EPIPHYTIC AND TERRICOLOUS LICHENS DIVERSITY IN COZIA NATIONAL PARK (ROMANIA)

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Abstract. *A list of 76 lichens taxa, including mainly epiphytic and many terricolous lichenized fungi, is reported from Cozia National Park-Romania. Nine taxa are newly recorded for Romania. 54 taxa are new for Cozia.*

Keywords: *lichenized fungi, diversity, epiphytic, terricolous, Cozia.*

Rezumat. Diversitatea lichenilor tereştri şi epifitici din Parcul Național Cozia (România). *O listă cu 76 de taxoni, incluzând în special lichenii epifitici şi tericoli, este raportată din Parcul Național Cozia (Romania). 9 taxoni sunt amintiți în premieră pentru România, iar 54 taxoni pentru Cozia.*

Cuvinte cheie: *licheni, diversitate, epifitic, tericol, Cozia.*

INTRODUCTION

Lichens as unique symbiotic organisms have important ecological roles. Epiphytic lichens, especially being highly sensitive to pollution, are well-known bioindicators. The present study focusing on mainly epiphytic and terricolous lichen diversity in Cozia Mount is one of the most detailed lichenological surveys aimed to contribute for Romanian lichen mycota.

The lichen flora of Romania has been studied for more than 150 years and the results are found in over 300 publications (BARTÓK, 1993, 1994; BURLACU, 1967; BURLACU et al., 1969; CIURCHEA, 1969, 1970; CIURCHEA & CODOREANU, 1967; CODOREANU, 1966; CODOREANU et al., 1960; HORIA, 1965; MORUZI & TOMAN, 1967, 1969, 1970-71; SAVA, 1972, 1973; MORUZI et al., 1967) presented a survey (in Romanian) of all available floristic information. Following practice of that time, these authors included many infraspecific entities, listing a total of 2,575 taxa (CIURCHEA, 2007b). Effectuated research about lichens from Cozia Mount: CODOREANU & CIURCHEA (1965) mentions 35 species of lichens on gneiss, at altitudes between 1,000-1,200 m; BARTÓK (1990) mentions 36 species of lichens; some of them had been reconsidered by nomenclature and included in "*Catalogue of lichens in Romania*" (CIURCHEA, 1998, 2007a).

Study Area

Cozia Mount, placed east of the Olt Defile, is part of the Mountains Fagaras group, being the south-west subdivision of those. The Fagaras Mountains are located in the central zone of Romania, in the central-southern part of the Southern Carpathians and are crossed, from North to South, by the Olt River. Administratively, it belongs to Valcea County (Fig. 1).

According to our pre-research on Cozia Mount, the eligible area for lichen collecting is about 117.6 km^2 that is a part of Cozia National Park. This possible study area is a large rectangle with sides of 6' x 8' length. The coordinates of the corners are; from North to South: $45^0$22'N-$24^0$25'E, $45^0$16'N-$24^0$25'E and from East to West $45^0$22'N-24^o17'E, $45^0$16'N-$4^0$17'E. There are 6 squares from East to West and 8 squares from North to South. Each square has 1 x 1 (km) dimensions and will be called 'Grid'. This grid system will make our work easier and well organized. Data about the plan of research can be found on the Website about Lichens of Cozia. http://cozialichens.googlepages.com

Geology and geomorphology. Geologically it prevails gneiss, which is known as „gneiss of Cozia", like crystals of orthoclase and granite. The southern unit is formed by reef limestone, conglomerates with elements of gneiss and grit stones (all from Cretaceous), packets of rocks that sink into new sedimentary systems. The relief of the National Park Cozia, with an altitude difference of about 1,360 m (between the Olt Valley and Cozia Peak, 1,668 m), it is characterized by a dynamic aspect: big differences of level on small areas, steep slopes and ruiniform landforms.

There are mainly three types of soil (cambisols, spodosols, hydromorphic soils) with a lot of sub-types. Cambisols contain eumezobasic brown soils formed on rocks rich in minerals and iron-magnesium – limestone rocks, dolomites, conglomerates, calcareous sandstones formed on mountainsides with different expositions and slopes. These soils support the growing of beech stands, mixed with maple and ash trees, on shadowed mountainsides; oaks are mixed with linden trees and field maples on sunny slopes; brown acid soils are formed on acid rocks rich in iron-magnesium, on slopes with different expositions and inclinations and they encourage the growing of spruce woods. Spodosols are represented by feriilluvial brown soils, which formed under cold and very humid climatic conditions, on acid rocks and podzol soils, which formed in cold and rainy climate, on acid substratum. Due to the presence of waterproof substrata in connection to an excessive humid regime, there are also hydromorphic soils situated on the banks of some brooks.

