Additional lichens and some lichenicolous fungi from the Una National Park (Bosnia and Herzegovina)

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Abstract: A list of 62 taxa (61 species) of lichens and 7 species of lichenicolous fungi from the Una National Park in the north-western part of Bosnia and Herzegovina is presented. The lichens *Caloplaca crenulatella*, *Dimerella pineti*, *Lecanora expallens*, *Lopadium disciforme*, *Placynthiella icmalea*, *Toninia athallina* and the lichenicolous fungi *Abrothallus bertianus*, *A. parmeliarum*, *Cornutispora lichenicola*, *Endococcus rugulosus*, and *Sphaerellothecium parmeliae* are new to Bosnia and Herzegovina.

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Introduction

Out of the three National Parks in Bosnia and Herzegovina (i.e. Sutjeska, Kozara, Una) the Una National Park, founded in 2008, is the most recent one. It covers 19,800 ha and is located in the Una-Sana Canton close to the city Bihać in the north-western part of Bosnia and Herzegovina near the border with Croatia (Fig. 1).

There are only few recent floristic papers dealing with the lichen flora of Bosnia and Herzegovina (CHRISTENSEN 1994, WECKESSER & VISNJIĆ 2005, BILOVITZ & MAYRHOFER 2009, BILOVITZ et al. 2009, BILOVITZ & MAYRHOFER 2010).

BILOVITZ et al. (2009) report 57 taxa of lichens (56 species) from the Una National Park. In the present contribution we add 39 new lichenized and 7 lichenicolous fungi, so there is a total of 96 taxa of lichens (95 species) and 7 lichenicolous fungi.

Material and methods

The lichenized and lichenicolous fungi presented in this paper are based on a lichen collection made by Matthias SCHWAHN, who visited the Una National Park in October 2009.

The specimens have been identified (using routine light microscopy techniques) mainly with the aid of HAWKSWORTH (1983), WIRTH (1995) and IHLEN & WEDIN (2008). Some of the identifications required verification by using standardized thin-layer chromatography (TLC) following the protocols of WHITE & JAMES (1985) and ORANGE et al. (2001).

The specimens are preserved in the herbarium of the Institute of Plant Sciences, Karl-Franzens-University Graz (GZU), a smaller number of duplicates is housed at the University of Bihać.

The nomenclature follows NIMIS & MARTELLOS (2003), SANTESSON et al. (2004) or other modern treatments. New records for Bosnia and Herzegovina are marked with an asterisk (*).

Fig. 1. Location of the Una National Park

List of sampling locations

Bosnia and Herzegovina, NW-Bosnia, Una-Sana, Una National Park, ...

01	SE of Kulen Vakuf, surroundings of the mountain Osjecenica, 1370–1390 m, N 44°30,270'–44°30,292', E 16°15,490'–16°15,534', mixed woodland, 10.X. 2009, leg. M. Schwahn.
02	SE of Kulen Vakuf, surroundings of the mountain Osjecenica, 1450 m, N 44° 30,496', E 16°15,204', mixed woodland, 10.X.2009, leg. M. Schwahn.
03	SE of Kulen Vakuf, surroundings of the mountain Osjecenica, 1080 m, N 44° 30,823', E 16°13,233', rock-ridden pasture, 10.X.2009, leg. M. Schwahn.

List of substrates and their abbreviations

Abi alb	*Abies alba*
Ace pse	*Acer pseudoplatanus*
Fag syl	*Fagus sylvatica*
cal	on calcareous rocks, in rock crevices
mus	on mosses
mus-cal	on mossy calcareous rocks

List of lichenized fungi

Aspicilia contorta (Hoffm.) Kremp.: 03 (cal)

Buellia griseovirens (Turner & Borrer ex Sm.) Almb.: 01 (Fag syl), 02 (Abi alb, Ace pse)

Calicium abietinum Pers.: 02 (Abi alb)
**Caloplaca crenulatella* (Nyl.) H.Olivier: 03 (cal)
Caloplaca herbidella (Hue) H.Magn.: 01 (Ace pse), 02 (Ace pse)
Caloplaca variabilis (Pers.) Müll.Arg.: 03 (cal)
Candelariella aurella (Hoffm.) Zahlbr.: 03 (cal)
Cladonia coniocraea (Flörke) Spreng.: 01 (Abi alb)
Cladonia fimbriata (L.) Fr.: 02 (Abi alb)
Cladonia polydactyla (Flörke) Spreng.: 02 (Abi alb)
Cladonia pyxidata (L.) Hoffm.: 01 (mus), 02 (Fag syl)
Collema cristatum (L.) Weber ex F.H.Wigg.: 03 (mus-cal)

**Dimerella pineti* (Ach.) Vězda: 02 (Abi alb)

Evernia divaricata (L.) Ach.: 01 (Fag syl)

Fuscidea stiriaca (A.Massal.) Hafellner: 01 (Fag syl)

Hypogymnia farinacea Zopf: 01 (Fag syl)
Hypogymnia physodes (L.) Nyl.: 01 (Abi alb, Fag syl), 02 (Abi alb)
Hypogymnia tubulosa (Schaer.) Hav.: 02 (Abi alb)

