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Various records of lichens from southeastern Albania

Original Article

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Abstract:
117 taxa of lichens from two neighboring districts (Pogradec and Korçë) in the southeast of Albania are presented. 62 taxa are new for the study area and 27 taxa are new to Albania.

Key words:
biodiversity, lichens, flora of Albania, new records

Apstrakt:
Različiti zapisi o lišajima iz jugoistočne Albanije
Predstavljeno je 117 taksona lišaja iz dva susedna okruga (Pogradec i Korçë) na jugoistoku Albanije. 62 taksona su nova za područje istraživanja i 27 taksona su nova za Albaniju.

Ključne reči:
biodiverzitet, lišaji, flora Albanije, novi zapisi

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Introduction

Hitherto, no thorough investigation about the lichens of this area has been carried out. As a result, publications are quite sporadic or lacking. Markgraf (1927, 1931) has produced a few records from Korçë district as part of his expedition focused on the flora and vegetation of Albania. Hafellner (2007) provides a checklist of lichens based on historical records by several authors. This list does not include any species of lichen from the area specifically covered in this investigation, except those reported by Markgraf (1927, 1931). Svoboda et al. (2012) have reported a greater number of lichens from 5 localities visited in this area (1 in the district of Pogradec and 4 in the district of Korça) compared to the above-mentioned authors. It should be noted that their localities in the district of Korça were positioned within the Bredhi i Drenovës National Park, leaving other areas or habitats of this district uncovered. The results presented below are based on fieldwork undertaken by author encouraged by the need to increase and improve knowledge on the diversity of lichens in Albania.

Materials and Methods

Specimens were collected by the author during field trips carried out in both districts. The sampling localities were chosen according to diversity of the habitats paying attention to the substrates. Specimens were determined using lichenological routine light microscopy methods and based on relevant literature according to Poelt (1969), Poelt & Vězda (1977, 1981), Clauzade & Roux (1985), Wirth (1995), Nimis & Martellos (2004), Smith et al. (2009), Wirth et al. (2013). The nomenclature follows Nimis & Martellos (2008) and reflects a more modern concept of genus. The specimens are deposited in the author's personal herbarium.

List of sampling localities

1: Pogradec district, calcareous hills W of Ohrid lake c. 20 km N of Pogradec, 41°03'40"N/20°36'36.2"E, alt. c. 700 m, 10.06.2020.
2: Pogradec district, calcareous rocks on *Carpinus* scrub, near the village Rëmenj, c. 16 km S of Pogradec, an area characterized by drought but influenced by human activity, 40°51'05.6"N/20°36'49.4"E, alt. c. 830 m, 10.06.2020.
3: Pogradec district, near the village Peshkëpi, c. 20 km E of Pogradec, 40°53'45.9"N/20°46'45.7"E, alt. c. 940 m, 11.06.2020.
4: Pogradec district, near the village Guri i Bardhë, c. 22 km W of Pogradec, hedges between pastures, 40°52'53.8"N/20°33'03.6"E, alt. c. 1050 m, 11.06.2020.
5: Korçë district, on roadside trees (*Populus*), c. 5 km NW of Korça, 40°39'13.8"N/20°44'48"E, alt. c. 850 m, 12.06.2020.
6: Korçë district, on *Robinia* behind the Memorial of Martyrs in Korçë, 40°37'10.3"N/20°47'22.4"E, alt. 950 m, 12.06.2020.

7: Korçë district, Bozdovec, Bredhi i Drenovës National Park, c. 7 km E of the village Drenovë, on hill wooded by middle-aged mixed forest with dominance of *Abies borisii-regis* in the northern part of the park, 40°34'36.8"N/20°50'34.5"E, alt. 1360 m, 13.06.2020.
8: Korçë district, Korçë, Bredhi i Drenovës National Park, tourist route in the southern part of the park, 40°32'33.3"N/20°49'18.2"E, alt. 1240-1300 m, 14.06.2020.
9: Korçë district, near the village Vithkuq, c. 32 km SW of Korçë, limestone outcrops, mixed deciduous forest, 40°31'05.3"N/20°35'09.4"E, alt. c. 1230 m, 15.06.2020.
10: Korçë district, near the village Dardhë, c. 18 km SE of Korçë, mixed forest, 40°30'54"N/20°49'25"E, alt. c. 1250 m, 16.06.2020.

