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New country records of lichenized and non-lichenized fungi from Southeastern Europe

Jiří MALÍČEK*, František BOUDA, Eliška KONEČNÁ, Harrie SIPMAN & Jan VONDRÁK

Abstract: MALÍČEK, J., BOUDA, F., KONEČNÁ, E., SIPMAN, H. & VONDRÁK, J. 2021. New country records of lichenized and non-lichenized fungi from Southeastern Europe. – *Herzogia* 34: 38–54.

One hundred and ten lichenized and three non-lichenized fungi are reported from southeastern Europe, mostly from the Balkan Peninsula. *Caloplaca phaeothamnos* is new to Europe. *Caloplaca brachyspora*, *Chaenotheca cinerea*, *Gyalecta liguriensis*, *Peltula placodizans*, *Pleurosticta koflerae*, *Polyblastia forana*, *Protoparmelia oleagina*, *Protoparmeliopsis achariana*, *P. vaenskaei* and *Verrucaria breussii* are new to southeastern Europe. New country records are reported for Albania (57 species), Bosnia and Herzegovina (4), Bulgaria (15), Croatia (3), Greece (14), Kosovo (6), Montenegro (1), North Macedonia (5), Romania (1) and Serbia (12). Many of these records are from old-growth and primeval forests. They underline the high potential for nature and biodiversity protection of many localities on the Balkan Peninsula.

Zusammenfassung: MALÍČEK, J., BOUDA, F., KONEČNÁ, E., SIPMAN, H. & VONDRÁK, J. 2021. Neue Länderfunde von lichenisierten und nicht lichenisierten Pilzen aus Südosteuropa. – *Herzogia* 34: 38–54.

Es wird über Funde von einhundertzehn lichenisierten und drei nicht lichenisierten Pilze aus Südosteuropa berichtet, vorwiegend von der Balkanhalbinsel. *Caloplaca phaeothamnos* ist neu für Europa. *Caloplaca brachyspora*, *Chaenotheca cinerea*, *Gyalecta liguriensis*, *Peltula placodizans*, *Pleurosticta koflerae*, *Polyblastia forana*, *Protoparmelia oleagina*, *Protoparmeliopsis achariana*, *P. vaenskaei* und *Verrucaria breussii* sind neu für Südosteuropa. Erstfunde werden aus den folgenden Länder gemeldet: Albanien (57 Arten), Bosnien und Herzegowina (4), Bulgarien (15), Kroatien (3), Griechenland (14), Kosovo (6), Montenegro (1), Nord-Mazedonien (5), Rumänien (1) und Serbien (12). Viele dieser Funde stammen aus alten Wäldern und Urwäldern. Sie unterstreichen das hohe Potenzial für den Schutz der Natur und der biologischen Vielfalt vieler Orte auf der Balkanhalbinsel.

Key words: Bredhi i Hotovës-Dangëlli, Llogara, Orlovo Brdo, Paklenica, Mt Smolikas, Thethit.

Introduction

The lichen biota of Southeastern European countries are generally among the least explored in Europe, despite two centuries of lichenological research in this area. Greece with almost 1,500 species is the best studied country in the region and the only one with a recent “flora” in the traditional sense, e.g. an annotated taxon catalog and keys to the species (ARCADIA 2020). Bulgaria, Romania and Croatia also belong to the better explored countries and their lichen checklists exceed 1,000 species (CIURCHEA 1998, MAYRHOFER et al. 2005, 2018a). The rest of the countries in this region are expected to have national checklists which cover only a small proportion of

* corresponding author

their real lichen diversity. The total species numbers for these countries may be several times higher. Fortunately, the intensity of floristic research on the Balkan Peninsula, has accelerated in recent years. For instance, numerous new records have been reported from Albania (BURGAZ et al. 2019a, XHULAJ 2019), Bosnia and Herzegovina (MAYRHOFER et al. 2019), Bulgaria (e.g., SHIVAROV et al. 2017, 2018, MAYRHOFER et al. 2020), Croatia (BURGAZ et al. 2017, MAYRHOFER et al. 2018b), Greece (CHRISTENSEN 2018a, b, 2020 a, b, MUGGIA et al. 2018), Montenegro (MAYRHOFER et al. 2017, BURGAZ et al. 2019b) and North Macedonia (MALÍČEK & MAYRHOFER 2017). Here we summarize interesting new findings recorded during opportunistic sampling on several excursions to Southeastern Europe over the last few years, supplemented by several other records (e.g. from revision of older herbarium samples).

Material and methods

Sampling was carried out between 2010 and 2019; a few records are older. In this paper, only species not yet recorded from individual countries are presented with full locality details. In addition to new field observations, other already published lichen records, which were not new for individual countries, were revised as well in order to complete the characterization of the local lichen biota. Some rare, remarkable and phytogeographically interesting taxa are mentioned in the second part of the results. The specimens were identified by standard techniques (examination under the light microscope, spot/UV reactions) and thin layer chromatography (TLC) using solvent systems A, B', C, following ORANGE et al. (2010). Specimens analyzed by TLC are indicated by an asterisk (*), species new to Southeastern Europe by an exclamation point (!) and non-lichenized fungi by a hash #. Herbaria vouchers are deposited in the personal herbarium of Jiří Malíček, PRA (collections by J. Vondrák and Z. Palice) and PRM (collections by F. Bouda). Additional specimens from B, BRA and GZU were examined. The samples deposited with a specimen of another species (intermixed taxa) are marked by the abbreviation 'dep.' (i.e. deposited under) followed by the name of lichen under which it is filed in the collection. Species, which were recorded only in the field, are marked by "not."

Results and discussion

1. List of new country records

Acarospora macrospora (Hepp) A.Massal. ex Bagl.

Albania: Prokletije Mts, Theth, W-facing slopes with scattered *Pinus heldreichii* trees 0.2 km NE of Mt Maja Buni i Thores (1776 m), 42°23'29"N/19°43'33"E, alt. 1720 m, on limestone rock, 2019, Malíček 13536 & Konečná [JM].

Agonimia tristicula (Nyl.) Zahlbr.

Serbia: Niš Region, Suva Planina Mts, Jelasnica, limestone valley of Jelasnicka reka brook SSE of village, 43°16'42"N/22°03'54"E, alt. 325 m, on calcareous soil and bryophytes, 2018, Malíček [not.].

Anema decipiens (A.Massal.) Forssell

Albania: Bredhi i Hotovës-Dangëlli National Park, Përmet, rocky valley of a brook close to Lengarices River canyon 1.5 km E of Maja Vinjahut Hill, 40°15'15.8"N/20°27'07.7"E, alt. 420 m, on vertical limestone rock, 2019, Malíček 13115 & Konečná [JM].

#*Arthopyrenia analepta* (Ach.) A.Massal.

Albania: Llogara National Park, Orikum, shrubs, pine forests and low rock outcrops above road at SE border of the park, 40°11'56.047"N/19°35'30.746"E, alt. 1030 m, on twigs of *Crataegus* sp., 2019, Malíček 13616 & Konečná [JM]. Ibid.: grazed pine-fir forests in central part of the park, c. 40°12'20"N/19°34'59"E, alt. 890 m, on twigs of *Crataegus* sp., 2019, Malíček 13656 & Konečná [JM].

Bacidia arceutina (Ach.) Arnold

Albania: Llogara National Park, Orikum, grazed pine-fir forests in central part of the park, c. 40°12'20"N/19°34'59"E, alt. 890 m, on twigs of *Crataegus* sp., 2019, Malíček 13654 & Konečná [JM].

Bacidia laurocerasi (Delise ex Duby) Zahlbr.

Albania: Llogara National Park, Orikum, grazed pine-fir forests in central part of the park, c. 40°12'20"N/19°34'59"E, alt. 890 m, on twigs of *Crataegus* sp., 2019, Malíček 13655 & Konečná [JM].

Bacidina sulphurella (Samp.) M.Hauck & V.Wirth

Bulgaria: Rila Mts, Blagoevgrad, forests in valley of Rila River 1.3 km NE of Rila Monastery, c. 42°08'24"N/23°21'16"E, alt. 1200 m, at base of *Fagus sylvatica*, 2018, Malíček 11737 & Konečná [JM, dep. *Strigula stigmatella*].

Biatora fallax Hepp

Bosnia and Herzegovina: Drvar, old-growth mixed forest in the protected area Lom, 44°27.397'N/16°27.75718'E, alt. 1300 m, on bark of *Abies alba*, 2019, Bouda [PRM].

Biatorella hemisphaerica Anzi

Albania: Prokletije Mts, Theth, W-facing slopes with scattered *Pinus heldreichii* trees 0.2 km NE of Mt Maja Buni i Thores (1776 m), 42°23'29"N/19°43'33"E, alt. 1720 m, on calcareous soil, 2019, Malíček 13517 & Konečná [JM].