Hydrology. All the rivers that drain Cozia National Park are tributaries to the Olt, either directly (the Baiasu, the Lotrisor, the Pausa, the Călineştiul etc.), or indirectly, through the gathering of those of the Lotru (the Vasilatu etc.).

Climate. The annual average temperature at Cozia station (1,573 m alt.) is of 3.3 ^{0}C, and the average quantity of precipitation is of 1,015 mm/year. With the decrease of the altitudes, the annual average temperature grows, reaching 10^{0}C in the Olt Valley, while precipitation decreases to 700 mm/year. The southern slopes are submitted to the influence of warmer air that advances northwards along the Olt, which influences the local vegetation.

Flora and vegetation. The Park flora is extremely luxuriant, having approximately 932 taxa. Endemics are: *Centaurea stoebe* var. *coziensis* and *Stipa pulcherrima crassiculmis* (*S. crassiculmis*). There are also numerous rare species. A peculiarity of Cozia Massif is an unusual stratification of vegetation. The wood vegetation characterized by *Quercus dalechampii, Q. petraea* can be found up to 1,026 m, while fir and beech are found at 300-400 m (COSTACHE et al., 2007).

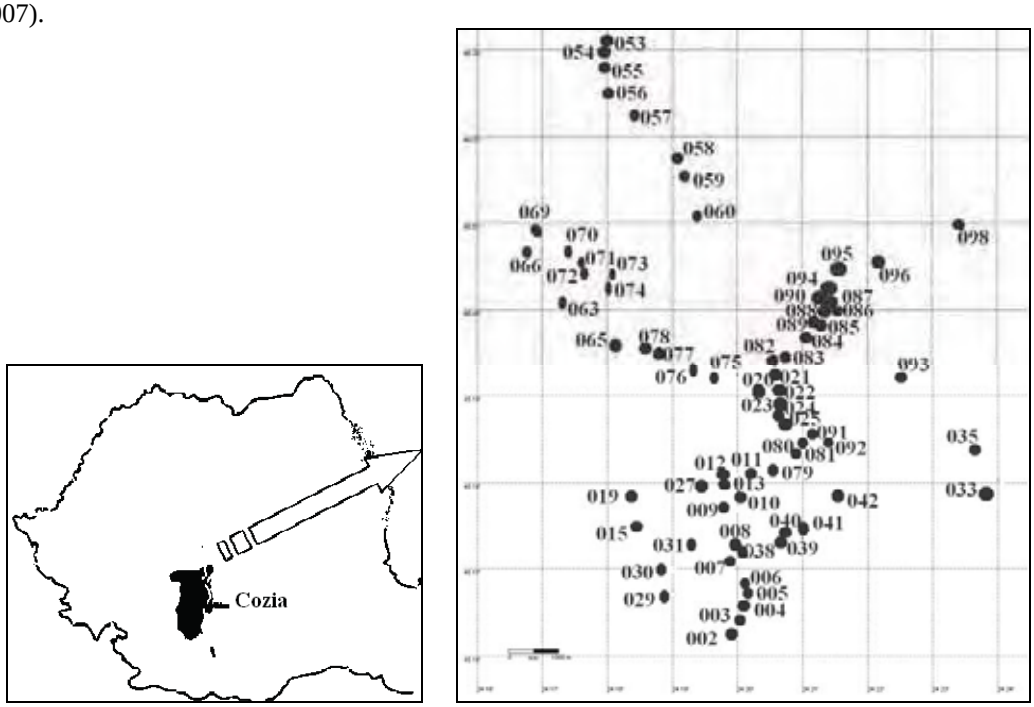

Figure 1. Study area (Cozia) with numbers of the collecting sites.
Figura 1. Zona studiată (Cozia) cu numerele punctelor de colectare.

MATERIALS AND METHODS

The lichen material was collected from 70 sites in Cozia National Park. Epiphytic samples were collected on tree substrata including certain species such as *Fagus sylvatica*, *Quercus robur*, *Q. dalechampii*, *Betula pendula*, *Carpinus betulus*, *Tilia argentea*, *Acer pseudoplatanus*, *Cerasus avium*, *Fraxinus ornus*, *F. excelsior*, *Alnus incana*, *Populus tremula*, *P. canescens*, *Pinus sylvestris*, *Picea abies*, *Abies alba*, *Larix decidua*, *Juniperus communis.* Terricolous lichen samples were also collected on soil substrate, some being together with the mosses. The geographic coordinates and elevations were recorded on the paper bags as well as the substrate types in the field. The collected samples were let air dried and put in herbarium envelopes after identification.

The collected lichen material was investigated microscopically (Olympus SZx40) and chemically by using spot tests. The taxa were identified with the aid of flora books and identification keys (BRODO et al., 2001; DOBSON, 1992; JAHNS, 1987; PURVIS et al., 1992; WIRTH, 1995). The lichen specimens are preserved in the Herbarium of the Faculty of Science and Arts, Marmara University, Istanbul (MUFE) with numbers given by GÜLŞAH ÇOBANOĞLU, (G.Ç. ROM01 – G.Ç.ROM76).

