

Lichens on *Fumana*

1. An investigation on herbarial sheets

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Abstract: A total of 170 herbarial sheets from the higher plant collection of the BP Herbarium with *Fumana* specimens on them were investigated. Epiphytic lichens were found on 35 of them and 14 lichen species could be distinguished. *Rinodina pyrina* (Ach.) Arn., a boreal-Mediterranean crustose lichen was found to be the most frequent species. Six lichen species are recorded from *Fumana* in Hungary for the first time.

INTRODUCTION

One usually thinks of epiphytic lichen vegetation as conspicuously coloured and large lichens covering trunks and twigs of single trees, trees of forests, orchards or rows of trees. Actually, when a field botanist is fascinated by this kind of view, he is inclined to pass the inconspicuous lichens living on dwarf shrubs. Nevertheless, in certain places dwarf shrubs may be the only supporters of epiphytic lichens (e.g., in sandy areas, rocky grasslands, etc.).

The occurrence of lichens on dwarf shrubs is well-known in Hungarian lichenology since SZATALA (1939a, 1939b) reported epiphytic lichen species from *Fumana procumbens* (Dun.) Gren. et Godr. and *Salix rosmarinifolia* L. collected in sandy areas around Kelebia and Szeged.

The present study provides further details on the epiphytic lichen community living on *Fumana* specimens. The investigation was based on herbarial sheets of the higher plant collection.

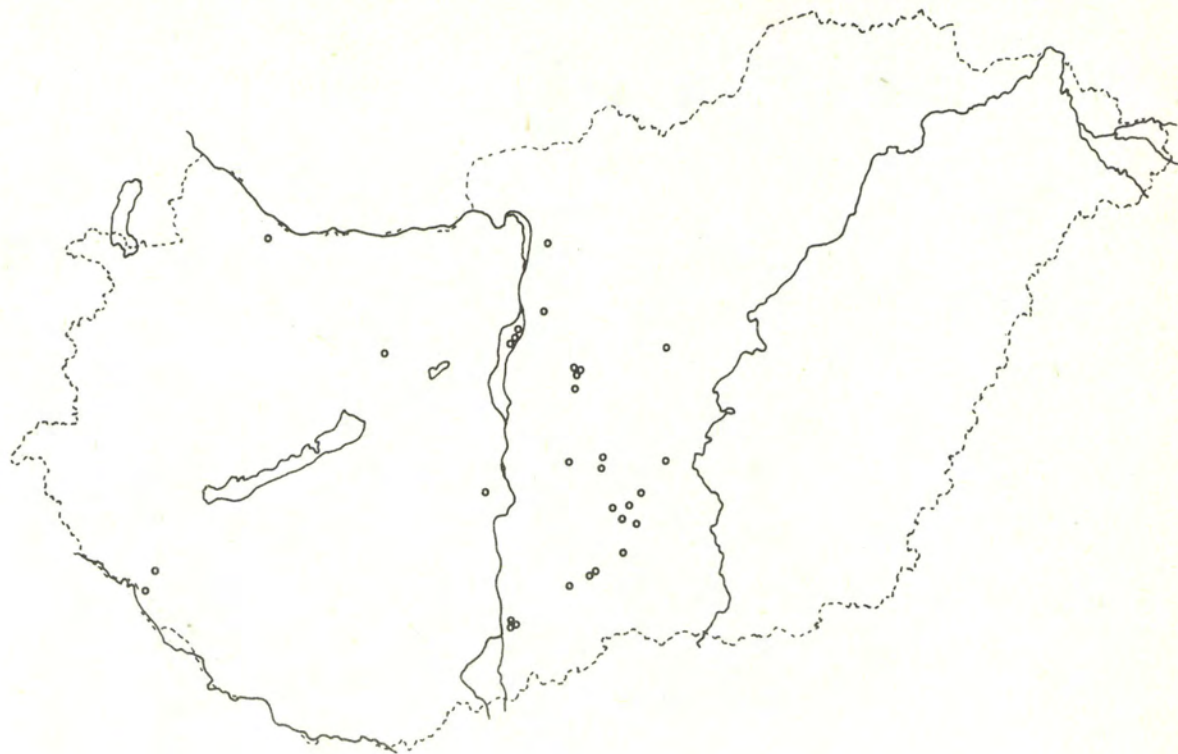
What kind of information for lichenologists can be derived from herbarial sheets of higher plants?

