

Vrana Park – a neglected site for bryophyte and fungal diversity in Sofia city

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Received: August 21, 2018 ▷ Accepted: October 20, 2018

Abstract. The article deals with bryophytes and macrofungi studied on the territory of Vrana Park. Sixty-eight species of bryophytes and 87 fungal species were recorded. Of these, four species of bryophytes and three fungal species are of conservation importance. An overview and comments on the habitat condition are provided. This is the first study of bryophytes in the Vrana Park. Seventy-two fungal species are reported for the first time from the park area.

Key words: bryophytes, Bulgaria, conservation importance, macrofungi, liverworts, new records, Vrana Park, urban bryophytes

Introduction

The bryophyte flora and mycota in Bulgarian parks are poorly known. Sporadic data are available only (Arnaudoff 1909; Podpéra 1911; Stefanoff & Petrov 1962; Natcheva & Ganeva 2005) on the bryophytes in Sofia city, where Vrana Park is located, and none for the Park itself. With respect to macrofungi, only 32 species (29 basidiomycetes and 3 ascomycetes) have been published so far from the Park (Dimitrova & al. 2007; Pencheva & al. 2009; Gyosheva & Nedelin 2015). Vrana Park possesses an interesting microhabitat assemblage, owing to its entirely human-designed landscape and long history.

The area of the Park has been used as a mansion estate for centuries. The first documents date from the beginning of the 15th century. Its territory includes built-in areas, arable fields, pastures and some remnants of a native forest. Its most re-

cent history is related to transformation of the mansion into a park. The Park was built as a summer residence of the Bulgarian Tsar Ferdinand I and combines plant species from all over the world and from Bulgaria. It took a very long time to build the Park (43 years). There have been three main periods of construction (1900–1909; 1909–1926 and 1926–1943). They resulted in a park-type botanical garden with five open areas, six alpine gardens, two main lakes with a few smaller ones, and three glasshouses (Fomina 2003). Presently, the number of alpine gardens has been reduced to two. Although at present the Park shows some signs of degradation, it is still a remarkable example of landscaping art and a popular site to visit.

The aims of this study are: 1) to reveal the bryophytes diversity in the Vrana Park; 2) to contribute new data on macrofungi on the territory of the Park, and 3) to evaluate the state of their habitats.

Material and methods

Vrana Park (Fig. 1) is situated *ca.* 11 km from the centre of Sofia, which is part of Sofia floristic region. The average elevation is *ca.* 560 m a.s.l. and covers 99.3 ha. The climate is temperate-continental. The soil is sandy-loamy (Dimitrov & al. 2003). The arrangement of the Park provides various microhabitats and substrates. Dominant types of the habitats are grasslands and woodlands. Humidity highly depends on the annual rainfalls. Located at about *ca.* 0.700 km. from river Iskar, the Park still has rather dry soils and low air humidity. Those factors are constantly changing its landscape due to tree loss and dynamic in-species hierarchy (*Hedera helix* L. is invading the forest floor and tree trunks), which has a negative impact on biodiversity.

The study of bryophytes and macrofungi on the territory of Vrana Park was carried out in 2017–2018 by the transect method. Transects were selected in order to cover the entire range of microhabitats. Data on substrates, host plants, fertility stage (for the bryophytes), and spatial data were collected.

Vouchers of bryophyte species were deposited in the Bryophyte Collection of the Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences (SOM). The nomenclature follows Hill & al. (2006) for bryophytes, and Kirk & Ansell (2004) for fungi. The ecological-trophic groups of macrofungi are given after Dimitrova & Gyosheva (2009, 2010) and Gyosheva & Denchev (2000). The threat status of macrofungi follows the *Red List of Fungi in Bulgaria* (Gyosheva & al. 2006).



Fig. 1. Map of Vrana Park (within the green line) showing the sampling sites (red dots).

Results and discussion

Bryophytes

Sixty-eight bryophyte species were found as a result of the present study. Of these, seven species are liverworts (*Marchantiophyta*) and 61 species are mosses (*Bryophyta*) (Table 1). The most important microhabitats for bryophytes are the small disturbed areas within the grasslands (which determines the presence of many terricolous species) and the rocky habitats, e.g. the alpine garden Dahlem.