List of Collecting Sites:

CZ002: 336 m; 45° 16’ 14.75855”N-24° 19’ 56.81929”E; 08.VII.2007, **CZ003:** 423 m; 45° 16’ 26.15182”N-24° 20’ 03.69418”E; 08.VII.2007, **CZ004:** 372 m; 45° 16’ 35.12960”N-24° 20’ 07.38703”E; 08.VII.2007, **CZ005:** 417 m; 45° 16’ 45.01805”N-24° 20’ 09.42033”E; 08.VII.2007, **CZ006:** 426 m; 45° 16’ 49.01007”N-24° 20’ 07.29264”E; 08.VII.2007, **CZ007:** 463 m; 45° 17’ 04.74401”N-24° 19’ 53.99781”E; 08.VII.2007, **CZ008:** 451 m; 45° 17’ 15.08972”N-24° 19’ 59.34647”E; 08.VII.2007, **CZ009:** 531 m; 45° 17’ 42.39680”N-24° 19’ 48.62121”E; 09.VII.2007, **CZ010:** 581 m; 45° 17’ 52.58793”N-24° 20’ 01.44658”E; 09.VII.2007, **CZ011:** 687 m; 45° 18’ 07.04824”N-24° 20’ 11.31990”E; 09.VII.2007,**CZ012:** 676 m; 45° 18’ 03.69624”N-24° 19’ 47.60486”E; 09.VII.2007, **CZ013:** 708 m; 45° 17’ 59.83013”N-24° 19’ 46.93192”E; 09.VII.2007, **CZ015:** 420 m; 45° 17’ 30.77821”N-24° 18’ 27.07645”E; 10.VII.2007, **CZ019:** 672 m; 45° 17’ 49.51465”N-24° 18’ 25.62827”E; 10.VII.2007, **CZ020:** 1591 m; 45° 19’ 03.22187”N-24° 20’ 18.13823”E; 11.VII.2007, **CZ021:** 1611 m; 45° 19’ 02.84782”N-24° 20’ 29.39471”E; 11.VII.2007, **CZ022:** 1606 m; 45° 19’ 01.72114”N-24° 20’ 30.26952”E; 11.VII.2007, **CZ023:** 1595 m; 45° 18’ 57.43050”N-24° 20’ 37.87606”E; 11.VII.2007, **CZ024:** 1428 m; 45° 18’ 52.53857”N-24° 20’ 40.13700”E;