List of substrates and their abbreviations:

cor: on bark of trees
cal: on limestone
ter-cal: on calcareous soil
sil: on siliceous rocks
bry: on bryophytes
Abb: *Abies borisii-regis*
Aps: *Acer pseudoplatanus*
Car: *Carpinus* sp.
Fag: *Fagus sylvatica*
Pop: *Populus* sp.
Qce: *Quercus cerris*
Rps: *Robinia pseudoacacia*
Sal: *Salix* sp.

Results

A total of 117 taxa of lichens were recorded, including 62 lichens new to the investigation area and 27 new to the country. Species are arranged alphabetically. Numbers from 1 to 10 correspond to the localities listed above; the abbreviations following this number correspond to the substrates listed above. Author's initials and numbers in brackets show individual consecutive numbering systems used by the author to identify and locate individual specimens. New records for the investigation area are indicated with an asterisk (*), and new records for Albania with a ring (o).

Acarospora cervina A. Massal.
1, 2, 5, 9 cal (SX 7108, 7211, 8521, 8964)

**Acarospora glaucocarpa* (Ach.) Körb.
1 cal (SX 7133)

Anaptychia ciliaris (L.) Flot.
1 Car, 6 Rps (SX 7113, 8656)

*°*Arthonia apatetica* (A. Massal.) Th. Fr.
3, 4, 5, cor (SX 7314, 7404, 8593)

Arthonia didyma Körb.
7, 8, 10 Abb (SX 8772, 8811, 8123)

Athallia alnetorum (Giralt, Nimis & Poelt) Arup, Frödén & Søchting
4 Qce, 5 Pop (SX 7415, 8542)

*°*Athallia cerinella* (Nyl.) Arup, Frödén & Søchting
6 cor (SX 8619)

Athallia holocarpa (Hoffm.) Arup, Frödén & Søchting
5 cor (SX 8565)

*°*Athallia pyracea* (Ach.) Arup, Frödén & Søchting
4, 7, 8, 10 Aps (SX 7423, 8735, 8809, 8176)

**Bagliettoa marmorea* (Scop.) Gueidan & Cl. Roux
1 cal (SX 7186)

*°*Bagliettoa parmigera* (J. Steiner) Vězda & Poelt
1 cal (SX 7153)

*°*Bagliettoa parmigerella* (Zahlbr.) Vězda & Poelt
1 cal (SX 7104)

Blastenia crenularia (With.) Arup, Søchting & Frödén
1, 2, 4 cal (SX 7111, 7270, 7441)

Blastenia ferruginea (Huds.) A. Massal.
3, 4, 6, 9 cor (SX 7315, 7476, 8655, 8911)

Calicium salicinum Pers.
7, 8 Abb (SX 8768, 8832)

Caloplaca cerina (Hedw.) Th. Fr.
1 cor, 7 Fag, 8 Fag, 9 Sal (SX 7174, 8761, 8844, 8924)

**Caloplaca conversa* (Kremp.) Jatta
1 cal (SX 7168)

**Candelariella aurella* (Hoffm.) Zahlbr.
1 cal (SX 7156)

**Candelariella vitellina (*Hoffm.) Müll. Arg
6, 10 cor (SX 8660, 8111)

Candelariella xanthostigma (Ach.) Lettau
3, 4, 6 cor, 7, 8 Abb (SX 7310, 7437, 8692, 8750, 8812)

**Circinaria calcarea* (L.) A. Nordin, Savić & Tibell
1, 2, 3, 6, 9, 10 cal (SX 7137, 7261, 7303, 8605, 8922, 8108)

**Circinaria contorta* (Hoffm.) A. Nordin, Savić & Tibell
1, 2, 3, 6, 9 cal (SX 7157, 7224, 7302, 8613, 8957)

*°*Circinaria hoffmanniana* (S. Ekman & Fröberg ex R. Sant.) A. Nordin
1, 2 cal (SX 7107, 7223)

**Cladonia pyxidata* (L.) Hoffm. f. *pocillum* (Ach.) Nyl.
1, 2, ter-cal (SX 7105, 7219)

**Cladonia pyxidata* (L.) Hoffm. f. *pyxidata*
1, 2, 3, 4 ter-cal, 7, 9, 10 bry (SX 7152, 7261, 7308, 7430, 8708, 8964, 8152)

Collema flaccidum (Ach.) Ach.
1, 2, 3, 4 ter-cal (SX 7170, 7252, 7344, 7408)

*°*Enchylium polycarpon* (Hoffm.) Otálora, P.M. Jørg. & Wedin subsp. *polycarpon*
1, 2, 4 cal (SX 7114, 7216, 7426)