Eight species are included in the *Red List of the Bryophytes in Bulgaria*: two Endangered, one Not Evaluated, one Near Threatened, and one Vulnerable (Natcheva & al. 2006).

Six liverworts and three mosses are new to the Sofia floristic region (where Vrana Park is located).

Macrofungi

The total number of macrofungi, registered during the present study on the territory of Vrana Park, is 83 species (Table 2). Four species of slime moulds were also recorded. The taxa belong to *Ascomycota* (seven species), *Basidiomycota* (76 species) and *Mycetozoa* (four species). In the course of investigations, 68 species were found for the first time in the Park. Eighteen species (*Agaricus phaeolepidotus* (F.H. Møller) F.H. Møller, *Agrocybe vervacti* (Fr : Fr.) Singer, *Antrodia xantha* (Fr. : Fr.) Ryvarden, *Byssomerulius coriim* (Pers. : Fr.) Parmasto, *Ceriporia excelsa* S. Lundell ex Parmasto, *Discina ancilis* (Pers.) Sacc, *Gyromitra gigas* (Krombh.) Cooke, *Hymenochaete fuliginosa* (Pers. : Fr.) Lév., *Mycena aetites* (Fr.) Quél., *Peniophora lycii* (Pers. : Fr.) Höhn. & Litsch., *P. nuda* (Fr. : Fr.) Bres., *Postia fragilis* (Fr. : Fr.) Jülich, *Russula farinipes* Romell, *Steccherinum ochraceum* (Pers.) Gray, *Stereum sanguinolentum* (Alb. & Schwein. : Fr.) Fr., *S. subtomentosum* Pouzar, *Vuilleminia comedens* (Nees : Fr.) Maire, and *Xylaria longipes* Nitschke) are new for the Sofia floristic region (Dimitrova & Gyosheva 2009; Denchev & Assyov 2010). The greatest diversity of fungi was found in the wooded areas.

Fungi of seven ecological-trophic groups were discovered in different plant communities on the territory of the Park: leaf debris saprotrophs – two; litter saprotrophs – three; humus saprotrophs –

four; wood saprotrophs – 59; coprotrophs – one; mycorrhizal fungi – 10; wood parasites – seven, and moss parasites – one. Wood saprotrophs and mycorrhizal fungi prevailed among the studied taxa. A high level of lignicolous fungal diversity was registered in different deciduous and coniferous communities in the Park area. Five of them – *Armillaria mellea* (Vahl : Fr.) P. Kumm., *Fomes fomentarius* (L. : Fr.) Fr., *Ganoderma applanatum* (Pers.) Pat., *Phellinus torulosus* (Pers. : Fr.) Bourdot & Galzin, and *Piptoporus betulinus* (Bull. : Fr.) P. Karst. – are parasites, which seriously affect the sanitary status of the forest and Park ecosystems.

Three species of conservation importance, included in the *Red List of Fungi in Bulgaria*, were recorded during the field studies (Table 2). One of them (*Gyromitra gigas*) is included also in the *Red Data Book of the Republic of Bulgaria* (Petrova & Denchev 2015).

Conclusions

Vrana Park harbours considerable diversity of bryophytes and macrofungi. This is due to the great variety and relatively long stability of the habitats there. In general, they are in a good state, especially the grasslands, rocky habitats and single standing groups of old trees. The presence of small disturbed areas within the grasslands and the suitable soil texture (loamy-sandy with fine particles) determine the existence of many terricolous bryophyte species. Many of the old trees in the forested area are strongly overgrown by *Hedera helix*, which has a negative impact on the diversity of epiphytic species. Another factor for low diversity in the forested areas is the presence of a very dense understory shrub and sapling layer. By contrast, the greatest diversity of macrofungi was found in the wood communities, especially lignicolous basidiomycetes on dead and living wood. In spite of the proximity of a source of air pollution (Tsarigradsko Shose Blv.), its influence on the diversity of bryophytes seems to be negligible.