11.VII.2007, **CZ025:** 1416 m; 45° 18' 51.01236"N-24° 20' 42.58132"E; 11.VII.2007, **CZ027:** 766 m; 45° 17' 56.46753"N-24° 19' 30.26521"E; 12.VII.2007, **CZ029:** 385 m; 45° 16' 42.43135"N-24° 18' 55.46694"E; 17.VII.2007, **CZ030:** 476 m; 45° 16' 59.53345"N-24° 18' 51.58902"E; 17.VII.2007, **CZ031:** 648 m; 45° 17' 16.73723"N-24° 19' 19.00023"E; 17.VII.2007, **CZ033:** 771 m; 45° 17' 40.78499"N-24° 24' 30.79593"E; 18.VII.2007, **CZ035:** 822 m; 45° 18' 23.10527"N-24° 23' 39.03611"E; 18.VII.2007, **CZ038:** 483 m; 45° 17' 12.10929"N-24° 20' 03.97233"E; 19.VII.2007, **CZ039:** 571 m; 45° 17' 19.01823"N-24° 20' 42.58660"E; 19.VII.2007, **CZ040:** 600 m; 45° 17' 21.19259"N-24° 20' 47.07178"E; 19.VII.2007, **CZ041:** 613 m; 45° 17' 25.36506"N-24° 21' 01.56418"E; 19.VII.2007, **CZ042:** 939 m; 45° 17' 51.06793"N-24° 21' 35.22049"E; 19.VII.2007, **CZ053:** 353 m; 45° 23' 03.97723"N-24° 18' 02.89572"E; 27.VII.2007, **CZ054:** 372 m; 45° 22' 59.86269"N-24° 18' 00.14214"E; 27.VII.2007, **CZ055:** 383 m; 45° 22' 47.46528"N-24° 17' 59.63888"E; 27.VII.2007, **CZ056:** 366 m; 45° 22' 28.31854"N-24° 18' 03.17495"E; 27.VII.2007, **CZ057:** 344 m; 45° 22' 15.83181"N-24° 18' 26.10615"E; 27.VII.2007, **CZ058:** 429 m; 45° 21' 44.68114"N-24° 19' 07.88679"E; 27.VII.2007, **CZ059:** 470 m; 45° 21' 32.39559"N-24° 19' 16.72491"E; 27.VII.2007, **CZ060:** 530 m; 45° 21' 05.54550"N-24° 19' 21.28016"E; 27.VII.2007, **CZ063**: 412 m; 45° 20' 05.26488"N-24° 17' 18.03854"E; 29.VII.2007, **CZ065:** 1040 m; 45° 19' 37.02296"N-24° 18' 06.46777"E; 29.VII.2007, **CZ066:** 279 m; 45° 20' 39.96160"N-24° 16' 47.86334"E; 29.VII.2007, **CZ069:** 403 m; 45° 20' 55.65288"N-24° 16' 53.15769"E; 08.VIII.2007, **CZ070:** 537 m; 45° 20' 40.02741"N-24° 17' 23.31740"E; 08.VIII.2007, **CZ071:** 640 m; 45° 20' 31.62968"N-24° 17' 37.01498"E; 08.VIII.2007, **CZ072:** 665 m; 45° 20' 27.79604"N-24° 17' 38.54510"E; 08.VIII.2007, **CZ073:** 617 m; 45° 20' 23.65716"N-24° 18' 06.08352"E; 08.VIII.2007, **CZ074:** 571 m; 45° 20' 16.09765"N-24° 18' 01.52305"E; 08.VIII.2007, **CZ075:** 1524m; 45° 19' 12.43961"N-24° 19' 39.40065"E; 09.VIII.2007, **CZ076:** 1405 m; 45° 19' 18.68811"N-24° 19' 18.43168"E; 09.VIII.2007, **CZ077:** 1303 m; 45° 19' 29.28500"N-24° 18' 55.67337"E; 09.VIII.2007, **CZ078:** 1278 m; 45° 19' 30.60948"N-24° 18' 48.20019"E; 09.VIII.2007, **CZ079:** 797 m; 45° 18' 09.01431"N-24° 20' 33.46553"E; 11.VIII.2007, **CZ080:** 925 m; 45° 18' 20.53389"N-24° 20' 51.36649"E; 11.VIII.2007, **CZ081:** 1008 m; 45° 18' 24.18784"N-24° 21' 00.26130"E; 11.VIII.2007, **CZ082:** 1548 m; 45° 19' 26.35763"N-24° 20' 33.51149"E; 12.VIII.2007, **CZ083:** 1523 m; 45° 19' 27.24702"N-24° 20' 42.80963"E; 12.VIII.2007, **CZ084:** 1486 m; 45° 19' 38.11519"N-24° 21' 05.78989"E; 12.VIII.2007, **CZ085:** 1465 m; 45° 19' 47.94637"N-24° 21' 19.02205"E; 12.VIII.2007, **CZ086:** 1469 m; 45° 20' 00.63567"N-24° 21' 30.59456"E; 12.VIII.2007, **CZ087:** 1506 m; 45° 20' 04.99844"N-24° 21' 27.70730"E; 12.VIII.2007, **CZ088:** 1410 m; 45° 19' 58.64828"N-24° 21' 18.17549"E; 13.VIII.2007, **CZ089:** 1391 m; 45° 19' 59.51569"N-24° 21' 13.93852"E; 13.VIII.2007, **CZ091:** 1151 m; 45° 18' 32.80938"N-24° 21' 08.44666"E; 14.VIII.2007, **CZ092:** 1076 m; 45° 18' 28.49374"N-24° 21' 22.95395"E; 14.VIII.2007, **CZ093:** 1176 m; 45° 19' 13.83042"N-24° 22' 31.51604"E; 22.VIII.2007, **CZ094:** 1518 m; 45° 20' 13.29210"N-24° 21' 25.69096"E; 22.VIII.2007, **CZ095:** 1527 m; 45° 20' 26.67983"N-24° 21' 40.24043"E; 22.VIII.2007, **CZ096:** 1517 m; 45° 20' 30.85268"N-24° 22' 07.95117"E; 22.VIII.2007, **CZ098:** 796 m; 45° 20' 55.71095"N-24° 23' 28.03726"E; 22.VIII.2007.

RESULTS

Each identified lichen taxa is listed below in an alphabetical order; including 76 taxa belong to 39 genera (75 species, 4 varieties, 4 subspecies, 2 forms), following by the numbers of the collecting sites, types of substrata (abbreviated as shown under the list) and the G. Ç. Herbarium numbers.

The nomenclature mainly follows the Index Fungorum (www.indexfungorum.com) and the recent literature (AHTI & HAWKSWORTH, 2005; BLANCO et al., 2004). The names of authors are abbreviated according to BRUMMITT & POWELL (1992).

An asterisk (*) indicates a new record for Romania; 9 taxa are new to Romanian lichen mycota. 54 taxa were newly recorded in Cozia; each of them was indicated with a plus sign (+) in the list.