Enchylium tenax (Sw.) Gray
1, 2, 3, 4 ter-cal (SX 7175, 7246, 7322, 7467)

**Fuscopannaria praetermissa* (Nyl.) P.M. Jørg.
1 ter-cal, 9 bry (SX 7169, 8913)

*°*Gyalolechia flavorubescens* (Huds.) Søchting, Frödén & Arup var. *flavorubescens*
2 Car, 5 Pop (SX 7266, 8590)

Hypogymnia farinacea Zopf
7, 8 Abb (SX 8718, 8875)

**Lathagrium auriforme* (With.) Otálora, P.M. Jørg. & Wedin
1 cal (SX 7103)

**Lathagrium cristatum* (L.) Otálora, P.M. Jørg. & Wedin
1, 2, 9 cal (SX 7161, 7230, 8959)

Lecanora allophana (Ach.) Nyl. f. *allophana*
3, 5, 6 Pop, 7, 8, 10 Fag (SX 7317, 8546, 8643, 8715, 8808, 8151)

Lecanora allophana f. *sorediata* Vain.
3, 5 Pop (SX 7347, 8513)

**Lecanora argentata* (Ach.) Malme
7, 8, 9 Fag (SX 8780, 8867, 8934)

**Lecanora carpinea* (L.) Vain.
3, 4, 10 cor (SX 7319, 7440, 8105)

Lecanora chlarotera Nyl. subsp. *chlarotera*
3, 4 cor, 8 Fag (SX 7324, 7449, 8833)

Lecanora intumescens (Rebent.) Rabenh.
7, 8 Fag (SX 8762, 8843)

Lecanora leptyrodes (Nyl.) Degel.
1, 3, 4, 8, 9, 10 cor (SX 7102, 7366, 7465, 8812, 8918, 8116)

Lecanora salicicola H. Magn.
4, 9 cor (SX 7409, 8912)

Lecanora subcarpinea Szatala
7, 8, 10 Abb (SX 8709, 8822, 8160)

Lecidea atrobrunnea (DC.) Schaer. subsp. *atrobrunnea*
3, 10 sil (SX 7313, 8149)

**Lecidella elaeochroma* (Ach.) M. Choisy var. *elaeochroma*
1, 3, 5, 6, 10 cor (SX 7127, 7329, 8597, 8617, 8121)

**Lecidella euphorea* (Flörke) Hertel
1, 2, 7, 9 cor (SX 7106, 7255, 8731, 8961)

Lecidella flavosorediata (Vězda) Hertel & Leuckert
5, 6, 9 cor (SX 8536, 8671, 8953)

Lepra albescens (Huds.) Hafellner
9, 10 cor (SX 8926, 8172)

Leptogium saturninum (Dicks.) Nyl.
4 cor, 8 Fag (SX 7413, 8841)

**Lobothallia radiosa* (Hoffm.) Hafellner
1, 2, 9 cal (SX 7119, 7279, 8948)

Melanohalea exasperata (De Not.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch
9, 10 cor (SX 8931, 8124)

Melanohalea laciniatula (H. Olivier) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch
8 Abb (SX 8847)

*°*Micarea globulosella* (Nyl.) Coppins
10 Abb (SX 8131)

**Myriolecis dispersa* (Pers.) Sliwa, Zhao Xin & Lumbsch
2, 9 cal (SX 7253, 8938)

Myriolecis hagenii (Ach.) Sliwa, Zhao Xin & Lumbsch
3, 5, 6 cor (SX 7316, 8594, 8612)

Nephroma resupinatum (L.) Ach.
4, 9, 10 cor (SX 7432, 8925, 8137)

Ochrolechia pallescens (L.) A. Massal.
7 Aps, 8 Abb (SX 8710, 8859)

Ochrolechia szatalaensis Verseghy
10 Abb (SX 8128)

Parmelia submontana Hale
7 Fag, 10 Abb (SX 8724, 8162)

Phaeophyscia nigricans (Flörke) Moberg
2 cor, 5 Pop (SX 7247, 8567)

Phaeophyscia orbicularis (Neck.) Moberg
1, 2, 5, 6 cor (SX 7158, 7271, 8525, 8644)

**Physcia adscendens* H. Olivier
2, 6, 9 cor (SX 7281, 8672, 8903)

Physcia aipolia (Humb.) Fürnr.
7 Abb, 9 cor (SX 8704, 8962)

**Physcia biziana* (A. Massal.) Zahlbr. var. *biziana*

4, 6, 9, 10 cor (SX 7405, 8640, 8958, 8136)

