

Contribution to the lichenized and lichenicolous fungi in Bulgaria. I

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Received 19 June 2005 / Accepted 16 August 2005

Abstract. Records of 46 lichen species and 5 species of lichenicolous fungi in Bulgaria are presented, of which 13, *Agonimia tristicula*, *Candelariella lutella*, *C. plumbea*, *Intralichen christiansenii*, *Lichenostigma elongata*, *Lichinella nigritella*, *Marchandiomyces corallinus*, *Muellerella pygmaea* var. *athallina*, *Rinodina pityrea*, *Sarcopyrenia gibba* var. *geisleri*, *Scoliciosporum sarothamni*, *Staurothele ambrosiana*, and *Xanthoria nowakii* are new to Bulgaria and several others are new to the Rhodopes and Black Sea coast.

Key words: Black Sea coast, Bulgaria, lichens, lichenicolous fungi, the Rhodopes

Introduction

Records of lichens and lichenicolous fungi observed during two excursions to Bulgaria in 2002 and 2004, samples of which were collected in two floristic regions, the Rhodopes and Black Sea coast (Fig. 1), are presented.

The list contains 46 lichen species and 5 species of lichenicolous fungi, of which *Agonimia tristicula*, *Candelariella lutella*, *C. plumbea*, *Intralichen christiansenii*, *Lichenostigma elongata*, *Lichinella nigritella*, *Marchandiomyces*

corallinus, *Muellerella pygmaea* var. *athallina*, *Rinodina pityrea*, *Sarcopyrenia gibba* var. *geisleri*, *Scoliciosporum sarothamni*, *Staurothele ambrosiana*, and *Xanthoria nowakii* are new to Bulgaria, *Acarospora macrospora*, *Candelariella medians*, *Dirina stenhammari*, *Fulgensia bracteata*, *Haematomma nemetzii*, *H. ochroleucum* var. *ochroleucum* and var. *porphyricum*, *Lecanora saligna*, *Lichinella stipatula*, *Opegrapha rupestris*, *Peltigera hymenina*, *Phaeophyscia cernohorskyi*, *Protoblastenia calva*, *P. cyclospora*, *Protoparmelia psarophana*, *Toninia tumidula*, and *Xanthoria calcicola* are new to the Rhodopes, and *Buellia badia* and *Gyalecta truncigena* are new to the Black Sea coast.

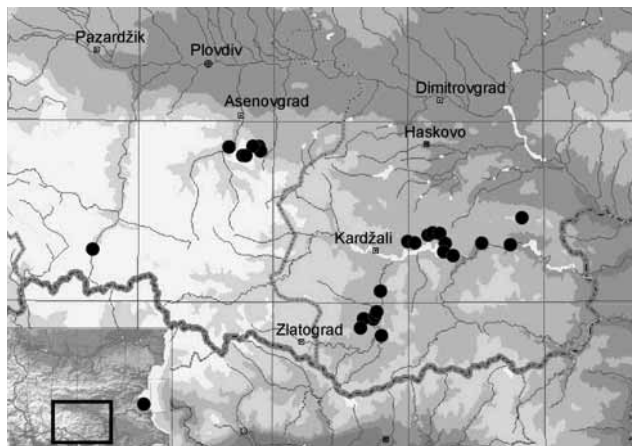


Fig. 1. Location of the collecting sites

Materials and Methods

All the presented samples were collected by the author and are currently deposited in the Herbarium of Faculty of Biological Sciences at the University of South Bohemia in České Budějovice (CBU – a provisional abbreviation).

Most species were determined mainly with the aid of Poelt (1969), Poelt & Vězda (1977), Clauzade & Roux (1985), Purvis *et al.* (1992), and Wirth (1995). *Gonohymenia nigritella*, *Lichinella stipatula*, *Marchandiomyces corallinus*, *Muellerella pygmaea* var. *athallina*, *Rinodina gennarii*, *Staurothele ambrosiana*, and *Xanthoria nowakii* have been seen by specialists. TLC was used to confirm the determination of varieties in *Haematomma ochroleucum*. Species of *Caloplaca*

are excluded from the present contribution. Nomenclature of lichens and lichenicolous fungi is mainly according to Nimis & Martellos (2003) and Santesson *et al.* (2004) respectively.