Lecanora argentata (Ach.) Malme: 01 (Fag syl), 02 (Ace pse)
Lecanora carpinea (L.) Vain.: 02 (Ace pse)
Lecanora chlarotera Nyl.: 01 (Abi alb, Fag syl), 02 (Abi alb, Ace pse)
**Lecanora expallens* Ach.: 02 (Abi alb)
Lecanora horiza (Ach.) Linds.: 01 (Fag syl)
Lecanora persimilis (Th.Fr.) Nyl.: 02 (Abi alb)
Lecanora pulicaris (Pers.) Ach.: 02 (Abi alb)
Lecanora subrugosa Nyl.: 02 (Fag syl)
Lecidella achristotera (Nyl.) Hertel & Leuckert: 02 (Ace pse)
Lepraria rigidula (de Lesd.) Tønsberg: 01 (Ace pse), 02 (Abi alb)
Lobaria pulmonaria (L.) Hoffm.: 01 (Ace pse), 02 (Ace pse)
**Lopadium disciforme* (Flot.) Kullh.: 02 (Ace pse)

Melanelixia fuliginosa (Fr. ex Duby) O.Blanco et al. subsp. *fuliginosa*: 01 (Ace pse)
Melanelixia fuliginosa subsp. *glabratula* (Lamy) J.R.Laundon: 01 (Ace pse), 02 (Ace pse)
Melanelixia subaurifera (Nyl.) O.Blanco et al.: 01 (Ace pse), 02 (Ace pse)
Melanohalea exasperatula (Nyl.) O.Blanco et al.: 02 (Abi alb)

Nephroma resupinatum (L.) Ach.: 02 (Ace pse)

Ochrolechia subviridis (Høeg.) Erichsen: 01 (Ace pse)

Parmelia saxatilis (L.) Ach.: 01 (Abi alb, Ace pse, Fag syl), 02 (Abi alb, Ace pse)
Parmelia sulcata Taylor: 01 (Ace pse), 02 (Ace pse)
Parmeliella triptophylla (Ach.) Müll.Arg.: 02 (Ace pse)
Parmeliopsis ambigua (Wulfen) Nyl.: 01 (Abi alb, Fag syl), 02 (Abi alb)
Parmeliopsis hyperopta (Ach.) Arnold: 02 (Abi alb, Fag syl)
Pertusaria albescens (Huds.) M.Choisy & Werner: 01 (Ace pse, Fag syl), 02 (Ace pse)
Pertusaria amara (Ach.) Nyl.: 01 (Fag syl), 02 (Abi alb, Ace pse)
Pertusaria coccodes (Ach.) Nyl.: 02 (Abi alb)
Pertusaria coronata (Ach.) Th.Fr.: 02 (Ace pse)
Pertusaria flavida (DC.) J.R.Laundon: 01 (Ace pse), 02 (Ace pse)
Pertusaria pertusa (Weigel) Tuck.: 01 (Fag syl), 02 (Ace pse)
Phaeophyscia orbicularis (Neck.) Moberg: 02 (Ace pse)
Phlyctis argena (Spreng.) Flot.: 01 (Abi alb, Fag syl), 02 (Abi alb, Ace pse, Fag syl)
Physconia distorta (With.) J.R.Laundon: 01 (Ace pse)
**Placynthiella icmalea* (Ach.) Coppins & P.James: 02 (Abi alb)
Platismatia glauca (L.) W.L.Culb. & C.F.Culb.: 01 (Fag syl), 02 (Abi alb, Fag syl)
Protoblastenia calva (Dicks.) Zahlbr.: 03 (cal)
Protoparmeliopsis muralis (Schreb.) M.Choisy: 03 (cal)
Pseudevernia furfuracea (L.) Zopf: 02 (Abi alb)

Ramalina farinacea (L.) Ach.: 01 (Ace pse, Fag syl)
Rinodina bischoffii (Hepp) A.Massal.: 03 (cal)
Rinodina immersa (Körb.) Zahlbr.: 03 (cal)

Scoliciosporum umbrinum var. *corticolum* (Anzi) Bagl. & Carestia: 02 (Abi alb)
Squamarina cartilaginea (With.) P.James: 03 (cal)

**Toninia athallina* (Hepp) Timdal: 03 (cal)

Verrucaria nigrescens Pers.: 03 (cal)

List of lichenicolous fungi

**Abrothallus bertianus* De Not.: 02 (teleomorph and anamorph; on *Melanelixia subaurifera*)

**Abrothallus parmeliarum* (Sommerf.) Arnold: 02 (only anamorph; on *Parmelia saxatilis*)

**Cornutispora lichenicola* D.Hawksw. & B.Sutton: 01 (on *Parmelia saxatilis*)

**Endococcus rugulosus* Nyl.: 03 (on *Verrucaria nigrescens*)

Plectocarpon lichenum (Sommerf.) D.Hawksw.: 01 (on *Lobaria pulmonaria*)

**Sphaerellothecium parmeliae* Diederich & Etayo: 01 (on *Parmelia saxatilis*), 02 (on *Parmelia saxatilis*, *P. sulcata*)

Vouauxiella lichenicola (Linds.) Petr. & Sydow: 02 (on *Lecanora chlarotera*)

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