1. Laboratory conditions in certain cases make it possible to carry out a more thorough investigation. In laboratory the whole supporter plant can be studied by means of microscope, while in the field one usually collects only pieces of bark or twigs on which the lichens can be noticed with the naked eye or a hand-lens.

2. Lichenological data of great value for floristics can be obtained from places, altitudes or dates where or when lichenologists have not had opportunity to collect.

3. A complete lichen association can be observed which is especially useful if no further collecting can be carried out for any reason.

4. An exact substrate indication can be obtained through the name of the higher plant identified by specialists.



Map 1. Distribution of the *Fumana* collecting sites in Hungary listed in Table 1.

MATERIALS AND METHOD

A total of 170 herbarial sheets with Fumana specimens were investigated from the Herbarium Carpato-Pannonicum in the Botanical Department of the Hungarian Natural History Museum, Budapest (BP). In many cases there were more than one Fumana specimens mounted on each individual sheet. Table 1 lists the collecting data extracted from the labels of these sheets. Map 1 shows the distribution of the collecting sites of Fumana specimens in Hungary. At present the last four collecting localities are in Czechoslovakia (116122, 116128, 116129) and in Yugoslavia (443327).

Thirty-two sheets belong to Fumana procumbens (Dun.) Gren. et Godr. and 3 sheets to Fumana ericoides (Cavan.) Pau. (116122, 116124, 116166).

Identification of the lichen species was carried out using the following works: POELT (1969), POELT and VĚZDA (1977, 1981), WIRTH (1980). In the course of the identification, lichen specimens with young and slightly developed thalli caused many problems. In these cases only the genus could be identified.

RESULTS AND DISCUSSION

The 14 lichen species found on herbarial Fumana specimens, their floral element indication, European distribution, growth form and dissemination type are given in Table 2. Cladonia furcata (Huds.) Schrad., a common terricolous lichen species is mentioned in the list of the epiphytic lichen species for the sake of completeness. It does not belong to them, since it only accidentally colonizes the bark of Fumana. It is not considered in the lichen-geographical spectrum and is excluded from further discussion.

The species SZATALA (1939a) also found on Fumana procumbens are designated by asterisks (*). Caloplaca cerina, C. cerinella, Lecania cyrtella, L. fuscella, Lecanora hageni and Phaeophyscia sp. are recorded from Fumana for the first time in Hungary.

The lichen-geographical spectrum is the following: Cosmopolitan 27%, Circumpolar 27%, Eurasian 27%, European 19%.

Concerning to the European distribution, most of the species can occur from the boreal to the Mediterranean areas. Since Fumana has similar distribution, one would expect that probably the same or similar epiphytic lichen vegetation would live on Fumana within this whole area. This seems to be confirmed by the four non-Hungarian data.

This lichen community can be characterized by the high rate (77%) of crustose lichen species reproducing by ascospores produced in apothecia, the smaller rate (23%) of lacinate foliose lichen species, and by the lack of crustose lichen species reproducing by ascospores produced in perithecia.

This lichen community cannot evidently be arranged in any epiphytic association mentioned by the lichen sociological literature (KLEMENT 1955, BARKMAN 1958, GALLÉ (1977)). There are three characteristic species of different ranks subordinated to one another in the list (by WIRTH 1980), namely Physcia adscendens for Physcietalia adscendentis Hadač 1944 em. Barkman 1958, Xanthoria parietina for Xanthorion parietinae Ochsner 1928 and Lecanora sambuci for Lecanoretum sambuci Wirth 1980. These species apparently point out that this community may belong to the Lecanoretum sambuci association proposed by WIRTH in 1980.

Table 3 shows the occurrence of the lichen species listed in Table 2 on each individual herbarial sheet. The most frequent species on the sheets was the Rinodina pyrina, followed in turn by Physcia adscendens, Caloplaca cerinella, Xanthoria parietina, Arthonia tenellula and Caloplaca holocarpa, etc.

There was no considerable difference between the epiphytic lichen vegetation of Fumana procumbens and F. ericoides according to the herbarial Fumana material.

Finally some further questions can be mentioned:

- Does the lichen community of Fumana presented here form a single, distinct association? In the case of dwarf shrubs is a whole plant suitable for sampling instead of quadrats?

Consequently, lichen frequency data from recordings of herbarial dwarf shrubs could be suitable for sociological studies.

Table 1.