Fundamental knowledge on the distribution of species reported from Bulgaria is taken from Mayrhofer *et al.* (2005).

Special part

Species prefixed by an asterisk are new to Bulgaria, and those by “!” and “!!” are newly recorded from the Rhodopes and the Black Sea coast respectively.

! *Acarospora macrospora* (Hepp) Bagl.

The Rhodopes: Distr. Kurdzhali, Kirkovo, Starovo, in village, alt. 350 m, 41°28' N, 25°25' E, on calcareous sandstone rocky outcrop, 11 Aug 2004 (CBU 2145).

* *Agonimia tristicula* (Nyl.) Zahlbr.

The Rhodopes: Distr. Plovdiv, Asenovgrad, Dobrostan, muscicolous on *Homalothecium sericeum* (Hedw.) Schimp., *Hypnum cupressiforme* Hedw., and *Pseudoleskeella catenulata* (Brid. ex Schrad.) Kindb. over calcareous rocks around Martsiganitsa hut, ca 6 km W of village, alt. ca 1200 m, 41°56' N, 24°53' E, 25 Aug 2004 (CBU 2060); Distr. Smolyan, Borino, Yagodina, near Yagodinska Peshtera cave, on limestone rock, 26 Oct 2002 (CBU 748); Distr. Kurdzhali, Kurdzhali, Dolishte, limestone rocks in valley ca 1 km W of village, alt. 300 m, 41°38' N, 25°35' E, on hard limestone rock, 16 Aug 2004 (CBU 2110, 2259).

Aspicilia calcarea (L.) Mudd

The Rhodopes: Distr. Kurdzhali, Kurdzhali, Dolishte, limestone rocks in valley ca 1 km W of village, alt. 300 m, 41°38' N, 25°35' E, on hard limestone rock, 16 Aug 2004 (CBU 2195).

!! *Buellia badia* (Fr.) A. Massal.

Black Sea coast: Distr. Burgas, Sinemorets, coastal rocks ca 2 km SE of village, alt. > 20 m, 42°00'30" N, 28°00' E, parasitic on *Neofuscelia* cf. *verruculifera* (Nyl.) Essl., 22 Aug 2004 (CBU 2049).

* *Candelariella lutella* (Vain.) Räsänen

The Rhodopes: Distr. Haskovo, Stambolovo, Rabovo, near dam of lake “Studen Kladenets”, alt. 250 m, 41°40' N, 25°40' E, on bark of *Pistacia terebinthus* L., 18 Aug 2004 (CBU 2138).

Note: Determined with the aid of Hakulinen (1954) and Poelt & Vězda (1977). According to Martellos & Nimis (2000), *C. lutella* is a cool-temperate species and its distribution in Europe is boreal-montane (e.g. Hafellner & Türk 2001; Santesson *et al.* 2004). Therefore, the occurrence in low altitude of southern Bulgaria is exceptional.

! *C. medians* (Nyl.) A.M. Sm.

The Rhodopes: Distr. Plovdiv, Asenovgrad, Dobrostan, calcareous rocks around Martsiganitsa hut, ca 6 km W of village, alt. ca 1200 m, 41°56' N, 24°53' E, on hard limestone rock, 25 Aug 2004 (CBU 2117); Distr. Kurdzhali, Kurdzhali, Dolishte, limestone rocks in valley ca 1 km W of village, alt. 300 m, 41°38' N, 25°35' E, on hard limestone rock, 16 Aug 2004 (CBU 2121); Distr. Haskovo, Stambolovo, Byal Kladenets,

limestone rocks in valley below village, alt. 350 m, 41°37' N, 25°40' E, on hard limestone rock, 17 Aug 2004 (CBU 2095).

* *C. plumbea* Poelt & Vězda

Black Sea coast: Distr. Burgas, Sinemorets, coastal rocks ca 2 km SE of village, alt. ca 5 m, 42°00'30" N, 28°00' E, on coastal rocks in supralittoral zone, 22 Aug 2004 (CBU 2111, 2112, 2187).

Note: Determined with the aid of Khodosovtsev *et al.* (2004) and Poelt & Vězda (1976, 1977). Bulgarian specimens have been compared with the isotype specimens (Vězda, Lich. sel. exs., no. 1381, H!, PRM!).