List of Taxa

1. +*Amandinea punctata* (HOFFM.) COPPINS & SCHEID 5(*Ro-p*), 30(*Q)*, 57(*Fr*) (G.Ç. ROM–001)
2. +*Anaptychia ciliaris* (L.) KÖRB 41(*Fr*), 42(*Fr*), 81(*P*), 85(*Fa*) (G.Ç.ROM-002)
3. +*Bryoria capillaris* (ACH.) BRODO & D. HAWKSW. 89(*P*), 94(*P*) (G.Ç. ROM–003)
4. +*Bryoria fuscescens* var. *fuscescens* (GYELN.) BRODO & D. HAWKSW. 78(*Be*) (G.Ç. ROM–004)
5. +*Bryoria implexa* (HOFFM.) BRODO & D. HAWKSW. 89(*P*), 94(*P*) (G.Ç. ROM–005)
6. +*Candelaria concolor* (DICKS.) STEIN 29(*Ca*), 30(*Q*), 53(*Q*,*Fa-s*), 54(*Be*), 57(*Fr*), 69(*Q),* 78(*Be*), *93(Q)* (G.Ç. ROM–006)
7. +*Candelariella reflexa* (NYL.) LETTAU 5(*Ro-p*), 30(*Q*), 33(*Fa),* 53(*Fa*, *Fa-s*), 54(*Q- r*) (G.Ç. ROM–007)
8. *Cetraria islandica* subsp. *islandica* (L.) ACH. 12(S), 79(*Be*), 80(S), 84(S), 96(S) (G.Ç. ROM–008)
9. +*Cladonia chlorophaea* (FLÖRKE ex SOMMERF.) SPRENG. 31(S), 53(S), 58(B), 60(S) (G.Ç. ROM–009)
10. +*Cladonia coccifera* (L.) WILLD. 22(S), 91(S), 92(S), 96(*Fa*,S) (G.Ç.ROM-010)
11. +*Cladonia coniocraea* (FLÖRKE) SPRENG 4(S), 13(*Pi-s*), 21(S), 30(S), 31(S), 54(*Q-d*), 56(S), 74(S), 82(S), 85(*Fa*), 86(S), 94(*P*) (G.Ç.ROM-011)
12. +*Cladonia fimbriata* (L.) FR. 11(S-M), 22(S), 56(S), 82(S), 88(S), 91(S), 92(S), 96(*Fa*) (G.Ç.ROM-012)
13. **Cladonia floerkeana* (FR.) FLÖRKE 88(S) (G.Ç.ROM-O71)