Collecting data from the labels of the Fumana herbarial specimens
with epiphytic lichens

Regis- tration No.	Locality	Collector	Date
443321	In collibus arenosis ad Bácsa	Boros, Á.	1918.07.19.
298275	In arenosis inter opp. Nagykanizsa et pag. Sormás	Károlyi, Á.	1946.06.03.
298276	In graminosis arenosisque prope pag. Fityeháza	Károlyi, Á.	1962.07.22.
116124	Sükösd, homokon	Moesz, G.	1912.07.12.
116139	Sükösd, homokon	Moesz, G.	1912.07.12.
116166	In arenosis ad pg. Sükösd	Greinich, F.	1912.08.01.
495750	Prope pag. Jánoshalma "Keleshalmi gala- gonyás" in Kiskunsági Nemzeti Park	Szujkó-Lacza, J. and Kováts, D.	1980.08.07.
500439	Prope pag. Kiskunhalas (9682) "Debeak puszta"	Zólyomi, B.	1950.04.25.
500440	Prope pag. Kiskunhalas (9682) "Debeak puszta"	Zólyomi, B.	1950.04.25.
443334	In collibus arenosis "Bodoglári erdő" pr. Kiskunhalas	Boros, Á.	1951.05.26.
335041	In arenosis praedii Páka ad oppidum Kiskunfélegyháza	Lengyel, G.	1926.06.
335038	In arenosis praedii Bugac ad Kecskemét	Lengyel, G.	1926.08.18.
116151	Kecskemét, in arenosis ad Monostor- falva praedii Bugaci puszta	Szurák, J.	1914.05.22.
480973	In collibus arenosis in "Monostori homok- puszta" ad Kecskemét	Pinkert	1911.06.04.
116155	Kecskemét, praedium Bugac. In arena mobili silvae "Tolvajos"	Jávorka, S.	1920.06.25.
443344	Kecskemét, a Bugaczi nagy erdő homok- buczkáin	Boros, Á.	1918.06.24.
498295	Prope pag. Fülöpháza (9182/1) in Kis- kunság National Park. In Festucetum vaginatae danubiale - Fumanetosum	Szujkó-Lacza, J.	1978.07.19.
443328	In arenosis ad Ágasegyház	A. de Degen	1913.07.13.
335043	In arenosis ad Szabadszállás	Lengyel, G.	1914.06.11.
116163	Kistápe, in arenosis versus "Csuhus tó"	Jávorka and Zólyomi	1939.06.12.
443350	In collibus arenosis versus Kiserdő- hegy prope Gyón	Boros, Á.	1933.08.15.
334870	In collibus arenosis praedii Pót- harasztja	Lengyel, G.	1935.10.06.

Table 1. (cont.)

Regis- tration No.	Locality	Collector	Date
116132	In collibus arenosis praedii "Pótharaszti" inter pagos Monor et Uj-Hartyán	L. de Thaisz	1906.07.15.
443323	In collibus arenosis "Gombos-Pótharaszti erdő" prope pag. Vasad	Boros, Á.	1921.07.21.
443339	In arenosis Csepel-sziget	Bartha, A.	1926.07.13.
116137	Csepelsziget: Sziget-Sz-Miklós körül	Filarszky	1908.10.02.
116164	Csepelsziget, Szigetszentmiklós: in silva- ticis arenosis: Alsó buckaerdő	Jávorka, S.	1949.09.18.
204646	Nagy Alföld. Prope opp. Budapest-Lőrinc. Festucetum vaginatae in silv. "Kiserdő". In sol. aren.	Pócs, T.	1952.07.12.
443326	In collibus arenosis silvae Homok erdő. pr. pag. Farmos	Boros, Á.	1918.07.25.
443329	Váczrátót, a teczeréti homokpusztán (Szépen virit)	Boros, Á.	1917.07.10.
116115	Fehérvárcsurgó, ad angustias vallis Gajavölgy, secus Barinka	Moesz et Jávorka	1923.06.26.
116122	In monte Kobel ad Devény...	Résely, M.	1869.08.30.
116129	Schlossberg d. Ruine Kasza-Podhragy	Brancsik, C.	1900.07.06.
116128	Weterna Hola, sonnige Triften auf kalk im Kis Podhragy oberhalb. Illava	Pax, F.	1905.06.10.
443327	Deliblato	Pevalek, I.	1921.07.

Table 2.