Cetraria aculeata (Schreb.) Fr.

The Rhodopes: Distr. Haskovo, Madzharovo, near river Arda, 41°40' N, 25°50' E, on sunny volcanic rock, 27 Oct 2002 (CBU 743).

Diplotomma alboatrum (Hoffm.) Flot. (syn. *Buellia ambigua* (Ach.) Malme)

Black Sea coast: Distr. Burgas, Sinemorets, coastal rocks ca 2 km SE of village, alt. ca 10 m, 42°00'30" N, 28°00' E, on silicate rock with *Caloplaca thallicola* (Wedd.) Du Rietz and *C. viridirufa* (Ach.) Zahlbr., 22 Aug 2004 (CBU 2246).

! *Dirina stenhammari* (Fr.) Poelt & Follmann (syn. *D. massiliensis* f. *sorediata* (Müll. Arg.) Tehler)

The Rhodopes: Distr. Haskovo, Stambolovo, Byal Kladenets, limestone rocks in valley below village, alt. 350 m, 41°37' N, 25°40' E, beneath limestone overhangs, 17 Aug 2004 (CBU 2079).

! *Fulgensia bracteata* (Hoffm.) Räsänen

The Rhodopes: Distr. Kurdzhali, Kurdzhali, Dolishte, limestone rocks in valley ca 1 km W of village, alt. 300 m, 41°38' N, 25°35' E, over cushion-like mosses on hard limestone rock, 16 Aug 2004 (CBU 2424, 2426); Distr. Haskovo, Stambolovo, Byal Kladenets, limestone rocks in valley below village, alt. 350 m, 41°37' N, 25°40' E, over cushion-like mosses including *Trichostomum crispulum* Bruch, *Tortella inclinata* (R. Hedw.) Limpr., and *T. tortuosa* (Hedw.) Limpr., 17 Aug 2004 (CBU 2425).

F. fulgens (Sw.) Elenkin

The Rhodopes: Distr. Haskovo, Stambolovo, Byal Kladenets, limestone rocks in valley below village, alt. 350 m, 41°37' N, 25°40' E, on hard limestone rock, 17 Aug 2004 (CBU 2099).

F. schistidii (Anzi) Poelt

The Rhodopes: Distr. Plovdiv, Asenovgrad, Dobrostan, calcareous rocks in a small polje ca 5 km W of village, alt. 1300 m, 41°56' N, 24°53' E, muscicolous on *Orthotrichum cupulatum* Hoffm. ex Brid., 25 Aug 2004 (CBU 2231).

!! *Gyalecta truncigena* (Ach.) Hepp

Black Sea coast: Distr. Burgas, Sinemorets, coastal rocks ca 2 km SE of village, alt. ca 20 m, 42°00'30" N, 28°00' E, on bark of old *Ulmus* near sea coast, 22 Aug 2004 (CBU 2141).

Note: In Bulgaria, *G. truncigena* was previously known only from a montane zone of Pirin Mts (Pišút 2001).

!Haematomma nemetzii J. Steiner

The Rhodopes: Distr. Haskovo, Lyubimets, Malko Gradishte, rocks nearby Sveta Marina hill ca 5 km SW of village, alt. 600 m, 41°44' N, 26°00' E, on vertical faces of pale porous volcanic rock, 19 Aug 2004 (CBU 2013); Stambolovo, Byal Kladenets, protected area "Golemya Sipey" S of village, alt. 420 m, 41°37' N, 25°40' E, on acid volcanic rock, 17 Aug 2004 (CBU 2092).

Note: Bulgarian specimens have been compared with the sample from Bulgarian Black Sea coast (Vězda, Lich. sel. exs., no. 1355!).

!H. ochroleucum (Neck.) J.R. Laundon var. *ochroleucum* and var. *porphyricum* (Pers.) J.R. Laundon

The Rhodopes: Distr. Haskovo, Lyubimets, Malko Gradishte, rocks nearby Sveta Marina hill ca 5 km SW of village, alt. 600 m, 41°44' N, 26°00' E, on shaded vertical side of porous volcanic rock, 19 Aug 2004 (CBU 2171).

Note: TLC have confirmed the presence of porphyritic acid, usnic acid, and zeorin in var. *ochroleucum*, and atranorin and zeorin in var. *porphyricum*.