Buellia erubescens Arnold

Albania: Prokletije Mts, Theth National Park, Theth, old beech in forests along tourist path 2 km ENE of Theth, 42°23'58"N/19°45'04"E, alt. 1200 m, on bark of *Fagus sylvatica*, 2019, Malíček 13607 & Konečná [JM].

Calicium trabinellum (Ach.) Ach.

Albania: Prokletije Mts, Theth, W-facing slopes with scattered *Pinus heldreichii* trees 0.2 km NE of Mt Maja Buni i Thores (1776 m), 42°23'29"N/19°43'33"E, alt. 1720 m, on wood of *Pinus heldreichii*, 2019, Malíček 13514 & Konečná [JM, dep. *Lecanora saligna* agg.].

Caloplaca alnetorum Giralt, Nimis & Poelt

Bulgaria: Rila Mts, Blagoevgrad, forests in valley of Rila River 0.5 km NE of Rila Monastery, c. 42°08'14"N/23°20'40"E, alt. 1160 m, on bark of old *Fagus sylvatica*, 2018, Malíček 11749 & Konečná, rev. Vondrák [JM].

Caloplaca arcis (Poelt & Vězda) Arup

Greece: Methana, Kameni Chora, in village, 37°36'53"N/23°20'1"E, alt. 240 m, on volcanic stone in rural wall 2010, Vondráková & Vondrák 8601 [PRA].

Caloplaca areolata (Zahlbr.) Clauzade

Albania: Bredhi i Hotovës-Dangëlli National Park, Përmet, view point on SE-facing rocks above Lengarices River, 1 km SE of Maja Vinjahut Hill, 40°14'58"N/20°26'26"E, alt. 540 m, on limestone rock, 2019, Malíček 13099 & Konečná, rev. Vondrák [JM].

!*Caloplaca brachyspora* Mereschk.

Kosovo: Dragaš, Restelica, NP Sharri, rocky outcrops, 41°55.010'N/20°38.913'E, alt. 2000 m, 2017, Bouda, det. Vondrák [PRM 952018].

Caloplaca cerinelloides (Erichsen) Poelt

Bulgaria: Rila Mts, Blagoevgrad, forests in valley of Rila River 1.3 km NE of Rila Monastery, c. 42°08'24"N/23°21'16"E, alt. 1200 m, on twig of *Acer pseudoplatanus*, 2018, Malíček 11722 & Konečná, det. Vondrák [JM].

Caloplaca citrina (Hoffm.) Th.Fr. s.str.

Albania: Bredhi i Hotovës-Dangëlli National Park, Përmet, rocky valley of a brook close to Lengarices River canyon 1.5 km E of Maja Vinjahut Hill, 40°15'15.8"N/20°27'07.7"E, alt. 420 m, on vertical limestone rock, 2019, Malíček 13111 (dep. *Caloplaca* sp.), 13112 & Konečná, rev. Vondrák [JM].

Caloplaca demissa (Körb.) Arup & Grube

Greece: Methana, S-slope of volcanic hill in centre of Methana peninsula, 37°36'36"N/23°21'2"E, alt. 500–650 m, on sheltered vertical sides of volcanic boulders, 2010, Vondráková & Vondrák 8840, 8852 [PRA].

Caloplaca flavovirescens (Wulfen) Dalla Torre et Sarnth.

Albania: Bredhi i Hotovës-Dangëlli National Park, Përmet, rocky valley of a brook close to Lengarices River canyon 1.5 km E of Maja Vinjahut Hill, 40°15'15.8"N/20°27'07.7"E, alt. 420 m, on vertical limestone rock, 2019, Malíček 13116 & Konečná [JM].

Caloplaca fuscoatroides J.Steiner

North Macedonia: Vardar River valley, Demir Kapija, Kosharka: xerothermic pastures on SE-facing rocky slopes, 41°24'01"N/22°18'37"E, alt. 110 m, on diabase rock, 2018, Malíček 11693, det. Vondrák [JM].

Caloplaca interfulgens (Nyl.) J.Steiner

Albania: Bredhi i Hotovës-Dangëlli National Park, Përmet, low rocky outcrops along path on S-facing slope of Maja Vinjahut Hill, 40°14'54.8"N/20°26'06.5"E, alt. 510 m, on limestone stone, 2019, Malíček 13091 & Konečná, det. Vondrák [JM].

Caloplaca isidiigera Vězda

Kosovo: Dragaš, Restelica, NP Sharri, rocky outcrops, 41°55.010'N/20°38.913'E, alt. 2000 m, 2017, Bouda, det. Vondrák [PRM 952017].

Caloplaca jungermanniae (Vahl) Th.Fr.

Kosovo: Dragaš, Restelica, NP Sharri, rocky outcrops, 41°54.709'N/20°40.068'E, alt. 2080 m, 2017, Bouda, det. Vondrák [PRM 946917, sub *Bryoplaca jungermanniae*].

Caloplaca oasis (A.Massal.) Szatala

North Macedonia: Vardar River valley, Negotino, Palikura: Stobi archeological site, 41°33'04"N/21°58'30"E, alt. 140 m, on Ca-rich siliceous stone, 2018, Malíček 11676, rev. Vondrák [JM].

Serbia: Nis Region, Suva Planina Mts, Jelasnica, limestone valley of Jelasnica reka brook SSE of village, 43°16'42"N/22°03'54"E, alt. 325 m, on limestone rock, 2018, Malíček [not.].

Caloplaca obscurella (J.Lahm ex Körb.) Th.Fr.

Albania: Prokletije Mts, Bogë, trees on cemetery in village, 42°23'48.2"N/19°38'37.5"E, alt. 930 m, on bark of *Acer pseudoplatanus*, 2019, Malíček 12994 & Konečná [JM, dep. *Caloplaca cerina*]. Llogara National Park, Orikum, trees along main road in the park, 40°12'12"N/19°35'15"E, alt. 960 m, on bark of *Pinus nigra*, 2019, Malíček 13624 & Konečná [JM].

Serbia: Fruška Gora National Park, Novi Sad, Rakovac: xerothermic oak forest on S-facing slope of Kesmen Hill (352 m), 45°11'14.1"N/19°47'04.9"E, alt. 330 m, on bark of *Quercus pubescens*, 2019, Malíček 12983 [JM].

Caloplaca percrocata (Arnold) J.Steiner

Greece: Pindus National Park, Konitsa, Pades: rocky outcrops at Drakolimni Smolika lake, 1.4 km E of Mt Smolikas (2637 m), 40°05'22.4"N/20°54'31.7"E, alt. 2140 m, on serpentinite rock, 2019, Malíček 13027, rev. Vondrák [JM].

According to the Greek lichen flora (ARCADIA 2020), the species has already been reported from Greece, however these records are doubtful.

!*Caloplaca phaeothamnos* Kalb & Poelt

Greece: Methana, S-slope of volcanic hill in centre of Methana peninsula, 37°36'36"N/23°21'02"E, alt. 500–650 m, among mosses on volcanic stones, 2010, Vondráková & Vondrák 8810 [PRA].

A remarkable lichen distinct from other crustose Teloschistaceae species by the brown, minutely fruticulose thallus. Apothecia are red, but usually sparse and only a few observed in the Greek locality. The species is so far known from Turkey (POELT & KALB 1985, VONDRÁK et al. 2012) and the Canary Islands (HAFELLNER 1995). It is a muscicolous lichen growing within *Grimmia*-like moss cushions (often together with *Caloplaca stillicidiorum* and *C. chelyae*) on base-rich volcanic rocks in arid areas.

POELT & KALB (1985) included the peculiar lichen into the newly established section *Coccinodiscus* together with another two species (*C. congregians* and *C. grimmiae*) with brown thallus and red apo-

thecia. VONDRÁK et al. (2019) confirmed the close relationship of these species by ITS sequence data. KONDRATYUK et al. (2020) introduced a new genus, *Pisutiella*, for this and other species of 'Coccinodiscus' and some species of the *Caloplaca conversa* group.

Caloplaca servitiana Szatala

Albania: Bredhi i Hotovës-Dangëlli National Park, Përmet, shrubby vegetation and low rocky outcrops on S-facing slope 0.2 km N of Banjat e Benjës cave, 40°14'46"N/20°25'57"E, alt. 390 m, on twigs of *Phillyrea latifolia*, 2019, Malíček 13082 [JM].

Calvitimela aglaea (Sommerf.) Hafellner

Greece: Pindus National Park, Konitsa, Pades: rocky outcrops along path on W-facing slope of Mt Smolikas (2637 m), 40°05'20"N/20°55'07"E, alt. 2360 m, on serpentinite rock, 2019, Malíček 13025 [JM].

