

Received: October 29, 2018  
Accepted: January 14, 2019

ISSN 1857–9027  
e-ISSN 1857–9949  
UDC: 582.282-192(497.7)  
DOI: 10.20903/csnmbs.masa.2019.40.2.148

*Original scientific paper*

## CHECKLIST OF LARGER ASCOMYCETES IN THE REPUBLIC OF MACEDONIA<sup>#</sup>

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A comprehensive checklist of all up to date registered ascomycetes from Macedonia was established for the first time. The aim of this study was to summarize all data on ascomycetes and contribute to the knowledge of the presence of these fungi in the country. Information for this checklist are based on data from field mycological research trips, species documented from existing literature, and examined exsiccatae from the Macedonian Collection of fungi (MCF) accompanied with data noted in the MACFUNGI database of fungi. A total number of 255 taxa belonging to larger (macroscopic) ascomycetes were recorded among which 107 species, three varieties and three forms were new records for Macedonia. Among listed taxa 18 are already red-listed in addition to approximately fifty species which are estimated to be rare in the country.

**Key words:** fungi check list; Ascomycota; taxonomy; nomenclature; Macedonia

### INTRODUCTION

The territory of the Republic of Macedonia is defined with high ecosystems and species diversity due to its specific geographic position combined with diverse relief structure, complex geology, substantial water resources and modified sub-Mediterranean, continental and mountainous climate. Combination of these parameters contributes to a considerably rich mycodiversity in the country. Past studies of Macedonian mycobiota in last 20 years were mainly focused on basidiomycetes (Karadelev & Rusevska [1]), while ascomycetes as phylogenetically and phenotypically the most diverse and the largest taxonomic group of fungi remained understudied. The first contribution to Macedonian ascomycetes diversity was published in 1988 by Tortić [2]. Some valuable data of Ascomycota from Macedonia with special emphasis on phytopathogenic species has been documented in the following papers: Bryner *et al.* [3]; Papazova-Anakieva *et al.* [4–6] and Sotirovski *et al.* [7–11]. The country's first checklist of ascomycetes was compiled in 1998

by Karadelev & Nastov [12] listing a total of 52 species. Individual or non-targeted data for ascomycetes presence was also found in Grujoska [13], Grujoska & Papazov [14], Irbe *et al.* [15], Karadelev [16], Karadelev [17], Karadelev *et al.* [18–25], Karadelev & Murati [26], Karadelev & Spasikova [27–29], Karadelev & Rusevska [30, 31], Rusevska & Karadelev [32], Tortić & Cekova [33] and Pilat & Lindtner [48]. A comprehensive listing had targeted only few taxonomic groups, such as Helvellaceae, Morchellaceae, Pyronemataceae and hypogeous ascomycetes by Karadelev *et al.* [34], Chavdarova *et al.* [35] and Kajevska *et al.* [36]. Hitherto, a total of 18 ascomycetes have been taken into consideration for conservation actions and proposed in the supplemented edition of the National red list of fungi in Karadelev & Rusevska [1].

The aim of this study is to summarize an up to date checklist of all registered and unpublished ascomycetes from Macedonia which is expected to significantly enrich the knowledge of the presence of these fungi in the country and contribute to determining conservation status of listed taxa.

<sup>#</sup>Dedicated to academician Gjorgji Filipovski on the occasion of his 100<sup>th</sup> birthday

## EXPERIMENTAL SECTION

Species records, locations, and their ecology were recorded from available literature, cited along each record in the list. Data was also extracted from exiccata notes and records in Macedonian Collection of fungi (MCF) accompanied with data noted in the MACFUNGI database.

Key microscopic features for ascomycetes (dimensions, shape and ornamentation of spores, asci, paraphyses and other elements) of majority of available specimens have been preferentially examined in their fresh state in a tap water (Baral [37]). Herbarium exiccata had been firstly rehydrated in tap water prior to microscopic examination. Observation of the material has been conducted using light microscope (LW Scientific, Inc., Lawrenceville, Georgia, USA). Standard chemical reagents have been used: Lugol's solution, Melzer's reagent, Cotton Blue and 5% KOH have been used mostly for the representatives of the class Pezizomycetes while Congo red had been primarily used for the representatives of Leotiomycetes. For identification at morphological species level we have used available identification keys in Hawker [38], Dennis [39, 40], Moser [41], Breitenbach & Kränzlin [42], Hansen & Knudsen (eds.) [43], Montecchi & Sarasini [44] and Medardi [45]. Listed species names follow the Index Fungorum [46] and the MycoBank [47] databases and are listed in the alphabetical order of a valid current name. Most common synonyms are also given, where available. References are given for published species while we supplemented unpublished collections with a locality, a forest type, a confirmed host species (if known) and with a date of collecting.