***Intralichen christiansenii** (D. Hawksw.) D. Hawksw. & M.S. Cole (syn. *Bispora christiansenii* D. Hawksw.)

The Rhodopes: Distr. Plovdiv, Asenovgrad, Dobrostan, calcareous rocks around Martsiganitsa hut, ca 6 km W of village, alt. ca 1200 m, 41°56' N, 24°53' E, parasitic in apothecia of *Caloplaca biatorina* (A. Massal.) J. Steiner, 25 Aug 2004 (CBU 2253); Distr. Kurdzhali, Kirkovo, Starovo, in village, alt. 350 m, 41°28' N, 25°25' E, parasitic on *Acarospora macrospora*, 11 Aug 2004 (CBU 2146); Distr. Haskovo, Stambolovo, Byal Kladenets, limestone rocks in valley below village, alt. 350 m, 41°37' N, 25°40' E, parasitic in apothecia of *Caloplaca lactea* (A. Massal.) Zahlbr., 17 Aug 2004 (CBU 2237).

Lecanora muralis (Schreb.) Rabenh. (syn. *Protoparmeliopsis muralis* (Schreb.) M. Choisy)

The Rhodopes: Distr. Kurdzhali, Kirkovo, Bregovo, in valley of river Vurbitsa ca 2 km E of village, alt. 300 m, 41°28' N, 25°25' E, on rather acidic volcanic rock, 11 Aug 2004 (CBU 2155).

L. reuteri Schaer.

The Rhodopes: Distr. Plovdiv, Asenovgrad, Dobrostan, calcareous rocks in a small polje ca 2 km W of village, alt. 1300 m, 41°56' N, 24°53' E, on shaded vertical side of hard limestone rock, 25 Aug 2004 (CBU 2203).

!L. saligna (Schrad.) Zahlbr.

The Rhodopes: Distr. Kurdzhali, Kirkovo, Bregovo, in valley of river Vurbitsa ca 2 km E of village, alt. 300 m, 41°28' N, 25°25' E, on dead wood of shrub twigs, 11 Aug 2004 (CBU 2201).

Lecidea fuscoatra (L.) Ach.

The Rhodopes: Distr. Kurdzhali, Kirkovo, Bregovo, in valley of a small tributary to river Vurbitsa ca 1 km S of village, alt. 280 m, 41°28' N, 25°25' E, on exposed base-rich volcanic rock, 11 Aug 2004 (CBU 2162); Kirkovo, Starovo, in village, alt. 350 m, 41°28' N, 25°25' E, on calcareous sandstone rocky outcrop, 11 Aug 2004 (CBU 2161).

Lecidella carpathica Körb.

The Rhodopes: Distr. Kurdzhali, Kirkovo, Bregovo, in valley of river Vurbitsa ca 2 km E of village, alt. 300 m, 41°28' N, 25°25' E, on rather acid volcanic rock, 11 Aug 2004 (CBU 2156).

L. stigmatea (Ach.) Hertel & Leuckert

The Rhodopes: Distr. Haskovo, Stambolovo, Byal Kladenets, limestone rocks in valley below village, alt. 350 m, 41°37' N, 25°40' E, on hard limestone rock, 17 Aug 2004 (CBU 2190).

Leptogium saturninum (Diks.) Nyl.

The Rhodopes: Distr. Smolyan, Borino, Yagodina, near Yagodinska Peshtera cave, on hardwood bark, 26 Oct 2002 (CBU 750).