Candelariella lutella (Vain.) Räsänen

Albania: Llogara National Park, Orikum, shrubs, pine forests and low rocky outcrops above road at SE border of the park, 40°11'56.047"N/19°35'30.746"E, alt. 1030 m, on twigs of *Crataegus* sp., 2019, Malíček 13614 & Konečná [JM, dep. *Physcia leptalea*].

Catinaria atropurpurea (Schaer.) Vězda & Poelt

Bulgaria: Rila Mts, Blagoevgrad, old-growth scree forest on SE-facing slope above the Rila Monastery, 42°08'06"N/23°20'22"E, alt. 1200 m, on bark of *Tilia*, 2018, Malíček 11776 & Konečná [JM].

Circinaria hoffmanniana (S.Ekman & Fröberg ex R.Sant.) A.Nordin

Albania: Bredhi i Hotovës-Dangëlli National Park, Përmet, along tourist path in valley of Lengarices River, 1.6 km N of Ogdunan settlement, 40°14'53.4"N/20°26'41.2"E, alt. 500 m, on siliceous stone, 2019, Malíček 13133 & Konečná [JM, sub *Aspicilia contorta* subsp. *hoffmanniana*].

!*Chaenotheca cinerea* (Pers.) Tibell

Albania: Prokletije Mts, Theth, W-facing slopes with scattered *Pinus heldreichii* trees 0.2 km NE of Mt Maja Buni i Thores (1776 m), 42°23'29"N/19°43'33"E, alt. 1720 m, on bark of *Pinus heldreichii*, 2019, Malíček 13528 & Konečná [JM].

A rare species across Europe, with only a limited number of recent localities (e.g. TIBELL 1999, VONDRÁK et al. 2010, NIMIS et al. 2018). Previous records from the Balkan Peninsula were missing. Morphologically a very typical sample was collected on a single veteran pine in well-lit montane forest.

Chaenotheca phaeocephala (Turner) Th.Fr.

Bulgaria: Rila Mts, Blagoevgrad, old-growth scree forest on SE-facing slope above the Rila Monastery, 42°08'06"N/23°20'22"E, alt. 1200 m, on bark of *Tilia*, 2018, Malíček 11781 & Konečná [JM].

#*Chaenothecopsis pusilla* (Ach.) A.F.W.Schmidt

Albania: Llogara National Park, Orikum, grazed pine-fir forests in central part of the park, c. 40°12'20"N/19°34'59"E, alt. 890 m, on bark of *Pinus nigra*, 2019, Malíček & 13646 Konečná [JM, dep. *Chaenotheca chrysocephala*].

Cladonia humilis (With.) J.R.Laundon

Bulgaria: Pirin Mts, Melnik, Melnik Pyramids protected area, trees along tourist path, c. 41°31'43"N/23°24'55"E, alt. 550 m, on acidic sandy soil, 2018, Malíček 11702 [JM].

Collema nigrescens (Huds.) DC.

Albania: Bredhi i Hotovës-Dangëlli National Park, Përmet, shrubby vegetation and low rocky outcrops on S-facing slope 0.2 km N of Banjat e Benjës cave, 40°14'46"N/20°25'57"E, alt. 390 m, on bark of *Phillyrea latifolia*, 2019, Malíček 13077 [JM]. Prokletije Mts, Theth, W-facing slopes with old-growth beech forest 0.4 km NNE of Mt Maja Buni i Thores (1776 m), 42°23'36"N/19°43'32"E, alt. 1670 m, on mossy bark of *Fagus sylvatica*, 2019, Malíček 13563 & Konečná [JM].

Diplotomma chlorophaeum (Hepp ex Leight.) Szatala

Serbia: Tal der Južna Morava ca. 16 km S Niš, SW der Ortschaft Malošišće, 1977, Poelt, det. Mayrhofer [GZU].

Enterographa zonata (Körb.) Källsten

Bulgaria: Rila Mts, Blagoevgrad, forests in valley of Rila River 1.3 km NE of Rila Monastery, c. 42°08'24"N/23°21'16"E, alt. 1200 m, at base of *Fagus sylvatica*, 2018, Malíček 11737 & Konečná [JM, dep. *Reichlingia leopoldii*].

Felipes leucopellaeus (Ach.) Frisch & G.Thor

Bosnia and Herzegovina: Drvar, old-growth mixed forest in the protected area Lom, 44°27.397'N/16°27.75718'E, alt. 1300 m, on bark of *Abies alba*, 2019, Bouda [PRM].

Fellhanera subtilis (Vězda) Diederich & Sérus.

Serbia: Tara planina, Umgebung von Rastiste, Crvena stijena, ("Rote Wand"), Kalk, 1974, Poelt, det. Llop [GZU].

Fuscopannaria ignobilis (Anzi) P.M.Jørg.

Albania: Bredhi i Hotovës-Dangëlli National Park, Përmet, shrubby vegetation and low rocky outcrops on S-facing slope 0.2 km N of Banjat e Benjës cave, 40°14'46"N/20°25'57"E, alt. 390 m, on bark of *Quercus ithaburensis*, 2019, Malíček 13072 [JM].

Gyalecta fagicola (Arnold) Kremp.

Bulgaria: Rila Mts, Blagoevgrad, forests in valley of Rila River 1.3 km NE of Rila Monastery, c. 42°08'24"N/23°21'16"E, alt. 1200 m, on twig of *Fraxinus excelsior*, 2018, Malíček 11728 & Konečná [JM].

Gyalecta flotowii Körb.

Bosnia and Herzegovina: Drvar, old-growth mixed forest in the protected area Lom, 44°27.397'N/16°27.75718'E, alt. 1300 m, on bark of *Ulmus*, 2019, Bouda [PRM].

Gyalecta jenensis (Batsch) Zahlbr.

Albania: Prokletije Mts, Theth, pastures on NW-facing slopes 1.1 km NNE of Mt Maja Buni i Thores (1776 m), 42°23'59"N/19°43'35"E, alt. 1660 m, on limestone rock, 2019, Malíček 13584 & Konečná [JM].

Gyalecta liguriensis (Vězda) Vězda

Greece: Zakynthos [Zanté], Loucha, olive grove at NE-facing slope above the village, 37°47'29.9"N/20°43'31.2"E, alt. 473 m, on shaded bark of old *Olea*, 2017, Palice 24156 [PRA].

Gyalecta ophiospora (Lettau) Baloch & Lücking

Albania: Prokletije Mts, Theth, W-facing slopes with old-growth beech forest 0.4 km NNE of Mt Maja Buni i Thores (1776 m), 42°23'36"N/19°43'32"E, alt. 1670 m, on bark of *Fagus sylvatica*, 2019, Malíček 13559 & Konečná [JM]. Macroscopically *Gyalecta ophiospora* strongly resembles *G. carneola*, which has been repeatedly reported from several Balkan countries, usually as *Pachyphiale cornea* (e.g. MAYRHOFER et al. 2018a). Some of the records may belong to *G. ophiospora*, which forms typical S-shaped ascospores which are spirally twisted in the asci. This species has been reported from a single locality from the Balkan Peninsula, the province of Macedonia in Greece (ARCADIA 2020).

Heteroplacidium compactum (A.Massal.) Gueidan & Cl.Roux

Albania: Bredhi i Hotovës-Dangëlli National Park, Përmet, view point on SE-facing rocks above Lengarices River, 1 km SE of Maja Vinjahut Hill, 40°14'58"N/20°26'26"E, alt. 540 m, on limestone rock, 2019, Malíček 13098 & Konečná [JM].

Hypocenomyce scalaris (Ach.) M.Choisy

Albania: Llogara National Park, Orikum, managed pine forests on W-facing slope of Mt Maja Qores (2018 m), E of info center, 40°12'49"N/19°35'03"E, alt. 930 m, on bark of *Pinus nigra*, 2019, Malíček 13676 & Konečná [JM].

Lecania naegelii (Hepp) Diederich & van den Boom

Albania: Llogara National Park, Orikum, managed pine forests on W-facing slope of Mt Maja Qores (2018 m) in central part of park, 40°12'41"N/19°34'58"E, alt. 880 m, on bark of young *Pinus nigra*, 2019, Malíček 13672 & Konečná [JM, dep. *Buellia griseovirens*]. Ibid.: shrubs, pine forests and low rock outcrops above road at SE border of the park, 40°11'56.047"N/19°35'30.746"E, alt. 1030 m, on bark of *Pinus nigra*, 2019, Malíček 13620 & Konečná [JM]. Bredhi i Hotovës-Dangëlli National Park, Përmet, shrubby vegetation and low rock outcrops on S-facing slope 0.2 km N of Banjat e Benjës cave, 40°14'46"N/20°25'57"E, alt. 390 m, on twigs of *Phillyrea latifolia*, 2019,

Maliček 13081 [JM]. Ibid.: along tourist path in valley of Lengarices River, 2.0 km NNE of Ogdunan settlement, 40°15'02.2"N/20°26'58.5"E, alt. 450 m, on bark of *Quercus pubescens*, 2019, Maliček 13122 & Konečná [JM].