### CHECKLIST OF LARGER ASCOMYCETES IN THE REPUBLIC OF MACEDONIA

1. *Aleuria aurantia* (Pers.) Fuckel  
References: Tortić [2], Karadelev & Nastov [12], Tortić & Cekova [33], Kajevska *et al.* [36].
2. *Anthracobia macrocystis* (Cooke) Boud.  
References: Karadelev & Murati [26], Kajevska *et al.* [36].
3. *Anthracobia subatra* (Rehm) M.M. Moser  
Syn. *Lachnea subatra* Rehm  
References: Kajevska *et al.* [36].
4. *Apiognomonina veneta* (Sacc. & Speg.) Höhn.  
Syn. *Diaporthe veneta* Sacc. & Speg.  
References: Papazova-Anakieva *et al.* [5, 6].
5. *Arachnopeziza aurata* Fuckel  
Karadzhica Mt.: deciduous forest, *Populus tremula* (rotten wood), 14.07.2011; Pelister NP: oak forest, *Quercus* sp. (rotten wood), 19.04.2002.
6. *Arachnopeziza aurelia* (Pers.) Fuckel  
Syn. *Peziza aurelia* Pers.  
Galichica NP: oak forest, *Quercus* sp. (rotten wood), 22.04.2002; Skopska Crna Gora Mt.: oak forest, *Quercus* sp. (acorn and rotten wood), 07.05.2018.
7. *Ascocoryne cylichnium* (Tul.) Korf  
Syn. *Peziza cylichnium* Tul.  
References: Tortić [2], Karadelev & Nastov [12].
8. *Ascocoryne sarcoides* (Jacq.) J.W. Groves & D. E. Wilson  
Syn. *Helvella sarcoides* (Jacq.) Dicks.  
Anamorph syn. *Coryne dubia* (Pers.) Gray  
References: Karadelev & Nastov [12], Karadelev *et al.* [18], Karadelev & Murati [26].
9. *Ascotremella faginea* (Peck) Seaver  
Kozhuf Mt.: beech and fir forest, *Fagus sylvatica* (rotten wood), 13.07.2004; mixed beech and pine forest *Fagus sylvatica* (rotten wood), 07.05.2005; Osogovski Planini Mt.: beech forest, *Fagus sylvatica* (rotten wood), 09.06.2007.
10. *Balsamia vulgaris* Vittad.  
References: Chavdarova *et al.* [35].
11. *Barlaea constellatio* (Berk. & Broome) Sacc.  
Syn. *Pulvinula convexella* (P. Karst.) Pfister  
Mavrovo NP: mixed forest, 25.10.2016; Plachkovica Mt.: riparian vegetation, soil, 06.10.2014.
12. *Belonidium mollissimum* (Lasch) Raitv.  
Syn.: *Trichopeziza mollissima* (Lasch) Fuckel  
Shar Planina Mt.: beech forest, *Petasites albus* (dry stem), 24.04.2018.
13. *Bertia moriformis* (Tode) De Not.  
Syn. *Psilosphaeria moriformis* (Tode) Stev.  
References: Karadelev *et al.* [18], Karadelev & Murati [26].
14. *Biscogniauxia nummularia* (Bull.) Kuntze  
Karadzhica Mt.: beech forest, *Fagus sylvatica* (fallen branch), 29.07.1997, 11.10.2011; Shar Planina Mt.: beech forest, *Fagus sylvatica* (bark, rotten wood), 16.07.1997; Jakupica Mt.: beech forest, *Fagus sylvatica* (fallen branch), 08.07.1999; Maleshevski Planini Mt.: beech and pine forest, *Fagus sylvatica* (fallen branch), 18.09.2001; Kozhuf Mt.: beech forest, *Fagus sylvatica* (bark), 15.07.2014; Pelister NP: beech