***Lichenostigma elongata** Nav.-Ros. & Hafellner

The Rhodopes: Distr. Plovdiv, Asenovgrad, Dobrostan, calcareous rocks around Martsiganitsa hut, ca 6 km W of village, alt. ca 1200 m, 41°56' N, 24°53' E, parasitic on *Lecanora muralis*, 25 Aug 2004 (CBU 2188); Dobrostan, calcareous rocks in a small polje ca 2 km W of village, alt. 1300 m, 41°56' N, 24°53' E, parasitic on *Lobothallia radiosa* (Hoffm.) Hafellner, 25 Aug 2004 (CBU 2170); Distr. Kurdzhali, Kurdzhali, Dolishte, limestone rocks in valley ca 1 km W of village, alt. 300 m, 41°38' N, 25°35' E, parasitic on *Aspicilia calcarea* and *Lobothallia radiosa*, 16 Aug 2004 (CBU 2193, 2196, 2242); Stambolovo, Byal Kladenets, limestone rocks in valley below village, alt. 350 m, 41°37' N, 25°40' E, parasitic on *L. radiosa*, 17 Aug 2004 (CBU 2228); Distr. Haskovo, Lyubimets, Malko Gradishte, rocks nearby Sveta Marina hill ca 5 km SW of village, alt. 600 m, 41°44' N, 26°00' E, parasitic on *Lobothallia radiosa*, 19 Aug 2004 (CBU 2178).

Note: Determined with the aid of Calatayud *et al.* (2002).

***Lichinella nigritella** (Lettau) P. Moreno & Egea

The Rhodopes: Distr. Kurdzhali, Dzhebel, Rogozche, rocks in valley of river Vurbitsa near railway station, alt. 300 m, 41°28' N, 25°25' E, on sunny, occasionally irrigated base-rich volcanic rock, 12 Aug 2004, rev. A. Guttová (CBU 2176).

!L. stipatula Nyl.

The Rhodopes: Distr. Kurdzhali, Dzhebel, Rogozche, rocks in valley of river Vurbitsa near railway station, alt. 300 m, 41°28' N, 25°25' E, on sunny, occasionally irrigated base-rich volcanic rock, 12 Aug 2004, conf. A. Guttová (CBU 2175).

***Marchandiomyces corallinus** (Roberge) Diederich & D. Hawksw.

Black Sea coast: Distr. Burgas, Sinemorets, coastal rocks ca 2 km SE of village, alt. ca 20 m, 42°00'30" N, 28°00' E, parasite on cf. *Protoparmelia* sp., 22 Aug 2004 (CBU 2125); The Rhodopes: Distr. Kurdzhali, Momchilgrad, Ptichar, rocks in valley of river Vurbitsa, alt. 300 m, 41°28' N, 25°25' E, parasite on *Flavoparmelia* sp. on acid volcanic rock, 12 Aug 2004 (CBU 2020); Distr. Haskovo, Madzharovo, near dam of lake "Studen Kladenets", 41°40' N, 25°40' E, parasitic on *Neofuscelia pulla*, *Cetraria aculeata*, and other species occurring on sunny volcanic rock, 27 Oct 2002, det. J. Kocourková (CBU 699).

**Muellerella pygmaea* (Körb.) D. Hawksw. var. *athallina* (Müll. Arg.) Triebel

The Rhodopes: Distr. Kurdzhali, Kurdzhali, Dolishte, limestone rocks in valley ca 1 km W of village, alt. 300 m, 41°38' N, 25°35' E, parasite on *Caloplaca* cf. *polycarpa* (A. Massal.) Zahlbr., 16 Aug 2004, det. J. Kocourková (CBU 2225).

Neofuscelia pulla (Ach.) Essl. (syn. *Parmelia pulla* Ach.)

The Rhodopes: Distr. Kurdzhali, Kurdzhali, Dolishte, limestone rocks in valley ca 1 km W of village, alt. 300 m, 41°38' N, 25°35' E, on dead twigs of ground shrubs growing on calcareous soil, 16 Aug 2004 (CBU 2120); Distr. Haskovo, Madzharovo, near dam of lake "Studen Kladenets", 41°40' N, 25°40' E, on sunny volcanic rock, 27 Oct 2002 (CBU 742).

!*Opegrapha rupestris* Pers.

The Rhodopes: Distr. Smolyan, Devin, Trigrad, near cave, ca 2 km downstream of village, parasitic on *Verrucaria calciseda* DC. growing on hard limestone rock, 26 Oct 2002 (CBU 747).

O. varia Pers.

Black Sea coast: Distr. Burgas, Sinemorets, coastal rocks ca 2 km SE of village, alt. ca 15 m, 42°00'30" N, 28°00' E, on bark of *Ulmus*, 22 Aug 2004 (CBU 2245).

!*Peltigera hymenina* (Ach.) Delise

The Rhodopes: Distr. Haskovo, Madzharovo, protected area "Molina Skala" ca 3 km WNW of town, alt. 200 m, 41°39' N, 25°51' E, on shallow soil over sunny volcanic rocky outcrop, 18 Aug 2004 (CBU 2249).