Lecanora expallens Ach.

Albania: Llogara National Park, Orikum, grazed pine-fir forests in central part of the park, c. 40°12'20"N/19°34'59"E, alt. 890 m, on bark of *Abies borisii-regis*, 2019, Maliček 13632 & Konečná [JM*]. Ibid.: managed pine forests on W-facing slope of Mt Maja Qores (2018 m), E of info center, 40°12'49"N/19°35'03"E, alt. 930 m, on bark of *Pinus nigra*, 2019, Maliček 13675 & Konečná [JM*].

Lecanora horiza (Ach.) Linds.

Montenegro: Petrovac n. M., "prope pagum Raževići, in litore maris, supra lignum siccum (radix fruticis)" [locality data from label], 1966, Vězda [BRA], det. J. Maliček.

Lecanora rouxii S.Ekman & Tønsberg

Croatia: Velebit Mts, Paklenica National Park, Starigrad, Paklenica, trees and rocks along tourist path in valley of Velika Paklenica brook, W of Mala Močila crossroad, c. 44°20'04"N/15°28'33"E, alt. 390 m, on vertical limestone rock, 2016, Maliček 9396 [JM].

Lecanora subintricata (Nyl.) Th.Fr.

Albania: Prokletije Mts, Theth, W-facing slopes with scattered *Pinus heldreichii* trees 0.2 km NE of Mt Maja Buni i Thores (1776 m), 42°23'29"N, 19°43'33"E, alt. 1720 m, on wood of *Pinus heldreichii*, 2019, Maliček 13514 & Konečná, det. Palice [JM*].

Lecidella flavosorediata (Vězda) Hertel & Leuckert

Bulgaria: Rila Mts, Blagoevgrad, close to bridge over Rila River 1.2 km NE of Rila Monastery, 42°08'27"N/23°21'01"E, alt. 1180 m, on bark of *Betula pendula*, 2018, Maliček 11753 [JM].

Serbia: Fruška Gora National Park, Novi Sad, Rakovac: xerothermic oak forest on S-facing slope of Kesmen Hill (352 m), 45°11'14.1"N/19°47'04.9"E, alt. 330 m, on bark of *Quercus pubescens*, 2019, Maliček 12981 & Konečná [JM*].

Lemmopsis arnoldiana (Hepp) Zahlbr.

Albania: Bredhi i Hotovës-Dangëlli National Park, Përmet, shrubby vegetation and low rocky outcrops on S-facing slope 0.2 km N of Banjat e Benjës cave, 40°14'46"N/20°25'57"E, alt. 390 m, on limestone stone, 2019, Maliček 13086, det. Palice [JM].

Lepraria diffusa (J.R.Laundon) Kukwa

Serbia: Nis Region, Suva Planina Mts, Jelasnica, limestone valley of Jelasnicka reka brook SSE of village, 43°16'42"N/22°03'54"E, alt. 325 m, on calcareous soil, 2018, Maliček 11669 [JM].

Lepraria eburnea J.R.Laundon

Albania: Prokletije Mts, Thethit National Park, Theth, old beech in forests along tourist path 2 km ENE of Theth, 42°23'58"N/19°45'04"E, alt. 1200 m, on bark of *Fagus sylvatica*, 2019, Maliček 13605 & Konečná [JM].

Lepraria elobata Tønsberg

Albania: Llogara National Park, Orikum, managed pine forests on W-facing slope of Mt Maja Qores (2018 m) in central part of park, 40°12'41"N/19°34'58"E, alt. 880 m, on bark of *Pinus nigra*, 2019, Maliček 13666 & Konečná [JM]. Ibid.: E of info center, 40°12'49"N/19°35'03"E, alt. 930 m, on bark of *Pinus nigra*, 2019, Maliček 13674 & Konečná [JM].

Lepraria finkii (B.de Lesd.) R.C.Harris

Albania: Prokletije Mts, Thethit National Park, Theth, beech forest along tourist path just above Cjecaj settlement, 42°24'14"N/19°45'23"E, alt. 1020 m, on mossy bark of *Fagus sylvatica*, 2019, Maliček 13608 & Konečná [JM*].

Lepraria incana (L.) Ach.

Greece: Nomos Kavala: Thasos island, near antennae on summit Toumba, 40°43.8'N/24°40.1'E, alt. 1050 m, N-facing rock outcrops, 2010, H. Sipman & T. Raus 58988 [B 60 0186650]. TLC: atranorin, zeorin, ?divaricatic acid, fatty acids.

***Lepraria nylanderiana* Kümmerl. & Leuckert**

Greece: Nomos Samos: Ikaria island. Road along antennas on Mt. Atheras, 37°38.0'N/26°16.4'E, alt. ca. 830 m, N-facing gneiss rocks with heath patches and scattered *Crataegus monogyna* treelets, under overhanging rock, 2002, H. Sipman & T. Raus 48792 [B 60 0149466]. Nomos Kavala: Thasos island, Mt. Ipsario, summit area, 40°42.2'N/24°42.4'E, alt. 1200 m, schistose rock, 2010, H. Sipman & T. Raus 58720 [B 60 0183922]. TLC: atranorin, ?roccellic, thamnolic acids.

***Lepraria rigidula* (B.de Lesd.) Tønsberg**

Albania: Prokletije Mts, Theth National Park, Theth, beech forest along tourist path just above Cjecaj settlement, 42°24'14"N/19°45'23"E, alt. 1020 m, on mossy bark of *Fagus sylvatica*, 2019, Malíček 13609 & Konečná [JM*]. Ibid.: W-facing slopes with scattered *Pinus heldreichii* trees 0.2 km NE of Mt Maja Buni i Thores (1776 m), 42°23'29"N/19°43'33"E, alt. 1720 m, on bark of *Pinus heldreichii*, 2019, Malíček 13524 & Konečná [JM*]. Llogara National Park, Orikum, trees along main road in the park, 40°12'12"N/19°35'15"E, alt. 960 m, on bark of *Pinus nigra*, 2019, Malíček 13621 & Konečná [JM]. Ibid.: grazed pine-fir forests in central part of the park, c. 40°12'20"N/19°34'59"E, alt. 890 m, on bark of *Abies borisii-regis*, 2019, Malíček 13630 & Konečná [JM].

***Lepraria vouauxii* (Hue) R.C.Harris**

Albania: Prokletije Mts, Theth, W-facing slopes with scattered *Pinus heldreichii* trees 0.2 km NE of Mt Maja Buni i Thores (1776 m), 42°23'29"N/19°43'33"E, alt. 1720 m, on bark of *Pinus heldreichii*, 2019, Malíček 13529 & Konečná [JM*].

***Leptogium aragonii* Otálora**

Albania: Prokletije Mts, Theth, W-facing slopes with old-growth beech forest 0.4 km NNE of Mt Maja Buni i Thores (1776 m), 42°23'36"N/19°43'32"E, alt. 1670 m, on mossy bark of *Fagus sylvatica* and on calcareous soil, 2019, Malíček 13562, 13572 & Konečná [JM].

Romania: Apuseni Mts, Transylvania, Bihor County, Bratca, deciduous forests in valley of Grunlul brook, 0.5 km S of Platou Camping Suncuius, 46°56'03"N/22°32'41"E, alt. 320 m, on mosses on limestone rock, 2012, Malíček 5692, det. Otálora [JM].

***Leptogium brebissonii* Mont.**

Albania: Bredhi i Hotovës-Dangëlli National Park, Përmet, shrubby vegetation and low rocky outcrops on S-facing slope 0.2 km N of Banjat e Benjës cave, 40°14'46"N/20°25'57"E, alt. 390 m, on bark of *Quercus ithaburensis* and *Arbutus unedo*, 2019, Malíček 13070, 13074 [JM].

***Leptogium imbricatum* P.M.Jørg.**

Croatia: Velebit Mts, Paklenica National Park, Starigrad Paklenica, NE-facing rock above tourist path 0.6 WSW of Mt Zoranicev Vrh (1702 m), 44°22'08"N, 15°29'41"E, alt. 1630 m, on calcareous soil on limestone rock, 2016, Malíček 9432 [JM].

***Lichinella stipatula* Nyl.**

Serbia: Nis Region, Nisava River valley, Sicevo, xerothermic rocky outcrops on SSW-facing slopes under village, 43°20'12"N/22°05'02"E, alt. 280 m, on limestone rock, 2018, Malíček 11766 [JM].