14. +*Cladonia furcata* subsp. *furcata* (HUDS) SCHRAD. 22(S), 30(S), 31(S), 53(*Q-d*), 56(S), 60(S), 65(*Fa*), 71(S), 74(S), 79(S), 80(S), 84(S), 88(S), 89(*P*) (G.Ç.ROM-013)
15. +*Cladonia macilenta* var. *macilenta* HOFFM. 12(S) (G.Ç.ROM-014)
16. +*Cladonia pyxidata* (L.) HOFFM. 3(S), 22(S), 30(S), 56(S), 71(S), 74(S.), 84(S), 85(*Fa*), 88(S) (G.Ç.ROM-015)
17. +*Cladonia ramulosa* (WITH.) J. R. LAUNDON 22(S) (G.Ç. ROM–072)
18. *Cladonia rangiferina* (L.) WEBER ex F. H. WIGG. 12(S), 31(S), 96(S) (G.Ç.ROM-016)
19. +*Cladonia rangiformis* HOFFM. 70(S) (G.Ç.ROM-073)
20. +*Cladonia scabriuscula* (DELISE) LEIGHT. 96(S) (G.Ç.ROM-017)
21. +*Cladonia subulata* (L.) WEBER ex F.H. WIGG. 54(*Q-r*) (G.Ç.ROM-018)
22. +*Evernia divaricata* (L.) ACH. 85(*Fa*), 89(*P*) (G.Ç. ROM–019)
23. *Evernia prunastri* (L.) ACH. 11(*Ab*), 41(*Fr*), 42(*Fr)*, 57(*Al*), 59(*Pi*), 65(*Fa*), 66(W), 69(*Q*), 70(Q), 72(Q), 73(*Q*), 78(*Be*), 79(*Be*), 85(*Fa*), 93(*Q*), 98(*Ce*) (G.Ç. ROM–020)
24. +*Flavoparmelia caperata* (L.) HALE 3(*Q*), 4(*Al*), 5(*Ro–p*), 8(*Pi*), 9(*Q*), 12(*Q*), 13(*Pi*), 15(*Fa*), 19(*Q*), 30(*Pi*,*Q*), 31(*Fa*), 33(*Fa*), 38(*Pi-s, Fa, Al*), 39(*Ac*), 40(*Q*,*Pi-s*,*Pr-aAc*), 41(*Q*,*Fr*), 42(*Fr*), 53(*Ca-b*,*Q*,*Fa-s*), 54(*Ca*,*Q-r*), 55(*Pi-is*), 57(*Al-I*,*Fr*), 63(*Fa*), 66(W), 69(*Fa*,*Q*), 70(*Q*), 72(*Q*), 73(*Q*), 79(*Be*), 91(*Pi-s*), 93(*Q*), 98(*Ce*,*Fa*) (G.Ç.ROM-021)
25. +*Hypocenomyce scalaris* (ACH. ex LILJ.) M. CHOISY 13(*Pi-s*) (G.Ç.ROM-022)
26. +*Hypogymnia farinacea* ZOPF 6(*Q*), 11(*Ab*,*P*), 15(*Fa*), 23(*Ab*), 55(*Ca-b*), 57(*Fr*), 76(*P*), 77(*Be*), 82(*P*), 84(*P*), 86(*P*) (G.Ç.ROM-023)
27. *Hypogymnia physodes* (L.) NYL. 2(*Pi*), 6(*Fa*), 11(*P*), 12(*J*), 13(*Be*), 29(*T*), 30(*Pi*,*Q*), 35(*P*), 38(*Pi*,*Fa*,*Al*), 40(*Pr-a*,*Ac*,*Pi-s*), 41(*Q*), 54(*Q-r*), 55(*Pi-s*), 57(*Al-i*), 59(*Al*), 63(*Fa*), 66(W), 72(*Q*), 77(*Be*), 78(*Be*), 79(*Be*), 82(*P*), 83(*L*), 84(*P*), 85(*Fa*), 86(*P*), 88(*P*), 89(*P*), 92(*Pi*), 93(*Q*), 94(*P*), 98(*Fa*) (G.Ç.ROM-024)
28. +*Hypogymnia tubulosa* (SCHAER.) HAV. 29(*T*), 30(*Pi*), 41(*Q*), 63(*Fa*), 70(*Q*), 75(*P*), 79(*Be*), 83(*L*), 88(*P*) (G.Ç.ROM-025)
29. +*Lecanora argentata* (ACH.) MALME 27(*Q*), 31(*Fa*), 33(*Fa*), 54(*Be*), 55(*Pi-s*), 57(*Ca*, *Al*, *Fr*), 70(Q), 85(*Fa*), (G.Ç.ROM-026)
30. +*Lecanora campestris* subsp. *campestris* (SCHAER) HUE 83(*L*) (G.Ç.ROM-027)
31. +*Lecanora chlarotera* NYL. 12(*J*), 23(*Ab*), 33(*Fa*), 35(*Ab*), 53(*Fa-s*), 57(*Ca*), 65(*Fa*), 77(*Be*), 82(*P*), 85(*Fa*), 87(*Fa*), 96(*Fa*) (G.Ç.ROM-028)
32. **Lecanora conizaeoides* f. *conizaeoides* NYL. ex CROMBIE 74(*Fa*), 82(*P*) (G.Ç.ROM-029)
33. *Lecidella elaeochroma* f. *elaeochroma* (ACH.) M. CHOISY 5(*Ro-p*), 7(*Fa*), 30(*Pi*), 31(*Fa*), 57(*Al*,*Fr*), 65(*Fa)* (G.Ç.ROM-030)