List of lichens found on Fumana and some characteristic data

	Floral element (by Kopaczewskaja 1986)	Distribution in Europe (by Wirth 1980)	Growth form (after Jahns in Ahmadjian and Hale 1973)	Dissemination type
* <i>Arthonia tenellula</i> (Nyl.) B. de Lesd.	European	boreal-sub-Mediterranean	Crustose	Ascospore
<i>Caloplaca cerina</i> (Ehrh. ex Hedw.) Th. Fr.	Cosmopolitan	boreal-Mediterranean	Crustose	Ascospore
<i>Caloplaca cerinella</i> (Nyl.) Flag.	Circumpolar	Central-European-sub-Mediterranean	Crustose	Ascospore
* <i>Caloplaca holocarpa</i> (Hoffm.) Wade	Cosmopolitan	arctic-Mediterranean	Crustose	Ascospore
* <i>Candelariella</i> sp.			Crustose	-
<i>Cladonia furcata</i> (Huds.) Schrad.	(Cosmopolitan)	(boreal-Mediterranean)	(Foliose-Fruticose twofold character)	(Ascospore + Thallus fragment)
<i>Lecania cyrtella</i> (Ach.) Th. Fr.	+ Eurasian	south-boreal-Mediterranean	Crustose	Ascospore
<i>Lecania fuscella</i> (Schaer.) Koerb.	Eurasian	south-boreal-Mediterranean	Crustose	Ascospore
<i>Lecanora hageni</i> (Ach.) Ach.	Circumpolar	boreal-Mediterranean	Crustose	Ascospore
* <i>Lecanora sambuci</i> (Pers.) Nyl.	Circumpolar	south-boreal-Mediterranean	Crustose	Ascospore
<i>Phaeophyscia</i> sp.			Lacinate foliose	-
* <i>Physcia adscendens</i> (Fr.) Oliv.	European	boreal-Mediterranean	Lacinate foliose	Soredium
* <i>Rinodina pyrina</i> (Ach.) Arn.	+ Eurasian	boreal-Mediterranean	Crustose	Ascospore
* <i>Xanthoria parietina</i> (L.) Th. Fr.	Cosmopolitan	boreal-Mediterranean	Lacinate foliose	Thallus fragment

Table 3.

The occurrence of lichen species listed in Table 2 on the separate herbarial sheets

	443321	298275	298276	116124	116139	116166	495750	500439	500440	443334	335041	335038	116151	480973	116155	443344	498295	443328	335043	116163	443350	334870	116132	443323	443339	116137	116164	204646	443326	443329	116115	116122	116129	116128	443327		
Arthonia tenellula	+	.	.	.	.	+	.	+	+	+	.	+	+	+	+	.	.	+	+	+	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	+	
Caloplaca cerina	.	.	.	+	.	.	.	+	.	.	.	.	+	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.
Caloplaca cerinella	.	+	.	+	.	.	.	+	+	+	.	.	+	.	.	.	.	+	+	+	+	.	+	.	.	.	.	.	.	+	+	+	.	.	.	+	
Caloplaca holocarpa	.	.	.	.	+	.	+	+	+	.	.	+	+	+	+	.	.	.	+	+	.	.	+	.	.	.	.	.	.	.	.	.	+	.	.	.	
Candelariella sp.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Cladonia furcata	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.
Lecania cyrtella	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	+
Lecania fuscella	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Lecanora hageni	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	.	+	.	.	+	+	.	.
Lecanora sambuci	.	.	.	+	.	.	.	.	+	.	.	.	+	+	+	.	.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	
Phaeophyscia sp.	.	.	.	+	.	.	.	.	.	.	.	+	+	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Physcia adscendens	.	+	+	+	.	.	.	.	+	+	.	+	+	+	+	+	.	+	+	.	.	.	+	+	.	.	.	.	.	+	.	+	+	+	+	.	
Rinodina pyrina	+	.	.	+	.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	.	+	+	.	+	+	+	+	+	+	+	+	.	.	+	
Xanthoria parietina	.	+	.	+	.	.	.	+	+	+	.	.	+	+	+	+	.	+	+	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	+	.	.

- Of the approximately 60 Fumana sheets collected in rocky grasslands virtually none had epiphytic lichen vegetation. This requires further studies on living Fumana stands.
- Do dwarf shrubs other than Fumana in herbaria have similar epiphytic lichen vegetation?
- Living Fumana procumbens stands found in countries other than Hungary should be investigated whether they have similar or different epiphytic lichen vegetation.

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