***Melanelixia subargentifera* (Nyl.) O.Blanco et al.**

Albania: Bredhi i Hotovës-Dangëlli National Park, Përmet, deciduous forest along path on SE-facing slopes of Lengarices River, 1 km SE of Maja Vinjahut Hill, 40°15'08.4"N/20°26'39.3"E, alt. 510 m, on bark of *Quercus pubescens*, 2019, Malíček 13108 & Konečná [JM].

***Micarea lignaria* (Ach.) Hedl.**

Albania: Prokletije Mts, Theth, W-facing slopes with scattered *Pinus heldreichii* trees 0.2 km NE of Mt Maja Buni i Thores (1776 m), 42°23'29"N/19°43'33"E, alt. 1720 m, on wood on bark of *Pinus heldreichii*, 2019, Malíček 13510 & Konečná [JM].

***Micarea micrococca* (Körb.) Gams ex Coppins s.str.**

Albania: Llogara National Park, Orikum, grazed pine-fir forests in central part of the park, c. 40°12'20"N/19°34'59"E, alt. 890 m, on bark of *Abies borisii-regis*, 2019, Malíček 13644 & Konečná [JM].

Miriquidica nigroleprosa (Vain.) Hertel & Rambold

Kosovo: Dragaš, Restelica, NP Sharri, rocky outcrops, 41°54.897'N/20°39.466'E, alt. 2000m, 2017, Bouda [PRM 946894].

Moelleropsis nebulosa (Hoffm.) Gyeln.

Albania: Bredhi i Hotovës-Dangëlli National Park, Përmet, along tourist path in valley of Lengarices River, 1.6 km N of Ogdunan settlement, 40°14'53.4"N/20°26'41.2"E, alt. 500m, on siliceous stone, 2019, Malíček 13131 & Konečná [JM].

Mycobilimbia carneoalbida (Müll.Arg.) S.Ekman & Printzen

Bosnia and Herzegovina: Drvar, old-growth mixed forest in the protected area Lom, 44°27.397'N/16°27.75718'E, alt. 1300m, on bark of *Abies alba*, 2019, Bouda [PRM].

Myriolecis flowersiana (H.Magn.) Šliwa, Zhao Xin & Lumbsch

North Macedonia: Vardar River valley, Negotino, Krivolak: xerothermic continental steppes at right bank of Vardar, 41°32'15"N/22°08'19"E, alt. 130m, on Ca-rich siliceous stone, 2018, Malíček 11684 [JM, ut *Diplotomma hedinii*].

Myriolecis persimilis (Th.Fr.) Šliwa, Zhao Xin & Lumbsch

Bulgaria: Rila Mts, Blagoevgrad, forests in valley of Rila River 1.3km NE of Rila Monastery, c. 42°08'24"N/23°21'16"E, alt. 1200m, on twig of *Fraxinus excelsior*, 2018, Malíček 11727 & Konečná [JM].

Myriolecis semipallida (H.Magn.) Šliwa, Zhao Xin & Lumbsch

Serbia: Nis Region, Suva Planina Mts, Jelasnica, limestone valley of Jelasnicka reka brook SSE of village, 43°16'42"N/22°03'54"E, alt. 325m, on limestone rock, 2018, Malíček [not.].

Ochrolechia bahusiensis H.Magn.

Albania: Llogara National Park, Orikum, managed pine forests on W-facing slope of Mt Maja Qores (2018m), E of info center, 40°12'49"N/19°35'03"E, alt. 930m, on bark of *Pinus nigra*, 2019, Malíček 13678 & Konečná [JM*].

Parmelia ernstiae Feuerer & A.Thell

Albania: Llogara National Park, Orikum, managed pine forests on W-facing slope of Mt Maja Qores (2018m) in central part of park, 40°12'41"N/19°34'58"E, alt. 880m, on bark of *Pinus nigra*, 2019, Malíček 13664 & Konečná [JM*].

Peltula placodizans (Zahlbr.) Wetmore

Greece: Nomos Evvias, Ep. & Dim. Karistos: S Evvia, lower slopes above Metochi, along road to Platanistos, 38°00.5'N/24°28.6'E, alt. c. 250m, schist outcrops and boulders in phrygana, 2005, H. Sipman & T. Raus 53753 [B].

Pertusaria leioplaca DC.

Albania: Llogara National Park, Orikum, grazed pine-fir forests in central part of the park, c. 40°12'20"N/19°34'59"E, alt. 890m, on twigs of *Crataegus* sp., 2019, Malíček 13653 & Konečná [JM].

Pertusaria pupillaris (Nyl.) Th.Fr.

Albania: Llogara National Park, Orikum, managed pine forests on W-facing slope of Mt Maja Qores (2018m) in central part of park, 40°12'41"N/19°34'58"E, alt. 880m, on bark of young *Pinus nigra*, 2019, Malíček 13669 & Konečná [JM].

Bulgaria: Rila Mts, Blagoevgrad, forests in valley of Rila River 1.3km NE of Rila Monastery, c. 42°08'24"N/23°21'16"E, alt. 1200m, on bark of *Fagus sylvatica*, 2018, Malíček 11741 & Konečná [JM].

Phaeophyscia pusilloides (Zahlbr.) Essl.

Croatia: Velebit Mts, Paklenica National Park, Starigrad, Paklenica, trees and rocks along tourist path in valley of Velika Paklenica brook, W of Mala Močila crossroad, c. 44°20'04"N/15°28'33"E, alt. 390m, on bark of *Fagus sylvatica*, 2016, Malíček 9402 [JM].

Serbia: Fruška Gora National Park, Novi Sad, Rakovac: xerothermic oak forest on S-facing slope of Kesmen Hill (352m), 45°11'14.1"N/19°47'04.9"E, alt. 330m, on bark of *Quercus pubescens*, 2019, Malíček 12984 & Konečná [JM].

Physconia thorstenii A.Crespo & Divakar

Albania: Dibër County, Burrel, orchard on NW border of Lis, 41°37'44"N/20°05'26"E, alt. 540 m, on bark of *Malus domestica*, 2011, Malíček 4153 [JM].

This specimen was incorrectly reported by SVOBODA et al. (2012) as *Physconia distorta*.

Placocarpus schaeferi (Fr.) Breuss

Albania: Bredhi i Hotovës-Dangëlli National Park, Përmet, view point on SE-facing rocks above Lengarices River, 1 km SE of Maja Vinjahut Hill, 40°14'58"N/20°26'26"E, alt. 540 m, on limestone rock, 2019, Malíček 13097 & Konečná [JM].

Placynthium subradiatum (Nyl.) Arnold

Albania: Bredhi i Hotovës-Dangëlli National Park, Përmet, rocky valley of a brook close to Lengarices River canyon 1.5 km E of Maja Vinjahut Hill, 40°15'15.8"N/20°27'07.7"E, alt. 420 m, on vertical limestone rock, 2019, Malíček 13117 & Konečná [JM].

Pleurosticta koflerae (Clauzade & Poelt) Elix & Lumbsch

Greece: Nomos Kavala: Thasos island, Mt. Ipsario, summit area, 40°42.2'N/24°42.4'E, alt. 1200 m, on schistose rock, 2010, H. Sipman & T. Raus 58721 [B 60 0183923]. TLC: tr. norstictic, salazinic acids.

Polyblastia forana (Anzi) Arnold

Albania: Prokletije Mts, Theth, pastures on W-facing slopes 0.8 km NNE of Mt Maja Buni i Thores (1776 m), 42°23'51.7"N/19°43'32.9"E, alt. 1670 m, on limestone rock, 2019, Malíček 13577 & Konečná [JM, dep. *Caloplaca* cf. *inconnexa*].

The sample fits very well with the description in WIRTH et al. (2013), however, no reference material has been studied yet. This poorly known, inconspicuous and probably rare species is included in the identification key to Greek lichens (ARCADIA 2020) with a note about its doubtful status. The original record was published by HARMAND & MAIRE (1909). In Europe, it has been reported from several localities in the Alps (NIMIS et al. 2018).

Protoparmelia oleagina (Harm.) Coppins

Albania: Prokletije Mts, Theth, W-facing slopes with scattered *Pinus heldreichii* trees 0.2 km NE of Mt Maja Buni i Thores (1776 m), 42°23'29"N/19°43'33"E, alt. 1720 m, on wood of *Pinus heldreichii*, 2019, Malíček 13511 & Konečná [JM]. Llogara National Park, Orikum, managed pine forests on W-facing slope of Mt Maja Qores (2018 m), E of info center, 40°12'49"N/19°35'03"E, alt. 930 m, on bark of *Pinus nigra*, 2019, Malíček 13679 & Konečná [JM].

Protoparmeliopsis achariana (A.L.Sm.) Moberg & R.Sant.