34. +*Leptogium cyanescens* (PERS.) KÖRB. 33(*Fa*), 74(*Fa*,S), 79(*Be*) (G.Ç.ROM-031)
35. +*Lobaria pulmonaria* (L.) HOFFM. 10(*Q*), 60(S), 74(*Fa*), 87(*Fa*) (G.Ç.ROM-032)
36. +*Melanelia subaurifera* NYL. ESSL. 11(*Fa*), 41(*Q*) (G.Ç.ROM-033)
37. +*Melanelixia fuliginosa* subsp. *glabratula* (LAMY) 3(*Po*), 6(*Fa*), 7(*Fa*), 9(*Q*), 12(*J*), 27(*Q*), 29(*T*), 30(*Q*), 31(*Fa*), 33(*Fa*), 38(*Pi*), 40(*Q*,*Ac*), 42(*Fr)*, 53(*Ca-b*), 54(*Q-r*), 55(*Pi-s*), 57(*Al-I*,*Fr*), 65(*Fa*), 66(W), 69(Q,*Fa*), 70(*Q*), 72(*Q*), 74(*Fa*), 79(*Be*), 87(*Fa*), 92(*Pi*), 98(*Ce*), (G.Ç.ROM-034)
38. +*Nephroma parile* (ACH.) ACH. 71(S), 74(S,Fa) (G.Ç.ROM-035)
39. +*Opegrapha herbarum* MONT 9(*Q*), 24(*Be*), 54(*Q-r*) (G.Ç. ROM–036)
40. **Opegrapha prosodea* ACH. 27(*Q*), 29(*T*), 31(*Fa*), 33(*Fa*), 53(*Fa*,*Fa-s*), 57(*Al*), (G.Ç. ROM–037)
41. +*Parmelia saxatilis* (L.) ACH. 11(*Fa*), 12(S), 12(S,S-R), 13(*Be*), 29(*T*), 33(*Fa*), 55(*Pi-s*), 65(*Fa*), 66(W), 78(*Be*), 93(*Q*), 94(*P*), 95(*P*), 96(*Fa*), 98(*Fa*,*Ce*) (G.Ç. ROM–038)
42. **Parmelia submontana* NÁDV. ex HALE 13(*Be*) (G.Ç. ROM–039)
43. *Parmelia sulcata* TAYLOR 29(*T*), 31(*Fa*), 39(*Ac*), 40(*Pi-s*,*Ac*), 41(*Q*,*Fr*), 42(*Fr*), 57(*Al*), 59(*Pi*), 63(*Fa*), 65(*Fa*), 66(W), 69(*Q*,*Fa*), 70(*Q*), 73(*Q*), 79(*Be*), 87(*Fa*), 98(*Ce*,*Fa*) (G.Ç. ROM–040)
44. *Parmelina carporrhizans* TAYLOR 15(*Fa*), 42(*Fr*), 79(*Be*) (G.Ç.ROM-041)
45. **Parmelina pastillifera* (HARM.) HALE 31(*Fa*) (G.Ç.ROM-042)
46. *Parmelina tiliacea* (HOFFM.) ACH. 3(*Q*), 5(*Q*), 6(*Fa*), 41(*Fr*), 81(*Q*), 85(*Fa*), 98(*Fa*) (G.Ç.ROM-043)
47. +*Parmeliopsis ambigua* (WULFEN) NYL. 78(*Be*), 82(*P*), 83(*L*), 84(*P*), 88(*P*), 94(*P*), 95(*P*), 96(*Fa*) (G.Ç.ROM-044)
48. +*Parmotrema perlatum* (HUDS.) M.CHOISY 12(S), 30(*Q*,*Pi*), 57(*Fr*,*Al-i*), 87(*Fa*) (G.Ç.ROM-045)
49. +*Peltigera horizontalis* (HUDS.) BAUMG. 3(*Q*), 11(S-M), 60(S), 70(S), 74(S,*Fa*), 80(S) (G.Ç.ROM-046)
50. +*Peltigera praetextata* (FLÖRKE ex SOMMERF.) VAIN. 38(S), 60(S), 70(S,*Q*), 79(*Be*) (G.Ç.ROM-047)
51. +*Pertusaria lactea* (L.) ARNOLD 31(*Fa*), 53(*Ca*), 57(*Fr*), 74(*Fa*) (G.Ç.ROM-048)
52. +*Pertusaria pustulata* (ACH.) DUBY 54(*Q-r*), 57(*Fr*,*Ca*) (G.Ç.ROM-049)
53. +*Phaeophyscia orbicularis* (NECK.) MOBERG 29(*Ca*), 33(*Fa*), 53(*Ca-b*), 81(*Q*), 85(*Fa*) (G.Ç.ROM-050)
54. **Phaeophyscia rubropulchra* (DEGEL.) MOBERG 27(*Q*), 53(*Fa-s*,*Fa*), 63(*Fa*), 98(*Fa*), (G.Ç. ROM–051)
55. +*Physcia adscendens* (TH.FR.) H. OLIVIER 98*(Fa)* (G.Ç. ROM–052)
56. +*Physcia aipolia* (EHRH. ex HUMB.) FÜRNR. 42(*Fr*) (G.Ç.ROM-053)
57. +*Physcia leptalea* (ACH.) DC. 33(*Fa*), 42(*Fr*), 53(*Fa*) (G.Ç. ROM–054)