Acknowledgements. This study is held within the project „Investigation of the flora and vegetation: diversity, distribution, biosystematics, dynamics and conservation. Phase II”.

Table 1. List of bryophyte taxa in Vrana Park, their conservation status and substrate.

Nr.	Taxon	Substrate	Conservation status
Marchantiophyta			
1.	<i>Frullania dilatata</i> (L.) Dumort.	bark	
2.	<i>Lophocolea heterophylla</i> (Schrad.) Dumort.	decaying wood	
3.	<i>Lunularia cruciata</i> (L.) Dumort. ex Lindb.	soil	
4.	<i>Radula complanata</i> (L.) Dumort.	bark, rock	
5.	<i>Reboulia hemisphaerica</i> (L.) Raddi	soil	
6.	<i>Riccia glauca</i> L.	soil	EN
7.	<i>Riccia sorocarpa</i> Bisch.	soil	
Bryophyta			
1.	<i>Abietinella abietina</i> (Hedw.) M.Fleisch.	soil	
2.	<i>Amblystegium serpens</i> (Hedw.) Schimp.	soil	
3.	<i>Atrichum undulatum</i> (Hedw.) P.Beauv.	soil	
4.	<i>Barbula unguiculata</i> Hedw.	rock	
5.	<i>Brachythecium velutinum</i> (Hedw.) Ignatov & Huttunen	bark	
6.	<i>Brachythecium albicans</i> (Hedw.) Schimp.	soil	
7.	<i>B. rutabulum</i> (Hedw.) Schimp.	decaying wood	
8.	<i>Bryum argenteum</i> Hedw.	soil	
9.	<i>B. dichotomum</i> Hedw.	soil	
10.	<i>B. elegans</i> Nees	soil	
11.	<i>Campylidium sommerfeltii</i> (Myrin) Ochyra	rock	
12.	<i>Ceratodon purpureus</i> (Hedw.) Brid.	soil	
13.	<i>Cirriphyllum piliferum</i> (Hedw.) Grout	soil	
14.	<i>Climacium dendroides</i> (Hedw.) F.Weber & D.Mohr	soil	
15.	<i>Dicranoweissia cirrata</i> (Hedw.) Lindb.	bark	NE
16.	<i>Dicranum scoparium</i> Hedw.	soil	
17.	<i>D. tauricum</i> Sapjegin	bark	
18.	<i>Didymodon vinealis</i> (Brid.) R.H.Zander	soil	
19.	<i>Entosthodon fascicularis</i> (Hedw.) Müll.Hal.	soil	
20.	<i>Ephemerum minutissimum</i> Lindb.	soil	NE
21.	<i>Fissidens pusillus</i> (Wilson) Milde	rock	
22.	<i>F. taxifolius</i> Hedw.	soil	
23.	<i>Funaria hygrometrica</i> Hedw.	soil	
24.	<i>Grimmia pulvinata</i> (Hedw.) Sm.	rock, bark	
25.	<i>Hedwigia ciliata</i> (Hedw.) P.Beauv.	bark	
26.	<i>Homalothecium lutescens</i> (Hedw.) H.Rob.	Soil, rock	
27.	<i>Hypnum cupressiforme</i> Hedw.	decaying wood, bark, rock, concrete	
28.	<i>Leskea polycarpa</i> Hedw.	bark, concrete	

Table 1. Continuation.