- forest, *Fagus sylvatica* (fallen branch), 20.10.2005; Kitka Mt.: beech forest, *Fagus sylvatica* (bark), 03.05.2007; Lisec Mt.: beech forest, *Fagus sylvatica* (rotten wood), 16.05.2007; Osogovski Planini Mt.: beech forest, *Fagus sylvatica* (bark, fallen branch), 20.10.2007; 31.03.2018, 29.10.2014, 22.06.2018; Galichica NP: beech forest, *Fagus sylvatica* (fallen branch), 14.07.2010; Jasen Reserve: beech and pine forest, *Fagus sylvatica* (bark), 05.10.2010.
15. ***Biscogniauxia repanda*** (Fr.) Kuntze  
Syn. *Sphaeria repanda* Fr.  
Galichica NP: deciduous forest, *Sorbus aucuparia* (fallen branch), 27.07.1988.
  16. ***Bisporella citrina*** (Batsch) Korf & S.E. Carp.  
Syn. *Calycina citrina* (Hedw.) Gray  
References: Karadelev & Nastov [12], Karadelev [17], Karadelev *et al.* [19, 23], Karadelev & Murati [26].
  17. ***Bisporella pallescens*** (Pers.) S. E. Carp. & Korf  
Korab Mt.: beech and fir forest, *Fagus sylvatica* (rotten wood), 15.07.2013.
  18. ***Brunnipila clandestina*** (Bull.) Baral  
Syn. *Lachnum clandestinum* (Bull.) P. Karst.  
Skopska Crna Gora Mt.: oak and hornbeam forest, deciduous tree (fallen twig), 10.05.2018.
  19. ***Bulgaria inquinans*** (Pers.) Fr.  
Syn. *Bulgaria polymorpha* Oeder ex Wettst.  
References: Tortić [2], Karadelev & Nastov [12], Grujoska [13], Rusevska & Karadelev [32], Tortić & Cekova [33].
  20. ***Caloscypha fulgens*** (Pers.) Boud.  
Syn. *Pseudoplectania fulgens*(Pers.) Fuckel  
References: Karadelev *et al.* [22].
  21. ***Camarosporidiella laburni*** (Pers.) Wanas.  
Syn. *Cucurbitaria laburni* (Heyder ex Pers.) Ces. & De Not.  
Syn. *Gibberidea laburni* (Pers.) Kuntze  
Vodno Mt.: mixed deciduous forest, *Laburnum anagyroides* (branches), 10.11.2007.
  22. ***Capitotricha bicolor*** (Bull.) Baral  
Syn. *Dasyscyphus bicolor* (Bull.) Fuckel  
Syn. *Lachnum bicolor* (Bull.) P. Karst.  
References: Karadelev & Nastov [12], Karadelev *et al.* [18].
  23. ***Catinella olivacea*** (Batsch) Boud.  
Syn. *Patellaria olivacea* (Batsch) W. Phillips  
Mavrovo NP: beech forest, soil, 19.09.2010.
  24. ***Cistella acuum*** (Alb. & Schwein.) Svrcek  
Syn. *Dasyscyphus acuum* (Alb. & Schwein.) Sacc.  
Shar Planina Mt.: spruce forest, *Picea abies* (cones and rotten wood), 01.07.2010.
  25. ***Chaetosphaerella phaeostroma*** (Durieu & Mont.) E. Müll. & C. Booth  
Syn. *Byssosphaeria phaeostroma* (Durieu & Mont.) Stev.  
Kozhuf Mt.: beech forest, *Fagus sylvatica* (bark), 04.08.1984.
  26. ***Cheilymenia stercorea*** (Pers.) Boud.  
Syn. *Peziza stercorea*Pers.  
References: Kajevska *et al.* [36].
  27. ***Cheilymenia vitellina*** (Pers.) Dennis  
References: Karadelev *et al.* [24], Kajevska *et al.* [36].
  28. ***Chlorenchocelia versiformis*** (Pers.) J.R. Dixon  
Syn. *Chlorosplenium versiforme* (Pers.) P. Karst.  
Galichica NP: beech and fir forest, *Fagus sylvatica* (rotten wood), 15.09.2006; Prespa Lake area: pine plantation, *Pinus nigra* (rotten wood), 09.07.2006.
  29. ***Chlorociboria aeruginascens*** (Nyl.) Kanouse  
Syn. *Chlorosplenium aeruginascens* (Nyl.) P. Karst.  
References: Tortić [2], Karadelev & Nastov [12].
  30. ***Chlorociboria aeruginosa*** (Oeder) Seaver ex C. S. Ramamurthi, Korf & L. R. Batra  
Syn. *Chlorosplenium aeruginosum* (Oeder) De Not.  
References: Karadelev & Nastov [12], Karadelev [17].
  31. ***Chloroscypha alutipes*** (W. Phillips) Dennis  
Skopje: tree nursery, *Cupressus* (dry branches), 23.05.2018.
  32. ***Chlorosplenium sericeum*** (Alb. & Schwein.)  
Galichica NP: oak forest, deciduous tree (rotten wood), 30.07.2007
  33. ***Choiromyces meandriformis*** Vittad.  
Mavrovo NP: beech forest, soil, 10.09.2008.
  34. ***Ciboria rufofusca*** (O. Weberb.) Sacc.  
References: Karadelev *et al.* [20].
  35. ***Ciboria viridifusca*** (Fuckel) Höhn.  
Belchisko Blato: alder forest, *Alnus glutinosa* (conelike flowers), 19.10.2014.
  36. ***Claviceps purpurea*** (Fr.) Tul.  
References: Karadelev & Spasikova [27–29].