Note: Previously, *P. hymenina* was only known in Bulgaria from the Balkan Range (cf. Mayrhofer *et al.* 2005).

!*Phaeophyscia cernohorskyi* (Nádv.) Essl. (syn. *Ph. strigosa* (Poelt & Bushardt) N.S. Golubk.)

The Rhodopes: Distr. Kurdzhali, Kirkovo, Starovo, in forest ca 2 km E of village, alt. 390 m, 41°28' N, 25°25' E, on bark of *Quercus frainetto* Ten., 10 Aug 2004 (CBU 2200).

Note: Previously, *P. cernohorskyi* was only known in Bulgaria from the valley of River Strouma, near Kroupnik (Pišút 2001).

Placocarpus schaeferi (Fr.) Breuss

The Rhodopes: Distr. Kurdzhali, Kurdzhali, Dolishte, on limestone rock in valley ca 1 km W of village, alt. 300 m, 41°38' N, 25°35' E, on hard limestone rock, 16 Aug 2004 (CBU 2097); Distr. Haskovo, Madzharovo, protected area "Kovan Kaya", ca 3 km NNE of town, alt. 240 m, 41°39' N, 25°51' E, on base-rich volcanic rock, 19 Aug 2004 (CBU 2150).

Polysporina lapponica (Schaer.) Degel.

The Rhodopes: Distr. Kurdzhali, Kurdzhali, Kaloyantsi, protected area "Yumrouk Skala", ca 5 km SW of village, alt. ca 500 m, 41°37' N, 25°31' E, parasitic on *Acarospora* cf. *fuscata* (Schr.) Th. Fr. on acid volcanic stones on N-exposed slope, 15 Aug 2004 (CBU 1999); Kirkovo, Bregovo, in valley of river Vurbitsa ca 2 km E of village, alt. 300 m, 41°28' N, 25°25' E, parasitic on *A. fuscata*, 11 Aug 2004 (CBU 2157).

!*Protoblastenia calva* (Dicks.) Zahlbr.

The Rhodopes: Distr. Plovdiv, Asenovgrad, Dobrostan, calcareous rocks in a small polje ca 2 km W of village, alt. 1300 m, 41°56' N, 24°53' E, on vertical side of hard limestone rock, 25 Aug 2004 (CBU 2206).

!*P. cyclospora* (Körb.) Poelt

The Rhodopes: Distr. Haskovo, Stambolovo, Byal Kladenets, limestone rocks in valley below village, alt. 350 m, 41°37' N, 25°40' E, on hard limestone rock, 17 Aug 2004 (CBU 2189).

Note: Previously, *P. cyclospora* was only known in Bulgaria from the Pirin Mts (cf. Mayrhofer *et al.* 2005).

!*Protoparmelia psarophana* (Nyl.) Sancho & A. Crespo (syn. *Leacanora psarophana* Nyl.)

The Rhodopes: Distr. Kurdzhali, Kurdzhali, Shiroko Pole, protected area "Sredna Arda", ca 5 km E of village, alt. ca 240 m, 41°37' N, 25°31' E, on exposed acid volcanic rock, 15 Aug 2004 (CBU 2144).

Note: Bulgarian specimen has been compared with the sample from the Bulgarian Black Sea coast (Vězda, Lich. sel. exs., no. 1354!).

Rinodina gennarii Bagl. (syn. *Rinodina subexigua* (Nyl.) H. Olivier)

Black Sea coast: Distr. Burgas, Sinemorets, coastal rocks ca 2 km SE of village, alt. ca 5 m, 42°00'30" N, 28°00' E, on rocks in supralittoral zone, 22 Aug 2004, det. H. Mayrhofer (CBU 2221).

**R. pityrea* Ropin & H. Mayrhofer

The Rhodopes: Distr. Plovdiv, Luki, Yugovo, in village, alt. 700 m, 41°55' N, 24°55' E, on N-exposed mortar, 24 Aug 2004 (CBU 2229).

Note: Determined with the aid of Ropin & Mayrhofer (1995).