Nr.	Taxon	Substrate	Conservation status
29.	<i>Leucodon sciuroides</i> (Hedw.) Schwägr.	bark	
30.	<i>Orthotrichum affine</i> Schrad. ex Brid.	bark	
31.	<i>O. anomalum</i> Hedw.	rock	
32.	<i>O. diaphanum</i> Schrad. ex Brid.	bark	
33.	<i>O. pumilum</i> Sw. ex anon.	bark	NT
34.	<i>Oxyrrhynchium hians</i> (Hedw.) Loeske	soil	
35.	<i>Plagiomnium affine</i> (Blandow ex Funck) T.J.Kop.	soil	
36.	<i>P. undulatum</i> (Hedw.) T.J.Kop.	soil	
37.	<i>Pleuroidium subulatum</i> (Hedw.) Rabenh.	soil	
38.	<i>Pseudoamblystegium subtile</i> (Hedw.) Vanderp. & Hedenäs	bark	
39.	<i>Pseudocrossidium hornsouchianum</i> (Schultz) R.H.Zander	soil	
40.	<i>Pseudoleskeella nervosa</i> (Brid.) Nyholm	decaying wood	
41.	<i>Pseudoscleropodium purum</i> (Hedw.) M.Fleisch.	soil	
42.	<i>Ptychostomum capillare</i> (Hedw.) Holyoak & N.Pedersen	concrete	
43.	<i>P. imbricatulum</i> (Müll.Hal.) Holyoak & N.Pedersen	soil	
44.	<i>P. moravicum</i> (Podp.) Ros & Mazimpaka	decaying wood, bark	
45.	<i>P. rubens</i> (Mitt.) Holyoak & N.Pedersen	soil	NE
46.	<i>Pylaisia polyantha</i> (Hedw.) Schimp.	bark	
47.	<i>Schistidium apocarpum</i> (Hedw.) Bruch & Schimp.	rock	
48.	<i>Schistidium</i> sp.	rock	
49.	<i>Syntrichia papillosa</i> (Wilson) Jur.	bark	EN
50.	<i>S. ruralis</i> (Hedw.) F.Weber & D.Mohr	soil	
51.	<i>Thuidium delicatulum</i> (Hedw.) Schimp.	soil	
52.	<i>T. tamariscinum</i> (Hedw.) Schimp.	soil	VU
53.	<i>Tortula acaulon</i> (With.) R.H.Zander	soil	
54.	<i>T. caucasica</i> Broth.	soil	
55.	<i>T. lindbergii</i> Broth.	soil	
56.	<i>T. muralis</i> Hedw.	concrete	
57.	<i>T. subulata</i> Hedw.	rock	
58.	<i>T. truncata</i> (Hedw.) Mitt.	soil	
59.	<i>Weissia brachycarpa</i> (Nees & Hornsch.) Jur.	soil	
60.	<i>W. levieri</i> (Limpr.) Kindb.	soil	NE
61.	<i>W. longifolia</i> Mitt.	soil	

Abbreviations: EN – Endangered, NE – Not Evaluated, NT – Near Threatened, VU – Vulnerable.

Table 2. List of the fungi recorded on the territory of Vrana Park.

Nr.	Taxon	Substrate/ host	ETG	Conservation status
	<i>Ascomycota</i>			
	<i>Pezizomycetes</i>			
	<i>Pezizales</i>			
	<i>Discinaceae</i>			
1.	<i>Discina ancilis</i> (Pers.) Sacc.	dead wood	LeS	VU
2.	<i>Gyromitra gigas</i> (Krombh.) Cooke	dead wood	LeS	EN
	<i>Pyronemataceae</i>			
3.	<i>Octospora gyalectoides</i> Svrček & Kubička	among mosses	BrP	
4.	<i>Scutellinia scutellata</i> (L.) Lamb.	dead wood	LeS	
	<i>Sordariomycetes</i>			
	<i>Xylariales</i>			
	<i>Hypoxylaceae</i>			
5.	<i>Hypoxylon fragiforme</i> (Pers.) J. Kickx f.	dead beech wood	LeS	
	<i>Xylariaceae</i>			
6.	<i>Xylaria longipes</i> Nitschke	dead maple wood	LeS	
7.	<i>Xylaria polymorpha</i> (Pers.) Grev.	dead spruce wood	LeS	
	<i>Basidiomycota</i>			
	<i>Agaricomycetes</i>			
	<i>Agaricales</i>			
	<i>Agaricaceae</i>			
8.	<i>Agaricus phaeolepidotus</i> (F.H. Møller) F.H. Møller	soil	Hu	
9.	<i>Bovista plumbea</i> Pers. : Pers.	soil	Hu	
10.	<i>Cyathus striatus</i> (Huds. : Pers.) Willd.	dead wood	LeS	
11.	<i>Lycoperdon pyriforme</i> Schaeff. : Pers.	dead wood	LeS	
	<i>Amanitaceae</i>			
12.	<i>Amanita rubescens</i> Pers. : Fr.	soil	Mr	
	<i>Marasmiaceae</i>			
13.	<i>Gymnopus confluens</i> (Pers. : Fr.) Antonín, Halling & Noordel.	plant debris	St	
14.	<i>Gymnopus fusipes</i> (Bull. : Fr.) Gray	deciduous wood	LeP	
15.	<i>Gymnopus peronatus</i> (Bolton : Fr.) Antonín, Halling & Noordel	deciduous litter	St	
16.	<i>Marasmius epiphyllus</i> (Pers. : Fr.) Fr.	dead twigs and leaves	Fd	
17.	<i>Marasmius rotula</i> (Scop. : Fr.) Fr.	dead twigs and leaves	Fd	
	<i>Mycenaceae</i>			
18.	<i>Mycena aetites</i> (Fr.) Quél.	dead wood	LeS	
19.	<i>Mycena renati</i> Quél.	dead twigs	LeS	
20.	<i>Panellus stipticus</i> (Bull. : Fr.) P. Karst.	dead oak wood	LeS	
	<i>Physalacriaceae</i>			
21.	<i>Armillaria mellea</i> (Vahl : Fr.) P. Kumm	dead wood	LeP	
	<i>Pleurotaceae</i>			