37. *Colpoma quercinum* (Pers.) Wallr.  
Syn. *Colpoma nigrum* Tode) Höhn.  
Galichica NP: oak forest, *Quercus frainetto* (branch), 21.07.1988.
38. *Coryne atrovirens* (Pers.) Sacc.  
Syn. *Leotia atrovirens* Pers.  
References: Karadelev *et al.* [24].
39. *Crocicreas dolosellum* (P. Karst.) S. E. Carp.  
Syn. *Cyathicula dolosella* (P. Karst.) Dennis  
Shar Planina Mt.: beech forest, ?*Petasites albus* (dry stem), 24.04.2018.
40. *Cryphonectria parasitica* (Murrill) M. E. Barr  
Syn. *Endothia parasitica* (Murrill) P. J. Anderson & H. W. Anderson  
References: Bryner *et al.* [3], Papazova-Anakieva *et al.* [4, 6], Sotirovski *et al.* [7–11].
41. *Cudonia circinans* (Pers.) Fr.  
References: Karadelev & Rusevska [1], Karadelev *et al.* [20].
42. *Cudoniella clavus* (Alb. & Schwein.) Dennis  
Syn. *Helotium clavus* (Alb. & Schwein.) Gillet  
References: Karadelev *et al.* [24].
43. *Cudoniella tenuispora* (Cooke & Masee) Dennis  
Karadzhica Mt: beech and fir forest, herbaceous stem, 25.04.2018.
44. *Cyathicula cyathoidea* (Bull.) Thüm.  
Syn. *Peziza calyculus* Sowerby  
Syn. *Hymenoscyphus calyculus* (Sowerby) W. Phillips  
Bistra Mt.: beech forest, *Fagus sylvatica* (rotten wood), 14.10.2006; mixed beech and oak forest, deciduous tree (fallen branch), 11.10.2008; Galichica NP: beech forest, *Fagus sylvatica* (fallen branch), 02.11.2008; Kozhuf Mt.: beech forest, *Fagus sylvatica* (rotten branches), 10.10.1983; Osogovski Planini Mt.: beech forest, *Fagus sylvatica* (fallen twigs), 29.10.2014; Plachkovica Mt.: beech forest, *Fagus sylvatica* (fallen twig), 21.10.2014.
45. *Cyclaneusma niveum* (Pers.) DiCosmo, Peredo & Minter  
Syn. *Propolis nivea* (Pers.) Fr.  
Osogovski Planini Mt.: pine plantation, *Pinus nigra* (fallen needles), 21.10.2007.
46. *Daldinia concentrica* (Bolton) Ces. & De Not.  
Syn. *Hemisphaeria concentrica* (Bolton) Klotzsch  
References: Karadelev & Nastov [12].
47. *Dasyscyphella nivea* (R. Hedw.) Raitv.  
Syn. *Dasyscyphus niveus* (R. Hedw.) Sacc.  
Syn. *Peziza nivea* (R. Hedw.) Fr.  
Galichica NP: oak-hornbeam forest, *Quercus* sp. (rotten wood), 22.04.2002.
48. *Diatrype bullata* (Hoffm.) Fr.  
Plachkovica Mt.: riparian vegetation, *Salix* sp. (branch), 03.09.2014.
49. *Diatrype disciformis* (Hoffm.) Fr.  
References: Karadelev & Nastov [12], Karadelev [17], Karadelev *et al.* [18, 23], Karadelev & Murati [26].
50. *Diatrype stigma* (Hoffm.) Fr.  
References: Karadelev & Nastov [12], Karadelev [17], Karadelev *et al.* [18, 19, 25], Karadelev & Murati [26].
51. *Diatrypella favacea* (Fr.) Ces. & De Not.  
References: Karadelev *et al.* [18].
52. *Diatrypella verruciformis* (Ehrh.) Nitschke  
Syn. *Diatrypella verrucaeformis* (Ehrh.) Nitschke  
References: Karadelev & Nastov [12].
53. *Disciotis venosa* (Pers.) Boud.  
Syn. *Peziza venosa* Pers.  
References: Karadelev & Nastov [12], Karadelev & Rusevska [1], Karadelev *et al.* [34].
54. *Dothistroma septosporum* (Dorog.) M. Morelet  
Syn. *Mycosphaerella pini* Rostr.  
References: Papazova-Anakieva *et al.* [5].
55. *Dumontinia tuberosa* (Bull.) L.M. Kohn  
Shar Planina Mt.: meadow, *Anemone nemorosa* (rhizomes), 07.05.2016; Pelister NP: meadow, wet place with *Anemone nemorosa* (rhizomes), 13.04.2018.
56. *Elaphomyces granulatus* Fr.  
Syn. *Hypogaeum cervinum*(L.) Pers.  
References: Karadelev *et al.* [25], Karadelev & Spasikova [27–29], Chavdarova *et al.* [35].
57. *Elaphomyces reticulatus* Vittad.  
Syn. *Lycoperdastrum reticulatum* (Vittad.) O. Kuntze  
References: Karadelev & Spasikova [27–29], Chavdarova *et al.* [35].
58. *Encoelia fascicularis* (Alb. & Schwein.) P. Karst.  
Smrdesh: riparian vegetation, *Salix* sp. (bark of a living branch), 03.09.2014.
59. *Eutypella scoparia* (Schwein.) Ellis & Everh.  
Skopje (vicinity): deciduous forest, *Robinia pseudoacacia* (fallen branch), 02.01.2016, deciduous tree (fallen branch), 20.02.2018; Vod-