Greece: Nomos Evvias, Ep. & Dim. Karistos: S Evvia, summit area of Mt. Ochi, 38°03.5'N/24°27.9'E, alt. c. 1370 m, siliceous schist cliffs and boulders in barren rocky area, in temporary waterflow, 2005, H. Sipman & T. Raus 53948 [B]. TLC: usnic acid, ?zeorin, indet. terpenoids.

Protoparmeliopsis vaenskaei (Cl.Roux et C.Coste) Cl.Roux

Greece: Nomos. Kavala: Thasos island, along road from Megalo Prinos to antennes on summit Toumba, halfway, 40°43.7'N/24°38.7'E, alt. 750 m, S-facing rock outcrops on grazed mountain slope with scattered *Pinus nigra* trees, on rock, 2010, H. Sipman & T. Raus 59039 [ATHU, B 60 0186720].

This species and the foregoing one deviate from most other *Protoparmeliopsis* species because the thalli are squamulose rather than placodioid. They occur in the lower part of large patches of bare, slanting siliceous rock, where rainwater runoff keeps them wet longer. For differences between the two see ROUX (2004). *Protoparmeliopsis achariana* is rather widespread in mediterranean-atlantic Europe, while *P. vaenskaei* is known only from few sites. The species was recognized by Claude Roux from the picture on the Aegean Lichens website.

Psora vallsiaca (Schaer.) Timdal

Albania: Bredhi i Hotovës-Dangëlli National Park, Përmet, rocky valley of a brook close to Lengarices River canyon 1.5 km E of Maja Vinjahut Hill, 40°15'15.8"N/20°27'07.7"E, alt. 420 m, on vertical limestone rock, 2019, Malíček 13119 & Konečná [JM].

Pterygiopsis affinis (A.Massal.) Henssen

Serbia: Nis Region, Nisava River valley, Sićevo, xerothermic rocky outcrops on SSW-facing slopes under village, 43°20'12"N/22°05'02"E, alt. 280 m, on limestone rock, 2018, Malíček 11764 [JM].

Puttea exsequens (Nyl.) Printzen & Davydov

North Macedonia: Mavrovo National Park, Zhirovnica, beech forest in deep valley of a river 1.5 km S of Bibaj village, 41°42'59"N, 20°37'44"E, alt. 940 m, on wood and bark of *Fagus sylvatica*, 2014, Malíček 7754, det. Palice [JM].

Ramalina carpatica Körb.

Kosovo: Dragaš, Restelica, NP Sharri, rocky outcrops, 41°54.709'N/20°40.068'E, alt. 2080 m, 2017, Bouda [PRM 946914].

Ramalina europaea Gasparyan, Sipman & Lücking

Bulgaria: Rila Mts, Blagoevgrad, old-growth scree forest on SE-facing slope above the Rila Monastery, 42°08'06"N/23°20'22"E, alt. 1200 m, on siliceous rock, 2018, Malíček 11779 & Konečná [JM].

Kosovo: Dragaš, Restelica, NP Sharri, rocky outcrops, 41°54.690'N/20°40.068'E, alt. 2050 m, 2017, Bouda [PRM 952029].

Reichlingia leopoldii Diederich et Scheid.

Bulgaria: Rila Mts, Blagoevgrad, forests in valley of Rila River 1.3 km NE of Rila Monastery, c. 42°08'24"N/23°21'16"E, alt. 1200 m, at base of *Fagus sylvatica*, 2018, Malíček 11737 & Konečná [JM].

Rinodina albana (A.Massal.) A.Massal.

Bulgaria: Rila Mts, Blagoevgrad, forests in valley of Rila River 1.3 km NE of Rila Monastery, c. 42°08'24"N/23°21'16"E, alt. 1200 m, on twig of *Fraxinus excelsior* and *Fagus sylvatica*, 2018, Malíček 11729, 11744 & Konečná [JM].

Rinodina bischoffii (Hepp) A.Massal.

Albania: Bredhi i Hotovës-Dangëlli National Park, Përmet, rocky valley of a brook close to Lengarices River canyon 1.5 km E of Maja Vinjahut Hill, 40°15'15.8"N/20°27'07.7"E, alt. 420 m, on vertical limestone rock, 2019, Malíček 13117 (dep. *Placynthium subradiatum*) & Konečná [JM]. Ibid.: low rocky outcrops along path on S-facing slope of Maja Vinjahut Hill, 40°14'54.8"N/20°26'06.5"E, alt. 510 m, on limestone stone, 2019, Malíček 13092 & Konečná [JM]. Ibid.: along tourist path in valley of Lengarices River, 1.6 km N of Ogdunan settlement, 40°14'53.4"N/20°26'41.2"E, alt. 500 m, on siliceous stone, 2019, Malíček 13134 & Konečná, rev. Mayrhofer [JM]. Skadar Lake, Shkodër, Shirokë: low rocky outcrops on slopes above cemetery, 42°03'18"N/19°28'08"E, alt. 30 m, on limestone stones, 2019, Malíček 12997 [JM].

Rinodina guzzinii Jatta

Albania: Bredhi i Hotovës-Dangëlli National Park, Përmet, shrubby vegetation and low rocky outcrops on S-facing slope 0.2 km N of Banjat e Benjës cave, 40°14'46"N/20°25'57"E, alt. 390 m, on limestone stone, 2019, Malíček 13087 [JM].

Rinodina tephropsis (Tuck.) Herre

Greece: Pindus National Park, Konitsa, Pades: rocky outcrop close to tourist path 1 km SSW of Mt Misorachi (2227 m), 40°04'51.5"N/20°54'13.8"E, alt. 2030 m, on serpentinite rock, 2019, Malíček 13008, det. Mayrhofer [JM].

In Europe a rare member of the genus, more abundant only in Northern Europe and rarely reported from other countries mainly in the central part of the continent (MAYRHOFFER et al. 1992). According to the Greek lichen flora, the species has already been reported from Greece, however these records are doubtful (ARCADIA 2020). Therefore, we present this record only as a confirmation of the occurrence in Greece and not as a new record. The only previous record from Southeastern Europe has been published from Romania (MAYRHOFFER 1984, sub *Rinodina badiella*).

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

Albania: Bredhi i Hotovës-Dangëlli National Park, Përmet, view point on SE-facing rocks above Lengarices River, 1 km SE of Maja Vinjahut Hill, 40°14'58"N/20°26'26"E, alt. 540 m, on limestone rock, 2019, Malíček 13100 & Konečná [JM].

Rinodinella dubyanoides (Hepp) H.Mayrhofer & Poelt

Serbia: Nis Region, Suva Planina Mts, Jelasnica, SW-facing rocky slopes in limestone valley of Jelasnicka reka brook SSE of village, 43°16'37"N/22°04'07"E, alt. 340 m, on limestone rock, 2018, Malíček 11674, rev. Mayrhofer [JM, dep. *Rinodinella controversa*].

Schismatomma pericleum (Ach.) Branth & Rostr.

Greece: Nomos Kavala: Thasos island, along road from Maries to Dio Kefales, sideroad from Ipsario road, 40°42.7'N/24°40.6'E, alt. 800 m, on *Populus tremula* treebase in ravine, 2010, H. Sipman & T. Raus 58804 [B 60 0186494].

#*Sclerococcum deminutum* (Th.Fr.) Ertz & Diederich

Albania: Llogara National Park, Orikum, managed pine forests on W-facing slope of Mt Maja Qores (2018 m) in central part of park, 40°12'41"N/19°34'58"E, alt. 880 m, on *Pertusaria pupillaris*, bark of young *Pinus nigra*, 2019, Malíček 13671 & Konečná [JM].

Sclerophora pallida (Pers.) Y.J.Jao et Spooner

Albania: Prokletije Mts, Theth, W-facing slopes with old-growth beech forest 0.4 km NNE of Mt Maja Buni i Thores (1776 m), 42°23'36"N/19°43'32"E, alt. 1670 m, on bark of *Fagus sylvatica*, 2019, Malíček 13565 & Konečná [JM].

Sphaerophorus globosus (Huds.) Vain.

Greece: Nomos Evvias, Ep. & Dim. Karistos: S Evvia, surroundings of refuge at S foot of Mt. Ochi, 38°03.3'N/24°28.0'E, alt. c. 1075 m, old, heavily grazed *Castanea sativa* woodland, on mossy *Castanea* trunk, 2005, H. Sipman & T. Raus 53931 [B].

Thelopsis rubella Nyl.

Bulgaria: Rila Mts, Blagoevgrad, old-growth scree forest on SE-facing slope above the Rila Monastery, 42°08'06"N/23°20'22"E, alt. 1200 m, on bark of *Tilia*, 2018, Malíček 11777 & Konečná [JM].