Table 2. Continuation.

Nr.	Taxon	Substrate/ host	ETG	Conservation status
22.	<i>Pleurotus dryinus</i> (Pers. : Fr.) P. Kumm.	dead wood	LeS	
	<i>Pluteaceae</i>			
23.	<i>Pluteus cervinus</i> (Schaeff.) P. Kumm.	dead wood	LeS	
	<i>Psathyrellaceae</i>			
24.	<i>Coprinellus micaceus</i> (Bull. : Fr.) Vilgalys, Hopple & Jacq. Johnson	dead beech wood	LeS	
25.	<i>Coprinopsis atramentaria</i> (Bull. : Fr.) Redhead, Vilgalys & Moncalvo	dead beech stumps	LeS	
26.	<i>Parasola plicatilis</i> (Curtis : Fr.) Redhead, Vilgalys & Hopple	soil among grasses	C	
27.	<i>Psathyrella candolleana</i> (Fr. : Fr.) Maire	dead wood	LeS	
	<i>Schizophyllaceae</i>			
28.	<i>Schizophyllum commune</i> Fr. : Fr.	dead deciduous wood	LeS	
	<i>Strophariaceae</i>			
29.	<i>Agrocybe vervacti</i> (Fr. : Fr.) Singer	soil	Hu	
30.	<i>Hypholoma fasciculare</i> (Huds.:Fr.) P.Kumm.	dead wood	LeS	
	<i>Tricholomataceae</i>			
31.	<i>Lepista personata</i> (Fr. : Fr.) Cooke	soil	Hu	
32.	<i>Phyllotopsis nidulans</i> (Pers. : Fr.) Singer	dead deciduous tree	LeS	NT
	<i>Tubariaceae</i>			
33.	<i>Tubaria furfuracea</i> (Pers. : Fr.) Gillet	dead wood	LeS	
	<i>Auriculariales</i>			
	<i>Auriculariaceae</i>			
34.	<i>Auricularia auricula-judae</i> (Bull. : Fr.) Quél.	dead wood of <i>Sambucus nigra</i> L.	LeP	
35.	<i>Auricularia mesenterica</i> (Dicks. : Fr.) Pers.	dead deciduous wood	LeS	
	<i>Boletales</i>			
	<i>Boletaceae</i>			
36.	<i>Neoboletus erythropus</i> (Pers.) C. Hahn	soil	Mr	
37.	<i>Suillellus luridus</i> (Schaeff.) Murril	soil	Mr	
38.	<i>Xerocomellus chrysenteron</i> Bull.) Šutara	soil	Mr	
39.	<i>Xerocomus subtomentosus</i> (L.) Quél	soil	Mr	
	<i>Rhizopogonaceae</i>			
40.	<i>Rhizopogon roseolus</i> (Corda) Th. Fr.	soil	Mr	
	<i>Suillaceae</i>			
41.	<i>Suillus bovinus</i> (L. : Fr.) Roussel	soil	Mr	

Table 2. Continuation.