- no Mt.: deciduous forest, deciduous tree (fallen branch), 21.03.2018.
60. *Genea fragrans* (Wallr.) Paol.  
References: Chavdarova *et al.* [35], Kajevska *et al.* [36].
61. *Genea hispidula* Berk. ex Tul.  
References: Chavdarova *et al.* [35], Kajevska *et al.* [36].
62. *Genea verrucosa* Klotzsch  
References: Chavdarova *et al.* [35], Kajevska *et al.* [36].
63. *Geoglossum nigratum* Cooke  
References: Karadelev & Nastov [12], Rusevska & Karadelev [32].
64. *Geopora arenicola* (Lév.) Kers  
Syn. *Lachnea arenicola* (Lév.) Gillet  
References: Chavdarova *et al.* [35], Kajevska *et al.* [36].
65. *Geopora arenosa* (Fuckel) S. Ahmad  
Vodno: deciduous forest (soil), 04.05.2016
66. *Geopora sumneriana* (Cooke) M. Torre  
Syn. *Lachnea sumneriana* (Cooke) W. Phillips  
Syn. *Sepultaria sumneriana* (Cooke) Masee  
References: Karadelev & Nastov [12], Chavdarova *et al.* [35], Kajevska *et al.* [36].
67. *Glyphium elatum* (Grev.) H. Zogg  
Slan Dol: mixed deciduous forest (aspen, silver poplar and black locust), deciduous tree (bark of fallen branches), 23.12.2014.
68. *Graddonia coracina* (Bres.) Dennis  
Shar Planina Mt.: beech forest, deciduous tree (fallen branch), 24.04.2018.
69. *Guignardia aesculi* (Peck) V.B. Stewart  
References: Papazova-Anakieva *et al.* [5].
70. *Gyromitra esculenta* (Pers.) Fr.  
Syn. *Helvella esculenta* Pers.  
References: Karadelev [16], Karadelev *et al.* [34].
71. *Gyromitra infula* (Schaeff.) Quéf.  
Syn. *Helvella infula* Schaeff.  
References: Tortić [2], Karadelev & Nastov [12], Karadelev *et al.* [20, 21, 34].
72. *Gyromitra gigas* (Krombh.) Cooke  
Pelister Mt.: molika pine forest, soil, 16.04.2018; Karadzica Mt.: mugo pine forest, soil, 21.04.2018.
73. *Gyromitra parma* (J. Breitenb. & Maas Geest.) Kotl. & Pouzar  
Syn. *Discinaparma* J. Breitenb. & Maas Geest.  
References: Karadelev & Rusevska [1, 31], Karadelev & Murati [26].
74. *Gyromitra perlata* (Fr.) Harmaja  
Syn. *Discina perlata* (Fr.) Fr.  
Skopje: pine plantation, *Pinus sylvestris* (rotten wood), 07.03.2018; Vodno Mt.: pine plantation, *Pinus sylvestris* (rotten wood), 03.04.2018;
75. *Helvella acetabulum* (L.) Quéf.  
Syn. *Paxina acetabulum* (L.) Kuntze  
Syn. *Macroscyphus acetabuliforme* Gray  
References: Karadelev & Murati [26], Karadelev *et al.* [34].
76. *Helvella atra* Oeder  
Syn. *Leptopodia atra* (Oeder) Boud.  
References: Karadelev & Rusevska [1], Karadelev & Nastov [12], Karadelev *et al.* [34].
77. *Helvella crispa* Bull.  
Syn. *Craterella crispa* (Bull.) Pers.  
References: Tortić [2], Karadelev & Nastov [12], Rusevska & Karadelev [32], Karadelev *et al.* [34].
78. *Helvella costifera* Nannf.  
Skopje (vicinity): hornbeam forest, soil, 26.05.2016.
79. *Helvella elastica* Bull.  
Syn. *Leptopodia elastica* (Bull.) Boud.  
References: Karadelev *et al.* [20, 34], Rusevska & Karadelev [32].
80. *Helvella sublicia* Holmsk.  
Syn. *Helvella ephippium* Lév.  
References: Karadelev & Rusevska [1], Tortić [2], Karadelev & Nastov [12], Karadelev *et al.* [34].
81. *Helvella fibrosa* (Wallr.) Korf,  
Syn. *Cyathipodia villosa* (Hedw.) Boud  
Skopska Crna Gora Mt.: oak forest, soil, 18.06.2011.
82. *Helvella lacunosa* Fr.  
References: Tortić [2], Karadelev & Nastov [12], Karadelev [16], Karadelev *et al.* [19, 34], Karadelev & Murati [26], Rusevska & Karadelev [32].
83. *Helvella leucomelaena* (Pers.) Nannf.  
Syn. *Acetabula leucomelaena* (Pers.) Sacc.  
References: Rusevska & Karadelev [32], Karadelev *et al.* [34].
84. *Helvella monachella* (Scop.) Fr.  
Syn. *Helvella leucopus* Pers.