**Physcia dubia* (Hoffm.) Lettau
2 cal, 6 cor (SX 7267, 8673)

**Physcia leptalea* (Ach.) DC.
9 cor (SX 8919)

**Physcia stellaris* (L.) Nyl.
5, 9 cor (SX 8553, 8914)

**Physciella chloantha* (Ach.) Essl.
9 cor (SX 8933)

Physconia distorta (With.) J.R. Laundon
7 Fag, 8 Aps, 9 Abb (SX 8759, 8848, 8927)

Physconia perisidiosa (Erichsen) Moberg
8 Abb (SX 8814)

*°*Placidium lachneum* (Ach.) B. de Lesd.
1, 2 ter-cal, 9 bry (SX 7139, 7222, 8924)

*°*Placocarpus schaereri* (Fr.) Breuss
1, 2 cal (SX 7199, 7286)

*°*Placolecis opaca* (Dufour) Hafellner
2 cal (SX 7280)

**Placynthium nigrum* (Huds.) Gray
2 cal (SX 7278)

*Pleurosticta acetabulum (*Neck.) Elix & Lumbsch
7, 8 Abb (SX 8725, 8846)

*°*Polycauliona polycarpa* (Hoffm.) Frödén, Arup & Søchting
5 cor (SX 8518)

Protoblastenia incrustans (DC.) J. Steiner var. *incrustans*
1, 2, 9 cal (SX 7116, 7265, 8952)

*°*Protoparmeliopsis graeca* (J.Steiner) Sipman & Cl. Roux
2 cal (SX 7251)

**Protoparmeliopsis muralis* (Schreb.) M. Choisy var. *muralis*
1, 9 cal (SX 7177, 8906)

Psora rubiformis (Ach.) Hook.
7 sil, 10 bry (SX 8757, 8125)

*°*Pyrenodesmia chalybaea* (Fr.) A. Massal.
1, 2, 4 cal (SX 7163, 7249, 7463)

**Pyrenodesmia variabilis* (Pers.) A. Massal.
2, 4, 9 cal (SX 7245, 7433, 8923)

Ramalina calicaris (L.) Fr.
3, 4 cor, 8, 10 Abb (SX 7345, 7434, 8823, 8142)

Ramalina canariensis J. Steiner
3, 4, 9 cor (SX 7328, 7481, 8907)

Ramalina fraxinea (L.) Ach.
7, 8, 9 cor (SX 8792, 8836, 8951)

**Rinodina albana* (A. Massal.) A. Massal.
3, 6 cor (SX 7320, 8606)

*°*Rinodina anomala* (Zahlbr.) H. Mayrhofer & Giralt
2 cor (SX 7204)

*°*Rinodina bischoffii* (Hepp) A. Massal.
1, 2 cal (SX 7162, 7222)

**Rinodina exigua* (Ach.) Gray
3, 9 cor (SX 7338, 8929)

Rinodina immersa (Körb.) J. Steiner
1, 2, 4, 9 cal (SX 7190, 7283, 7444, 8902)

*°*Rinodina pyrina* (Ach.) Arnold
2 cor (SX 7286)

*°*Rinodinella dubyanoides* (Hepp) H. Mayrhofer & Poelt
1, 2 cal (SX 7193, 7232)

*Sanguineodiscus haematites (*Chaub. ex St.-Amans) I.V. Frolov & Vondrák
1, 2, 4, 8 cor (SX 7130, 7243, 7461, 8834)

**Sarcogyne regularis* Körb. var. *regularis*
2 cal (SX 7273)

Scoliciosporum umbrinum (Ach.) Arnold
7, 8, 10 Abb (SX 8736, 8882, 8153)

*°*Scytinium fragile* (Taylor) Otálora, P.M. Jørg. & Wedin
1, 2 cal (SX 7144, 7213)

Scytinium lichenoides (L.) Otálora, P.M. Jørg. & Wedin
1, 2 ter-cal, 6, 10 bry (SX 7164, 7248, 8639, 8117)

Scytinium pulvinatum (Hoffm.) Otálora, P.M. Jørg. & Wedin
1, 2, 7 ter-cal (SX 7165, 7250, 8732)

Scytinium tenuissimum (Hoffm.) Otálora, P.M. Jørg. & Wedin
1, 2 cor (SX 7166, 7254)

Squamarina cartilaginea (With.) P. James
1, 2 ter-cal (SX 7124, 7257)

Staurothele areolata (Ach.) Lettau
7, 8, 10 sil (SX 8734, 8845, 8143)