Nr. Taxon	Substrate/ host	ETG	Conservation status
<i>Cantharellales</i> <i>Clavulinaceae</i>			
42. <i>Clavulina coralloides</i> (L. : Fr.) J. Schröt.	coniferous litter	St	
<i>Corticiales</i> <i>Corticaceae</i>			
43. <i>Vuilleminia comedens</i> (Nees : Fr.) Maire	fallen branches of <i>Castanea</i> <i>sativa</i> Mill.	LeS	
<i>Gloeophyllales</i> <i>Gloeophyllaceae</i>			
44. <i>Gloeophyllum abietinum</i> (Bull. : Fr.) P. Karst.	dead trunks of <i>Abies alba</i> Mill.	LeS	
45. <i>Gloeophyllum odoratum</i> (Wulfen : Fr.) Imazeki	dead spruce wood	LeS	
<i>Hymenochaetales</i> <i>Hymenochaetaceae</i>			
46. <i>Hymenochaete fuliginosa</i> (Pers. : Fr.) Lév.	dead trunk of coniferous tree	LeS	
47. <i>Phellinus torulosus</i> (Pers. : Fr.) Bourdot & Galzin	living deciduous tree	LeP	
<i>Schizoporaceae</i>			
48. <i>Schizopora paradoxa</i> (Schrad. : Fr.) Donk	dead fallen branches of deciduous tree	LeS	
<i>Polyporales</i> <i>Fomitopsidaceae</i>			
49. <i>Antrodia xantha</i> (Fr. : Fr.) Ryvarden	dead coniferous wood	LeS	
50. <i>Piptoporus betulinus</i> (Bull. : Fr.) P. Karst.	living and dead birch wood	LeP	
51. <i>Postia fragilis</i> (Fr. : Fr.) Jülich	dead coniferous wood	LeS	
<i>Ganodermataceae</i>			
52. <i>Ganoderma applanatum</i> (Pers.) Pat.	living and dead deciduous wood	LeP	
<i>Meruliaceae</i>			
53. <i>Abortiporus biennis</i> (Bull.) Singer	dead wood	LeS	
54. <i>Bjerkandera adusta</i> (Willd. : Fr.) P. Karst.	dead wood of <i>Betula</i> <i>pendula</i> Roth and <i>Tilia</i> <i>argentea</i> DC.	LeS	
55. <i>Irpex lacteus</i> (Fr. : Fr.) Fr.	dead wood of <i>Hedera</i> <i>helix</i> L.	LeS	
56. <i>Phlebia tremellosa</i> (Schrad. : Fr.) Nakasone & Burds.	dead wood of <i>A. alba</i>	LeS	

Table 2. Continuation.