- Kumanovo (vicinity), along river Pchinja: riparian vegetation (willow and poplar), soil, 10.04.2007; Gradishtanska Planina: poplar forest, soil, 12.04.2018.
85. *Helvella macropus* (Pers.) P. Karst.  
Syn. *Peziza macropus* Pers.  
Bistra Mt.: beech forest, *Fagus sylvatica* (rotten wood), 14.10.2006.
86. *Helvella solitaria* P. Karst.  
Syn. *Helvella queletii* Bres.  
References: Karadelev *et al.* [34].
87. *Herpotrichia juniperi* (Duby) Petr.  
References: Papazova-Anakieva *et al.* [5].
88. *Heyderia abietis* (Fr.) Weinm.  
Syn. *Gymnomitrula abietis*(Fr.) S. Imai  
References: Karadelev & Rusevska [1], Tortić [2], Karadelev & Nastov [12].
89. *Humaria hemisphaerica* (Hoffm.) Fuckel  
Syn. *Lachnea hemisphaerica* (F. H. Wigg.) Gillet  
References: Tortić [2], Karadelev & Nastov [12], Irbe *et al.* [15], Karadelev *et al.* [20, 23, 24], Karadelev & Murati [26], Kajevska *et al.* [36].
90. *Hyaloscypha hyalina* (Pers.) Boud.  
Syn. *Octospora hyalina* (Pers.) Gray  
Jasen Reserve: pine and oak forest, *Quercus* sp. (rotten wood), 05.10.2010; Shar Planina Mt.: spruce forest, *Cornus mas* (rotten wood), 01.07.2010.
91. *Hymenoscyphus fructigenus* (Bull.) Gray  
Syn. *Phialea fructigena*(Bull.) Gillet  
Skopska Crna Gora Mt.: oak forest, *Quercus* sp. (acorn), 10.09.2005, 02.10.2005; Bistra Mt.: oak forest, *Quercus* sp. (acorn), 01.06.2006, 10.07.2011; Pelister NP: beech forest, *Fagus sylvatica* (beechnuts), 18.09.2006; Osogovski Planini Mt.: beech forest, *Fagus sylvatica* (beechnuts), 16.10.2007, *Corylus avellana* (nut), 05.07.2018; Galichica NP: deciduous forest, *Corylus avellana* (nut), 18.10.2008; Mavrovo NP: beech forest, *Fagus sylvatica* (beechnuts), 30.06.2010; Korab Mt.: beech forest, *Fagus sylvatica* (beechnuts), 15.07.2013; Maleshevski Planini Mt.: oak forest, *Quercus* sp. (acorn), 19.09.2014; Plachkovica Mt.: beech forest, *Fagus sylvatica* (beechnuts), 21.10.2014; Karadzica Mt.: beech and fir forest, *Fagus sylvatica* (beechnuts), 25.04.2018.
92. *Hymenoscyphus scutula* (Pers.) W. Phillips  
Shar Planina Mt.: deciduous forest, deciduous tree (fallen twig), 27.10.2017.
93. *Hymenoscyphus serotinus* (Pers.) W. Phillips  
Syn. *Lanzia serotina* (Pers.) Korf & W. Y. Zhuang  
Bistra Mt.: beech forest, *Fagus sylvatica* (rotten wood), 14.10.2006; Jasen Reserve: mixed forest (beech, pine, maple, ash and oak), *Fagus sylvatica* (fallen branches), 15.10.2010; Osogovski Planini Mt.: beech forest, *Fagus sylvatica* (fallen twigs), 29.10.2014.
94. *Hymenoscyphus syringicolor* Svrček  
Shar Planina Mt.: beech and oak forest, wet place, 24.04.2018, 30.04.2018.
95. *Hypomyces aurantius* (Pers.) Tul.  
Pelister NP: pine planting, *Pinus sylvestris* (log), 17.07.1989; Belasica Mt.: basidiocarp of *Xerocomus subtomentosus*, 30.09.2010; Shar Planina Mt.: spruce forest, mushroom fruitbody, 01.07.2010.
96. *Hypomyces chrysospermus* Tul. & C. Tul.  
Osogovski Planini Mt.: beech forest, bolets (fruitbody), 20.06.2018; Karadzica Mt.: mixed forest, bolets (fruitbody), 08.09.2018.
97. *Hypomyces lateritius* (Fr.) Tul. & C. Tul.  
Syn. *Peckiella lateritia* (Fr.) Maire  
Kozhuf Mt.: beech forest, basidiocarp of *Lactarius deliciosus*, 23.10.2005; Pelister NP: molika pine forest with *Abies borisii-regis*, basidiocarp of *Lactarius salmonicolor*, 07.10.2001.
98. *Hypomyces rosellus* (Alb. & Schwein.) Tul. & C. Tul.  
Vodno Mt.: pine plantation, *Pinus* sp. (rotten wood), 20.05.2018.
99. *Hypomyces spadiceus* Fr. ex Cooke  
Syn. *Hypolyssus spadiceus*(Fr.) Kuntze  
Pelister NP: beech and fir forest, basidiocarp of *Lactarius torminosus*, 19.09.2006.
100. *Hypocrea citrina* (Pers.) Fr.  
Jakupica Mt.: oak and hornbeam forest, plant remnants, 12.07.1999; Nidze Mt.: pine forest, plant remnants, 17.07.2002;
101. *Hypocrea gelatinosa* (Tode) Fr.  
Syn. *Creopus gelatinosus* (Tode) Link  
Demir Hisar: oak forest, deciduous tree (rotten wood), 15.10.2011; Jakupica Mt.: beech forest, *Fagus sylvatica* (stump), 11.07.1999; Karadzica Mt.: beech forest, *Fagus sylvatica* (rotten wood), 11.10.2001.
102. *Hypocrea pulvinata* Fuckel  
References: Karadelev & Rusevska [30].