Thyrea confusa Henssen

Albania: Bredhi i Hotovës-Dangëlli National Park, Përmet, rocky valley of a brook close to Lengarices River canyon 1.5 km E of Maja Vinjahut Hill, 40°15'15.8"N/20°27'07.7"E, alt. 420 m, on vertical limestone rock, 2019, Malíček 13114 & Konečná [JM].

Toninia physaroides (Opiz) Zahlbr.

North Macedonia: Vardar River valley, Negotino, Krivolak: xerothermic continental steppes at right bank of Vardar, 41°32'15"N/22°08'19"E, alt. 130 m, on calcareous soil, 2018, Malíček 11679 [JM].

Trapeliopsis flexuosa (Fr.) Coppins et P.James

Albania: Llogara National Park, Orikum, managed pine forests on W-facing slope of Mt Maja Qores (2018 m), E of info center, 40°12'49"N/19°35'03"E, alt. 930 m, on bark of *Pinus nigra*, 2019, Malíček 13677 & Konečná [JM].

Varicellaria hemisphaerica (Flörke) I.Schmitt & Lumbsch

Albania: Prokletije Mts, Thethit National Park, Theth, beech forest along tourist path just above Cjecaj settlement, 42°24'14"N/19°45'23"E, alt. 1020 m, on bark of *Fagus sylvatica*, 2019, Malíček 13610 & Konečná [JM].

!*Verrucaria breussii* Diederich & van den Boom

Albania: Llogara National Park, Orikum, trees along main road in the park, 40°12'12"N/19°35'15"E, alt. 960 m, on bark of *Pinus nigra*, 2019, Malíček 13624 & Konečná [JM, dep. *Caloplaca obscurella*].

This species generally prefers broad-leaved trees (BREUSS 1998). The naturally acidic pine bark at the locality was influenced by dust from the road and harbored more or less nitrophilous lichens communities.

2. The most interesting localities and remarkable lichens

Almost one half of all records published in this contribution comes from Albania. This country belongs to the least explored in Europe. In total, only about 500 lichen species, (including those reported here) , have been published from the country. The most remarkable species and the lichen biota of several selected localities are discussed below.

Bredhi i Hotovës-Dangëlli National Park (Albania)

Lichens in this large national park were studied during a one-day excursion in its central part near Përmet. Limestone rocks in valleys and lower altitudes are occupied by typical Mediterranean lichens, such as *Bagliettoa marmorea*, *Caloplaca erythrocarpa*, *Placocarpus schaeferi* and *Rinodinella controversa*. Several remarkable or rarely reported species were observed on rocks and calcareous soil, e.g. *Anema decipiens*, *Caloplaca areolata*, *C. interfulgens*, *Heteroplacidium compactum*, *Lemmopsis arnoldiana*, *Moelleropsis nebulosa* and *Psora vallesiaca*. Epiphytic lichen communities in young deciduous forests are surprisingly rich here in lichens and contain several less common species (*Caloplaca servitiana*, *Melanelixia glabra*, *Physconia servitii*) as well as many cyanolichens, occurring mainly on oaks: e.g. *Collema nigrescens*, *Collema subflaccidum*, *Fuscopannaria ignobilis*, *F. olivacea*, *Leptogium brebissonii*, *Lobarina scrobiculata*, *Nephroma laevigatum*, *Pectenium plumbea* and *Staurolemma omphalarioides*.

Llogara National Park (Albania)

Llogara is a unique forest reserve with foggy old-growth forests dominated by ancient *Abies borisii-regis* trees. Epiphytic communities are enriched by several characteristic oceanic species, such as *Lobaria virens* and *Pectenium plumbea*. *Blastenia coralliza*, *Gyalecta carneola*, *Nephroma laevigatum*, *Normandina pulchella*, *Ochrolechia subviridis* and *Ricasolia amplissima* are other remarkable lichens recorded on old firs. Follicolous lichens are represented by *Fellhanera bouteillei*, growing on leaves of *Buxus sempervirens*. Large areas of the park are covered in plantations, dominated by *Pinus nigra*. These forests are young and poor in rare lichens. Although a few interesting lichens occurred there, for example *Collema subflaccidum*, *Ochrolechia szatalaensis* and *Protoparmelia oleagina*. Several recent records from this park have been reported by SVOBODA et al. (2012), such as the rare cyanolichen *Fuscopannaria leucosticta*. The species was repeatedly found on several old *Abies* trees in 2019.

Mt Smolikas, Pindus National Park (Greece)

The second highest peak in Greece (2637 m) is covered by extensive serpentinite outcrops (fig. 1) in its upper part. Lichen diversity in such extreme conditions is not very high and some places are almost completely without lichens. However, some rare and specialized species have been collected at the locality, for example *Acarospora helvetica*, *Blastenia psychrophila*, *Calvitimela aglaea*, *Lecanora bicincta*, *Lecidea atrobrunnea*, *Protoparmeliopsis laetokkensis*, *Rhizoplaca chrysoleuca*, *R. melanophthalma*, *Rinodina milvina*, *R. tephraeaspis*, *Sporastatia testudinea* and *Tremolecia atrata*. Old-growth pine forests on slopes of the mountain harbor valuable lichen communities. Species composition is to some extent similar to Central European montane spruce forests (e.g. *Evernia divaricata*, *Lecanora mughicola*, *Tetramelas chloroleucus*), enriched by a few Mediterranean species, such as *Lethariella intricata*. Numerous lichen records from this locality have been published quite recently (CHRISTENSEN & ALSTRUP 2013).

Orlovo Brdo, Vardar River valley (North Macedonia)

The continental loess steppes on the slopes of Orlovo Brdo near Negotino are a unique botanical and zoological hotspot with numerous endemic plants and a large diversity of insects. Lichen communities are not rich, but soil crusts are locally well developed. *Collema crispum*, *Fulgensia fulgens*, *Leptogium schraderi*, *Placidium squamulosum*, *Psora decipiens*, *Squamarina cartilaginea*, *S. lentigera* and *Toninia physaroides* are typical species in these crusts. Other species have been recorded on small calcareous pebbles that are mostly occupied by common lichens,



Fig. 1. Serpentinite landscape under Mt Smolikas in Greece. Photo by J. Malíček



Fig. 2. Sparse relictic forest dominated by *Pinus heldreichii* in the Thethis National Park (Albania). Photo by J. Malíček

but several rarely reported species were observed as well: *Diplotomma hedinii*, *Lecanora flowersiana*, *L. perpruinosa*, *Rinodina dubyana* and *Staurothele hymenogonia*.

Paklenica National Park (Croatia)

This famous national park is characterized by numerous karst formations, such as deep valleys, caves, screes, steep rocky peaks and also broad-leaved old-growth forests, predominated by *Fagus sylvatica*. Well developed epiphytic communities occur mainly in deep valleys and at the upper tree line. *Blastenia coralliza*, *Collema nigrescens*, *Gyalecta truncigena*, *Lecanora subcarpineae*, *Leptogium saturninum*, *Lobaria pulmonaria*, *Mycobilimbia tetramera*, *Nephroma resupinatum*, *Pertusaria hymenea*, *P. pertusa*, *Phaeophyscia pusilloides*, *Phlyctis agelaeae*, *Physconia venusta*, *Punctelia borreri* and *Ramonia chrysophaea* represent remarkable species. Shady and semi-shady limestone rocks at lower elevations harbored e.g. *Caloplaca xantholyta*, *Lecanora pruinosa*, *L. rouxii*, *Placolecis opaca*, *Solenopsis grisea* and *Squamarina gypsacea*; sunny exposed rocky outcrops *Xalocoa ocellata*, and upper-montane limestones *Bilimbia lobulata*, *Leptogium tenuissimum* and *Solorina saccata*.

Prokletije Mts, Thethit National Park (Albania)

This area belongs to the most valuable and wildest regions of Albania, although tourism becomes every year more intensive. Steep rocky slopes, mountain pastures, well-lit forests with ancient *Pinus heldreichii* (fig. 2) and primeval beech forests belong to the typical habitats of this national park. Ancient pine trees and their snags are attractive substrates for various, mainly acidophilous lichens, such as *Blastenia monticola*, *Chaenotheca cinerea*, *Lecanora mughicola*, *Lethariella intricata*, *Ochrolechia szatalaensis* and *Protoparmelia oleagina*. Pine forests are rich in various limestone outcrops and also communities on calcareous soil, represented by *Biatorella hemisphaerica*, *Caloplaca aurea*, *C. sinapisperma*, *Catapyrenium cinereum*, *Solorina bispora*, *Squamarina gypsacea* and *Toninia rosulata*. Unfortunately, remnants of primeval beech forests have partially been cut during recent decades at better accessible sites in the surroundings of Theth. However, single veteran mossy trees are still surviving there. They harbor typical old-growth forest species, such as *Gyalecta ophiospora* and *Sclerophora pallida*, including many sensitive cyanolichens, e.g. *Collema nigrescens*, *Leptogium saturninum*, *Lobaria pulmonaria*, *Nephroma laevigatum*, *N. resupinatum*, *Parmeliella triptophylla*, *Pectenia plumbea* and *Peltigera collina*. Lichens in this national park have been extensively studied recently by SVOBODA et al. (2012).