Nr. Taxon	Substrate/ host	ETG	Conservation status
57. <i>Steccherinum ochraceum</i> (Pers.) Gray	fallen branches of deciduous tree	LeS	
<i>Phanerochaetaceae</i>			
58. <i>Ceriporia excelsa</i> S. Lundell ex Parmasto	dead wood of <i>Pinus</i> <i>sylvestris</i> L.	LeS	
59. <i>Byssomerulius corium</i> (Pers. : Fr.) Parmasto	dead branches of deciduous tree	LeS	
60. <i>Porostereum spadiceum</i> (Pers.) Hjortstam & Ryvarden	fallen branches of deciduous tree	LeS	
<i>Polyporaceae</i>			
61. <i>Cerrena unicolor</i> (Bull. : Fr.) Murrill	dead deci- duous wood	LeS	
62. <i>Fomes fomentarius</i> (L. : Fr.) Fr.	living and dead beech wood	LeP	
63. <i>Polyporus arcularius</i> (Batsch : Fr.) Fr.	dead deci- duous wood	LeS	
64. <i>Polyporus badius</i> (Pers.) Schwein.	dead deci- duous wood	LeS	
65. <i>Trametes gibbosa</i> (Pers. : Fr.) Fr.	dead deci- duous wood	LeS	
66. <i>Trametes hirsuta</i> (Willd. : Fr.) Gray	dead deci- duous wood	LeS	
67. <i>Trametes versicolor</i> (L. : Fr.) Lloyd	dead deci- duous wood	LeS	
68. <i>Trichaptum abietinum</i> (Pers. ex J.F. Gmel. : Fr.) Ryvarden	dead coniferous wood	LeS	
69. <i>Trichaptum biforme</i> (Fr.) Ryvarden	dead deci- duous wood	LeS	
70. <i>Trichaptum fuscoviolaceum</i> (Ehrenb.) Ryvarden	dead wood of <i>P.</i> <i>sylvestris</i>	LeS	
<i>Russulales</i> <i>Peniophoraceae</i>			
71. <i>Peniophora incarnata</i> (Pers.) P. Karst.	fallen branches of deciduous tree	LeS	
72. <i>Peniophora lycii</i> (Pers. : Fr.) Höhn. & Litsch.	fallen branches of deciduous tree	LeS	
73. <i>Peniophora nuda</i> (Fr. : Fr.) Bres	fallen branches of <i>Quercus</i> sp.	LeS	
74. <i>Peniophora quercina</i> (Pers. : Fr.) Cooke	fallen branches of <i>Quercus</i> sp.	LeS	
<i>Russulaceae</i>			
75. <i>Russula cyanoxantha</i> (Schaeff.) Fr.	soil	Mr	
76. <i>Russula farinipes</i> Romell.	soil	Mr	

Table 2. Continuation.

Nr. Taxon	Substrate/ host	ETG	Conservation status
77. <i>Russula foetens</i> (Pers. : Fr.) Fr. <i>Stereaceae</i>	soil	Mr	
78. <i>Stereum hirsutum</i> (Willd. : Fr.) Pers.	dead deciduous wood	LeS	
79. <i>Stereum rugosum</i> Pers. : Fr.) Fr.	dead deciduous wood	LeS	
80. <i>Stereum sanguinolentum</i> (Alb. & Schwein. : Fr.) Fr	cut trunk of coniferous tree	LeS	
81. <i>Stereum subtomentosum</i> Pouzar	dead deci- duous wood	LeS	
<i>Dacrymycetes</i>			
<i>Dacrymycetales</i>			
<i>Dacrymycetaceae</i>			
82. <i>Calocera cornea</i> (Batsch : Fr.) Fr.	dead deci- duous wood	LeS	
83. <i>Dacrymyces stillatus</i> Nees : Fr	dead coniferous wood	LeS	
<i>Mycetozoa</i>			
<i>Myxogastria</i>			
<i>Stemonitales</i>			
<i>Stemonitidaceae</i>			
84. <i>Stemonitis fusca</i> Roth.	dead wood	LeS	
<i>Trichiales</i>			
<i>Trichiaceae</i>			
85. <i>Trichia decipiens</i> (Pers.) T. Macbr.	dead wood	LeS	
<i>Liceales</i>			
<i>Tubiferaceae</i>			
86. <i>Lycogala epidendrum</i> (J.C.Buxb. ex L.) Fr.	rotten wood	LeS	
87. <i>Tubifera ferruginosa</i> (Batsch) J.F. Gmel.	dead wood	LeS	

Abbreviations: ETG – Ecological-trophic groups: Saprotrophic fungi: **Fd** – leaf debris saprotrophs, **St** – litter saprotrophs, **Hu** – humus saprotrophs, **LeS** – wood saprotrophs, **C** – coprotrophs; Mycorrhizal fungi – **Mr**; Parasites: **LeP** – wood parasites, **BrP** – moss parasites. **CV** – Conservation value: **EN** – Endangered, **VU** – Vulnerable, **NT** – Near Threatened; unpublished species, recorded by the authors for the first time are highlighted in bold.

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