58. +*Physcia stellaris* (L.) NYL. 98(*Fa*) (G.Ç. ROM–055)
59. +*Physconia distorta* (WITH.) J. R. LAUNDON 41(*Fr*), 54(*Ca*), 57(*Al*,*Fr*), 63(*Fa*), 81(*Q*), 98(*Fa*) (G.Ç. ROM–056)
60. +*Platismatia glauca* (L.) W.L. CULB. & C.F. CULB. 4(*Al*), 6(*Q*), 11(*P*), 12(*J*), 13(*Be*), 20(*P*,*Be*), 23(*Ab*), 72(*Q*), 76(*P*), 77(*Be*), 78(*Be*), 79(*Be*), 82(*P*), 83(*L*), 84(*P*), 86(*P*), 88(*P*), 89(*P*), 91(*Pi-s*), 92(*Pi*), 94(*P*), 95(*P*), 96(*Fa*) (G.Ç.ROM-057)
61. *Pseudevernia furfuracea* var. *ceratea* (ACH.) D.HAWKSW. 40(*Pr-a*), 75(*P*), 80(*Be*), 81(*Q*), 89(*P*), 94(*P*), 95(*P*) (G.Ç.ROM-058)
62. *Pseudevernia furfuracea* var. *furfuracea* (L.) ZOPF 2(*Pi*), 3(*Q*), 6(*Fa*,*Q*), 11(*P*), 12(*J*,S-R), 13(*Be*), 19(*Q*), 20(*Be*,*P*), 23(*Ab*), 25(*P*), 35(*P*), 59(*Pi*), 65(*Fa)*, 66(W), 73(*Q*), 75(*P*), 76(*P*), 77(*Be*), 79(*Be*), 82(*P*), 83(*L*), 84(*P*), 85(*Fa*), 86(*P*), 88(*P*), 91(*Pi-s*), 92(*Pi*), 93(*Q*), 94(*P*), 96(*Fa*) (G.Ç.ROM-059)
63. +*Punctelia subrudecta* NYL. KROG 30(*Q*,*Pi*), 31(*Fa*), 33(*Fa*), 57(*Fr*), 69(*Fa*,*Q*) (G.Ç.ROM-060)
64. **Ramalina canariensis* J. STEINER 31(*Fa*), 33(*Fa*), 53(*Ca-b*), 54(*Q-r*), 63(*Fa*), 69(*Fa*), 70(*Q*), 77(*Be*) (G.Ç.ROM-061)
65. +*Ramalina farinacea* (L.) ACH. 40(*Ac*), 41(*Fr*,*Q*), 57(*Al-i*), 85(*Fa*) (G.Ç.ROM-062)
66. *Ramalina fraxinea* (L.) ACH. 41(*Fr*), 42(*Fr*), 57(*Ac*), 70(*Q*), 81(*Q*), 87(*Fa*), 98(*Fa*) (G.Ç.ROM-063)
67. +*Ramalina pollinaria* (WESTR.) ACH. 30(*Q*), 53(*Ca–b*,*Q-d*), 54(*Q-r*), 65(*Fa*), 69(*Q*), 85(*Fa*) (G.Ç.ROM-064)
68. **Rimularia furvella* NYL. ex MUDD 82(S) (G.Ç. ROM–074)
69. +*Solorina saccata* (L.) ACH. 60(S) (G.Ç.ROM-075)
70. *Tuckermanopsis chlorophylla* (WILLD.) HALE 86(*P*), 92(*Pi*), 95(*P*) (G.Ç.ROM-065)
71. +*Usnea subfloridana* STIRT. 13(*Be*), 59(*Pi*), 82(*P*) , 85(*Fa*), 94(*P*), 96(*Fa*) (G.Ç.ROM-066)
72. **Usnea subscabrosa* NYL. ex MOTYKA 11(*P*), 73(*Q*), 78(*Be*), 83(*L*), 89(*P*), 94(*P*) (G.Ç.ROM-067)
73. +*Vulpicida pinastri* (SCOP.) J. E. MATTSSON 11(*P*), 78(*Be*), 82(*P*), 83(*L*), 86(*P*), 95(*P*) (G.Ç.ROM-068)
74. *Xanthoparmelia conspersa* (EHRH. ex ACH.) HALE 12(S,S-R), 22(S), 91(*Pi-s*), 92(*Pi*) (G.Ç. ROM–076)
75. +*Xanthoparmelia somloensis* GYELN. HALE 13(*Pi-s*), 82(*P*) (G.Ç.ROM-069)
76. +*Xanthoria parietina* (L.) TH. FR. 41(*Fr*), 42(*Fr*), 54(*Q-r*), 57(*Al*), 63(*Fa*), 69(*Fa*,*Q*), 74(*Fa*), 98(*Fa*) (G.Ç.ROM-070)

Abies sp.= Ab, *Acer* sp.= Ac, *Alnus* sp. = Al, *Alnus incana* = Al-i, Bark = B, *Betula* sp. = Be, *Carpinus* sp. = Ca, *Carpinus betulus* = Ca-b, *Cerasus* sp. = Ce, *Fagus* sp. = Fa, *Fagus sylvatica* = Fa-s, *Fraxinus* sp. = Fr, *Juniprus* sp. = J, *Larix* sp. = L, *Picea* sp. = P, *Pinus* sp. = Pi, *Pinus sylvestris* = Pi-s, *Populus* sp. = Po, *Prunus avium* = Pr-a, *Robinia pseudacacia* = Ro-p, *Quercus* sp. = Q, *Quercus robur* = Q-r, *Quercus dalechampii* = Q-d, Soil = S, Soil & Moss = S-M, Soil & Rock = S-R, *Tilia* sp. = T, Wood = W
New record for Romania = *, New record for Cozia= +

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