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References

- ARCADIA, L. 2020. Lichen flora of Greece including lichenicolous fungi. – <http://www.lichensofgreece.com/flora.pdf>
- BREUSS, O. 1998. Drei neue holz- und borkenbewohnende *Verrucaria*-Arten mit einem Schlüssel der bisher bekannten Taxa. – *Linzer biologische Beiträge* 30: 831–836.
- BURGAZ, A. R., FONTECHA-GALÁN, A., GUTIÉRREZ-LARRUGA, B. & RODRÍGUEZ-ARRIBAS, C. 2017. The Cladoniaceae and three additional noteworthy lichens from Croatia. – *Herzogia* 30: 138–151.

- BURGAZ, A. R., GUTIÉRREZ, B. & PINO-BODAS, R. 2019. Cladoniaceae of Montenegro. – *Botanica Complutensis* **43**: 109–139.
- BURGAZ, A. R., LUNA-GONZÁLEZ, S., GUTIÉRREZ-LARRUGA, B., PINO-BODAS, R., LÓKÖS, L. & FARKAS, E. 2019. Diversity of Albanian Cladoniaceae. – *Botanica Complutensis* **43**: 15–40.
- CHRISTENSEN, S. N. 2018a. Lichens of *Picea abies* forests in Greece. – *Herzogia* **31**: 219–230.
- CHRISTENSEN, S. N. 2018b. New or rarely reported lichens for Thrace, Greece. – *Herzogia* **31**: 390–394.
- CHRISTENSEN, S. N. 2020a. New or rarely reported lichens for Thraki, Greece II. – *Herzogia* **33**: 68–74.
- CHRISTENSEN, S. N. 2020b. Lichens of *Pinus sylvestris* stands in Makedonia and Thraki, Northern Greece. – *Herzogia* **33**: 75–89.
- CHRISTENSEN, S. N. & ALSTRUP, V. 2013. Notes on epilithic, epigeic and muscicolous lichens and lichenicolous fungi from rock outcrops in the mountains of northern Greece. – *Mycobiota* **1**: 25–50.
- CIURCHEA, M. 1998. Catalog of lichens in Romania 1998. – <http://www.bgbm.fu-berlin.de/sipman/Zschackia/Rumania/biblio.htm>.
- HAFELLNER, J. 1995. Bemerkenswerte Funde von Flechten und lichenicolen Pilzen auf makaronesischen Inseln III. Einige bisher auf den Kanarischen Inseln übersehene lecanorale Arten. – *Linzer Biologische Beiträge* **27**: 489–505.
- HARMAND, J. & MAIRE, R. 1909. Contribution à l'étude des lichens de la Grèce. – *Bulletin des séances de la Société des sciences de Nancy, sér. III*, **10**: 143–176.
- KONDRATYUK, S. Y., LÓKÖS, L., FARKAS, E., KÄRNEFELT, I., THELL, A., YAMAMOTO, Y. & HUR, J.-S. 2020. Three new genera of the Teloschistaceae proved by three gene phylogeny. – *Acta Botanica Hungarica* **62**: 109–136.
- MALÍČEK, J. & MAYRHOFER, H. 2017. Additions to the lichen diversity of Macedonia (FYROM). – *Herzogia* **30**: 431–444.
- MAYRHOFER, H. 1984. Die saxicolen Arten der Flechtengattungen *Rinodina* und *Rinodinella* in der Alten Welt. – *Journal of the Hattori Botanical Laboratory* **55**: 327–492.
- MAYRHOFER, H., ATANASSOVA, A., NIKOLOVA, S. O. & DENCHEV, C. M. 2020. Additions to the lichenized and lichenicolous fungi in Bulgaria. – *Mycobiota* **10**: 39–62.
- MAYRHOFER, H., BILOVITZ, P. O. & ROHRER, A. 2018b. Lichenized and lichenicolous fungi from Croatia kept in the herbarium GZU. – *Fritschiana (Graz)* **89**: 1–35.
- MAYRHOFER, H., DENCHEV, C. M., STOYKOV, D. Y. & NIKOLOVA, S. O. 2005. Catalogue of the lichenized and lichenicolous fungi in Bulgaria. – *Mycologica Balcanica* **2**: 3–61.
- MAYRHOFER, H., KONRAD, L.-M., PRETTNER, M., SEIFTER, K. & BILOVITZ, P. O. 2018a. The lichens of Croatia. – *Phyton (Horn, Austria)* **58**: 1–102.
- MAYRHOFER, H., MAŠIĆ, E. & BILOVITZ, P. O. 2019. Additions and corrections to the “Catalogue of Lichenized and Lichenicolous Fungi from Bosnia and Herzegovina”. – *Phyton (Horn, Austria)* **59**: 55–67.
- MAYRHOFER, H., SCHEIDEGGER, C. & SHEARD, J. W. 1992. On the taxonomy of five saxicolous species of the genus *Rinodina* (lichenized Ascomycetes). – *Nordic Journal of Botany* **12**: 451–459.
- MAYRHOFER, H., STEŠEVIĆ, D., BRUDERMANN, A., FÖTSCHL, B. R. & BILOVITZ, P. O. 2017. New or otherwise interesting lichenized and lichenicolous fungi from Montenegro II. – *Fritschiana (Graz)* **86**: 1–30.
- MUGGIA, L., KATI, V., ROHRER, A., HALLEY, J. & MAYRHOFER, H. 2018. Species diversity of lichens in the sacred groves of Epirus (Greece). – *Herzogia* **31**: 231–244.
- NIMIS, P. L., HAFELLNER, J., ROUX, C., CLERC, P., MAYRHOFER, H., MARTELOS, S. & BILOVITZ, P. O. 2018. The lichens of the Alps – an annotated checklist. – *Myckeys* **31**: 1–634.
- ORANGE, A., JAMES, P. W. & WHITE, F. J. 2010. Microchemical methods for the identification of lichens. – London: British Lichen Society.
- POELT, J. & KALB, K. 1985. Die Flechte *Caloplaca congregiens* und ihre Verwandten: Taxonomie, Biologie und Verbreitung. – *Flora* **176**: 129–140.
- ROUX, C. 2004. Les pycnides et conidies de *Lecanora vaenskaei* (lichens, Lecanoraceae). – *Mycotaxon* **90**: 77–80.
- SHIVAROV, V. V., THÜS, H. & DENCHEV, C. M. 2017. First records of two freshwater lichens, *Hydropunctaria scabra* and *Verrucaria alpicola*, from Bulgaria. – *Mycobiota* **7**: 1–5.
- SHIVAROV, V. V., DENCHEV, C. M. & THÜS, H. 2018. Ecology and distribution of *Dermatocarpon* (Verrucariaceae, Ascomycota) in the catchment areas of two Bulgarian rivers. – *Lichenologist* **50**: 679–690.
- SVOBODA, D., BOUDA, F., MALÍČEK, J. & HAFELLNER, J. 2012. A contribution to the knowledge of lichenized and lichenicolous fungi in Albania. – *Herzogia* **25**: 149–165.
- TIBELL, L. 1999. Caliciales. – *Nordic Lichen Flora* **1**: 20–71.
- VONDRÁK, J., FROLOV, I., DAVYDOV, E. A., YAKOVCHENKO, L., MALÍČEK, J., SVOBODA, S. & KUBÁSEK, J. 2019. The lichen family Teloschistaceae in the Altai-Sayan region (Central Asia). – *Phytotaxa* **396**: 1–66.
- VONDRÁK, J., HALICI, M. G., KOCAKAYA, M. & VONDRÁKOVÁ, O. 2012. Teloschistaceae (lichenized Ascomycetes) in Turkey. I. – Some records from Turkey. – *Nova Hedwigia* **94**: 385–396.

- VONDRÁK, J., PALICE, Z., KHODOSOVTSSEV, A. & POSTOYALKIN, S. 2010. Additions to the diversity of rare or overlooked lichens and lichenicolous fungi in Ukrainian Carpathians. – *Chornomorski Botanical Journal* 6: 6–34.
- WIRTH, V., HAUCK, M. & SCHULTZ, M. 2013. *Die Flechten Deutschlands*. – Stuttgart: Ulmer.
- XHULAJ, S. 2019. Preliminary data on lichens from Albanian Alps (Razëm locality, Northern Albania). – *Biologica Nyssana* 10: 155–158.

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