103. *Hypocrea rufa* (Pers.) Fr.  
Dobra Voda Mt.: oak forest, deciduous tree (fallen branch), 10.03.2008; Mariovo: Macedonian oak forest, basidiocarp of *Xerocomus* sp., 11.10.2005; Nidze Mt.: mixed forest (pine, beech and fir), basidiocarp of *Fomitopsis pini-cola*, 17.07.2002; Plachkovica Mt.: beech forest, *Fagus sylvatica* (rotten wood), 06.10.2014; Skopje: pine planting, *Suillus* sp. (basidiocarp), 10.10.2005; Pelister NP: beech forest, *Fagus sylvatica* (fallen branch), 18.09.2006.
104. *Hypoxylon fragiforme* (Pers.) J. Kickx f.  
References: Tortić [2], Karadelev & Nastov [12], Karadelev *et al.* [18], Karadelev & Murati [26].
105. *Hypoxylon fuscum* (Pers.) Fr.  
References: Karadelev & Nastov [12], Karadelev *et al.* [18], Karadelev & Murati [26], Karadelev & Rusevska [30].
106. *Hypoxylon howeanum* Peck  
Karadzhica Mt.: beech forest, *Fagus sylvatica* (bark), 29.07.1997; Shar Planina Mt.: beech forest, *Fagus sylvatica* (bark), 11.07.1998.
107. *Hypoxylon rubiginosum* (Pers.) Fr.  
Syn. *Hypoxylon rubiginosum* var. *rubiginosum*(Pers.) Fr.  
References: Karadelev & Nastov [12], Karadelev *et al.* [18].
108. *Hypoxylon serpens* (Pers.) J. Kickx f.  
Syn. *Nemania serpens* var. *serpens*  
References: Karadelev & Nastov [12], Karadelev *et al.* [18].
109. *Hysterographium fraxini* (Pers.) De Not.  
Syn. *Hypoderma fraxini* (Pers.) DC.  
References: Rusevska & Karadelev [32].
110. *Jackrogersella multiformis* (Fr.) L. Wendt  
Syn. *Hypoxylon multiforme* (Fr.) Fr.  
Syn. *Hypoxylon multiforme* var. *multiforme*(Fr.) Fr.  
Syn. *Annulohypoxylon multiforme*(Fr.) Y.M. Ju, J.D. Rogers & H.M. Hsieh  
References: Karadelev & Nastov [12], Karadelev & Rusevska [30].
111. *Kabatina thujae* R. Schneid.  
References: Papazova-Anakieva *et al.* [5].
112. *Kretzschmaria deusta* (Hoffm.) P.M.D. Martin  
Syn. *Sphaeria deusta*Hoffm.  
Syn. *Ustulina deusta* (Hoffm.) Maire  
References: Tortić [2], Karadelev & Nastov [12], Karadelev *et al.* [18].
113. *Lachnellula suecica* (de Bary ex Fuckel) Nannf.  
References: Karadelev & Nastov [12], Karadelev & Rusevska [31].
114. *Lachnum tenuissimum* (Quél.) Korf & W.Y. Zhuang  
Syn. *Dasyscyphus tenuissimus* (Quél.) Dennis  
References: Karadelev & Nastov [12].
115. *Lachnum virgineum* (Batsch) P. Karst.  
Syn. *Dasyscyphus virgineus*(Batsch) Gray  
References: Karadelev & Nastov [12], Karadelev *et al.* [18].
116. *Lasiosphaeria ovina* (Pers.) Ces. & De Not.  
References: Karadelev & Nastov [12], Karadelev *et al.* [18].
117. *Lasiosphaeria spermoides* (Hoffm.) Ces. & De Not.  
Karadzhica Mt.: beech forest, *Fagus sylvatica* (rotten wood), 11.10.2001; Mavrovo NP: beech forest, *Fagus sylvatica* (fallen branch), 19.06.2010.
118. *Leotia lubrica* (Scop.) Pers.  
References: Tortić [2], Karadelev & Nastov [12], Karadelev *et al.* [23, 25], Tortić & Cekova [33].
119. *Leptosphaeria acuta* (Moug. & Nestl.) P. Karst  
Karadzhica Mt.: beech and fir forest, herbaceous stem, 25.04.2018.
120. *Leptosphaeria doliolum* (Pers.) Ces. & De Not.  
References: Karadelev & Nastov [12], Karadelev *et al.* [18].
121. *Lirula nervisequia* (DC.) Darker  
Syn. *Hypoderma nervisequum* DC.  
References: Papazova-Anakieva *et al.* [5].
122. *Lophodermium pinastri* (Schrad.) Chevall.  
References: Papazova-Anakieva *et al.* [5].
123. *Lophodermium seditiosum* Minter  
References: Papazova-Anakieva *et al.* [5].
124. *Melanomma pulvis-pyrius* (Pers.) Fuckel  
Mavrovo NP: beech-fir forest, *Abies borisii-regis* (bark), 19.06.2010; Shar Planina Mt.: beech forest, *Fagus sylvatica* (rotten wood), 11.07.1997.
125. *Melastiza chateri* (W.G. Sm.) Boud.  
References: Kajevska *et al.* [36].
126. *Melastiza flavorubens* (Rehm) Pfister & Korf  
References: Kajevska *et al.* [36].