R. pyrina (Ach.) Arnold

The Rhodopes: Distr. Haskovo, Stambolovo, Rabovo, in valley of river Arda, alt. 190 m, 41°40' N, 25°40' E, on bark of *Salix fragilis* L., 18 Aug 2004 (CBU 2159).

Rinodinella controversa (A. Massal.) H. Mayrhofer & Poelt

The Rhodopes: Distr. Kurdzhali, Kurdzhali, Dolishte, limestone rocks in valley ca 1 km W of village, alt. 300 m, 41°38' N, 25°35' E, on hard limestone rock, 16 Aug 2004 (CBU 2218).

Sarcogyne regularis Körb.

The Rhodopes: Distr. Haskovo, Stambolovo, Byal Kladenets, limestone rocks in valley below village, alt. 350 m, 41°37' N, 25°40' E, on exposed hard limestone rocks, 17 Aug 2004 (CBU 2165).

**Sarcopyrenia gibba* (Nyl.) Nyl. var. *geisleri* Beckh. ex Körb.

The Rhodopes: Distr. Haskovo, Stambolovo, Byal Kladenets, limestone rocks in valley below village, alt. 350 m, 41°37' N, 25°40' E, on exposed hard limestone rock, 17 Aug 2004 (CBU 2172).

**Scoliciosporum sarothamni* (Vain.) Vězda

The Rhodopes: Distr. Kurdzhali, Kirkovo, Starovo, in village, alt. 350 m, 41°28' N, 25°25' E, on asphalt roofing material on small roof, 10 Aug 2004 (CBU 2010).

**Staurothele ambrosiana* (A. Massal.) Zschacke

The Rhodopes: Distr. Haskovo, Madzharovo, by river Arda, 41°40' N, 25°50' E, on volcanic boulder occasionally flooded by water, 29 Oct 2002, det. O. Breuss (CBU 695).

Synalissa symphorea (Ach.) Nyl.

The Rhodopes: Distr. Haskovo, Madzharovo, by river Arda, 41°40' N, 25°50' E, on sunny volcanic rock, 27 Oct 2002 (CBU 741).

! *Toninia tumidula* (Sm.) Zahlbr.

The Rhodopes: Distr. Kurdzhali, Kurdzhali, Dolishte, limestone rocks in valley ca 1 km W of village, alt. 300 m, 41°38' N, 25°35' E, on hard limestone rock, 16 Aug 2004 (CBU 2241).

Note: Previously, *T. tumidula* was only known in Bulgaria from the Black Sea coast (cf. Mayrhofer *et al.* 2005).

! *Xanthoria calcicola* Oksner

Black Sea coast: Distr. Burgas, Sinemorets, coastal rocks ca 2 km SE of village, alt. 10-20 m, 42°00'30" N, 28°00' E, on coastal rocks, 22 Aug 2004 (CBU 2183); The Rhodopes: Distr. Smolyan, Devin, Trigrad, near cave ca 2 km downstream of village, on limestone rock, 26 Oct 2002 (CBU 746); Distr. Haskovo, Stambolovo, Rabovo, in valley of river Arda, alt. 190 m, 41°40' N, 25°40' E, on base-rich volcanic rock, 18 Aug 2004 (CBU 2041); Lyubimets, Malko Gradishte, rocks near Sveta Marina hill ca 5 km SW of village, alt. 600 m, 41°44' N, 26°00' E, on exposed base-rich porous volcanic rock, 19 Aug 2004 (CBU 2142).

**X. nowakii* S. Kondratyuk & U. Bielczyk

The Rhodopes: Distr. Plovdiv, Asenovgrad, Dobrostan, calcareous rocks around Martsiganitsa hut, ca 6 km W of village, alt. ca 1200 m, 41°56' N, 24°53' E, on hard limestone rock beneath overhang, with untypical *Caloplaca biatorina*, 25 Aug 2004, conf. U. Bielczyk (CBU 2257).

Acknowledgements. I would like to thank Ursula Bielczyk (Kraków, PL), Othmar Breuss (Wien, A), Anna Gutková (Bratislava, SK), Jana Kocourková (Prague, CZ), and Helmut Mayrhofer (Graz, A) for determining or revising critical lichens, J. Košnar (České Budějovice, CZ) for determining the bryophytes, and Mark R.D. Seaward (Bradford, UK) for checking my English.

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