*°*Synalissa ramulosa* (Bernh.) Fr.
2 cal (SX 7264)

**Thalloidima candidum* (Weber) A.Massal.
1, 2 cal (SX 7112, 7238)

*°*Thalloidima diffractum* (A. Massal.) A. Massal.
1 cal (SX 7129)

Thalloidima opuntioides (Vill.) Kistenich, Timdal, Bendiksby & S.Ekman
2 cal, 9 bry (SX 7229, 8963)

Usnea barbata (L.) F.H. Wigg.
8 Abb (SX 8821)

Usnea perplexans Stirt.
10 Abb (SX 8104)

**Variospora aurantia* (Pers.) Arup, Frödén & Søchting
1, 9 cal (SX 7146, 8928)

*°*Variospora dalmatica* (A. Massal.)
1, 2 cal (SX 7142, 7233)

*°*Variospora flavescens* (Huds.) Arup, Frödén & Søchting
2 cal (SX 7236)

*°*Verrucaria caerulea* DC.
1, 2 cal (SX 7191, 7260)

**Verrucaria nigrescens* Pers.
1, 2 cal (SX 7192, 7258)

**Xanthocarpia ochracea* (Schaer.) A. Massal. & De Not.
1, 2 cal (SX 7115, 7242)

*°*Xanthomendoza fallax* (Hepp) Søchting, Kärnefelt & S.Y. Kondr.
5 cor (SX 8508)

Xanthomendoza fulva (Hoffm.) Søchting, Kärnefelt & S.Y. Kondr.
8, 10 cor (SX 8863, 8133)

*°*Xanthoparmelia glabrans* (Nyl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch
7 sil (SX 8755)

Xanthoparmelia pulla (Ach.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch
7, 10 sil (SX 8758, 8122)

**Xanthoria parietina* (L.) Th. Fr.
1, 2 cal, 4, 5, 6, 9 cor (SX 7109, 7263, 7435, 8541, 8654, 8921)

Discussion

Thus far, 55 taxa of lichens were known from both districts (Markgraf, 1927, 1931; Svoboda et al., 2012). This study is able to add a further 62 taxa. More than 60% of the lichen taxa added by this contribution are crustose and many of them are widely distributed in the Mediterranean region. Regarding the substrate ecology of the newly recorded lichen taxa, 58% of the added taxa are saxicolous, 35% are corticolous and only 6% are terricolous or muscicolous.

New lichen species for the Albania are *Arthonia apatetica*, *Athallia cerinella*, *A. pyracea*, *Bagliettoa parmigera*, *B. parmigerella*, *Circinaria hoffmanniana*, *Enchylium polycarpon* subsp. *polycarpon*, *Gyalolechia flavorubescens* var. *flavorubescens*, *Micarea globulosella*, *Placidium lachneum*, *Placocarpus schaereri*, *Placolecis opaca*, *Polycauliona polycarpa*, *Protoparmeliopsis graeca*, *Pyrenodesmia chalybaea*, *Rinodina anomala*, *R. bischoffii*, *R. pyrina*, *Rinodinella dubyanoides*, *Scytinium fragile*, *Synalissa ramulosa*, *Thalloidima diffractum*, *Variospora dalmatica*, *V. flavescens*, *Verrucaria caerulea*, *Xanthomendoza fallax* and *Xanthoparmelia glabrans*.

It should be noted: In Korça town itself were only found three species, miserably developed (*Physcia biziana*, *Physciella chloantha* and *Phaeophyscia orbicularis*). Compared to the coastal areas visited so far this is poor, presumably because of the dry climate far from the coast. Calcareous rocks on *Carpinus* scrub south of Pogradec, an area characterized by drought but influenced by human activity. To be noticed on *Carpinus*: *Anaptychia ciliaris*, *Gyalolechia flavorubescens*, *Physcia leptalea*, *Rinodina pyrina*. On limestone: *Placocarpus schaereri*, *Placolecis opaca*, *Scytinium fragile*, *Synalissa ramulosa* and *Thalloidima diffractum*.

Conclusions

Despite the considerable number of taxa found and localities visited, it is expected that the lichen flora should be richer due to the fact that some areas are difficult to reach and the large extent of both districts. Although many factors influence the species composition of the investigated localities, it may be concluded that the general climate and the potential natural vegetation/vegetation zones adjust the general pattern of the lichenic flora, while the stand parameters and the conditions of the instant surroundings, especially the topography-influenced local climatic conditions and the present vegetation surrounding the habitats, may affect the species composition to a considerable extent.

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