulgaria, Bosnia, Croatia, France, Greece, Slovakia, Slovenia, Switzerland). See (1).

Verrucaria macrostoma Dufour ex DC.

This species is found in the habitat of calcareous rocks near the dry river bed. For the account of the distribution see (4).

Specimen examined: *Forebalkan, Vratschanski Karst reserve, approaching Skaklya waterfall, on the limestone rocks, 17 August 2006, DS (SOMF 27229).

Distribution: Europe.

Verrucaria maura Wahlenb.

This maritime species occurs on both calcareous and siliceous rocks. No Bulgarian specimen is available for study in our collections. Known distribution in Bulgaria: Black Sea coast - from Sozopol and Taulkliman bay (4), (10).

Additional specimen examined: Wales, Pembrokeshire
Verrucaria minuta (Hepp) Zschacke (Syn. Verrucaria lecideoides A. Massal. var. minuta (A. Massal.) Hepp.)

It occurs on non- or weakly calcareous substrata. Known in Bulgaria from the Black Sea coast, Forebalkan, Stara Planina Mts and Vitosha region (4).

Specimens examined: as Verrucaria lecideoides var. minuta, Vitosha region, Vitosha Mt, Krapetz and Bosnek villages, no date, Leg. AP, Ident. Ö. Szatala (SO 17).

Distribution: Europe (Central and Southern).

Verrucaria muralis Ach.

This species occurs on limestone, frequently on pebbles embedded in the ground, in natural and semi-natural habitats. In Bulgaria it is known from several floristic regions, but it is probably more frequent (4).

Specimens examined: as V. muralis f. ferruginosa Nyl., Vitosha region, Vitosha Mt, above Zheleznishkata Gora, 10 July 1930, Leg. AP, Ident. Ö. Szatala (SO 9, 10, 11).

Additional specimen examined: Hungary, Mont. Bükk, Sajó Kazinc, Vár Hegy, alt. 230 m, 5 June 1933, F. Fóriess (SO 12), ex Herb. F. Fóriess.

Distribution: Europe (common), N. Africa, Asia, Australia, New Zealand (7).

Verrucaria nigrescens Pers. (Syn. V. nigrescens Pers. var. controversa A. Massal.; V. nigrescens var. fuscoatra Wallr.)

One of the most frequent species of Verrucaria reported from calcareous areas throughout the country. It can be distinguished under the dissecting microscope by the dark brown thallus with dark brown to black medulla and mainly 1(–3) perithecia immersed in each areole. Except on limestones, frequent on silicate rocks (8).

Specimens examined: *North Eastern Bulgaria, Shoumensko Plato Natural Park, Kroumovi Porti, on calcareous rock, 25 October 2007, DS (SOMF 26862); Znepole region, Dragoman, 19 April 1899, SK (SO 6); Golo Bardo, Ostritsa peak, on limestones, alt. 1100 m, 10 Jul 1959, BZ (Natl. Hist. Mus. 2069); Krapets village, alt. 800 m, 19 June 1934, AP (SO 1); between Zheleznitsa and Bistritsa, 10 August 1930, AP (SO 8); Strouma valley: Konyavska Mt, near the village of Zemen, on limestone rock, June 1952, BZ (Natl. Hist. Mus. 2070); Pirin Mts, 27 July 1954, BZ (SOMF 24023); on marbles to Banderitsa chalet, 1800 m., 10 July 1938, AP (SO 5).

Additional specimen examined: Hungary, com Borsod, on sandy slope, along Dissgyőr, alt. 200 m, 8 April 1922, F. Fóriess (SO 7), ex Herb. F. Fóriess.

Distribution: Europe (common), N. America, N. Africa, Asia, Australia. See (7).

Verrucaria pachyderma Arnold (Fig. 1, 2)


**Specimen examined**: Danube Plain, limestones of Kajluka, Pleven, 28 July 1934, AP (SO), Forebalkan, Sevlievsko, Kormencheskoto Defile, 1 August 1899, leg. SK, det. AP (SO); Slavyanka Mt, on limestones, 10 August 1935, AP (SO); as *V. plumbea* Ach., Forebalkan, in the vicinity of Cherepish (SO 3).

Additional specimen examined: *V. sphinctrina* Ach. (ex Herb. F. Fóriiss), Hungarian Mts Bükk, on limestones, alt. ca 880 m, 7 July 1924, F. Fóriiss (SO).

**Acknowledgment**

The author is grateful to the following curators: Dr. Maya Stoyneva (SO), Dr. Cvetomir Denchev (SOMF) and Dr. Dimitar Dimitrov (Natl. Hist. Mus.) for kindly allowing this study of specimens from *Verrucaria*.

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