127. *Microglossum viride* (Pers.) Gillet  
References: Karadelev & Rusevska [1], Tortić [2], Karadelev & Nastov [12], Tortić & Cekova [33].
128. *Microglossum griseoviride* V. Kučera  
Bistra Mt.: beech forest (soil), 25.09.2017; Pelister NP: beech and fir forest (soil), 18.09.2017.
129. *Microsphaera alphitoides* Griffon & Maubl.  
References: Papazova-Anakieva *et al.* [5, 6], Karadelev & Murati [26], Karadelev & Rusevska [30].
130. *Microsphaera juglandis* Golovin  
Kozhuf Mt.: roadsides, *Juglans regia* (leaves), 15.07.2005; Prespa Lake area: *J. regia* (leaves), 08.07.2004.
131. *Microstoma protracta* (Fr.) Kanouse  
References: Karadelev & Rusevska [1].
132. *Mitrophora semilibera* (DC.) Lév.  
References: Karadelev & Murati [26], Karadelev *et al.* [34].
133. *Mitruia paludosa* Fr.  
References: Karadelev & Rusevska [1], Karadelev *et al.* [34].
134. *Mollisia cinerea* (Batsch) P. Karst.  
References: Karadelev & Nastov [12], Karadelev *et al.* [18, 23].
135. *Mollisia discolor* (Mont. & Fr.) W. Phillips  
Galichica NP: oak forest, deciduous tree (rotten wood), 30.07.2007.
136. *Mollisia ligni* (Desm.) P. Karst.  
Syn. *Pyrenopeziza ligni* (Desm.) Sacc.  
Deshat Mt.: beech forest, *Fagus sylvatica* (rotten wood), 12.05.2007; Jakupica Mt.: beech forest, *Fagus sylvatica* (fallen branch), 12.07.1999.
137. *Mollisia rivularis* (Svrček) L.G. Krieglst.  
Karadzhica Mt.: beech and fir forest, herbaceous stem, 25.04.2018.
138. *Morchella conica* Pers.  
References: Karadelev *et al.* [25, 34], Karadelev & Murati [26].
139. *Morchella deliciosa* Fr.  
References: Karadelev *et al.* [25, 34].
140. *Morchella elata* Fr.  
References: Karadelev & Rusevska [1], Karadelev *et al.* [34].
141. *Morchella esculenta* (L.) Pers.  
References: Karadelev & Rusevska [1], Karadelev [16], Karadelev & Murati [26].
142. *Morchella esculenta* var. *umbrina* (Boud.) S. Imai  
Syn. *Morchella umbrina* Boud.  
Vodno Mt.: deciduous forest, soil, 03.03.2018.
143. *Morchella steppicola* Zerova  
References: Karadelev *et al.* [34].
144. *Mycosphaerella pyri* (Auersw.) Boerema  
Unknown locality and date, *Pyrus amygdaliformis* (leaves).
145. *Nectria cinnabarina* (Tode) Fr.  
References: Papazova-Anakieva *et al.* [5], Karadelev & Nastov [12], Karadelev *et al.* [18].
146. *Neobulgaria pura* (Pers.) Petr.  
References: Tortić [2], Karadelev & Nastov [12].
147. *Neobulgaria pura* var. *pura* (Pers.) Petr.  
Syn. *Coryne bresadolae* Rehm  
References: Karadelev [17].
148. *Neodasyscypha cerina* (Pers.) Spooner  
Vodno Mt.: deciduous forest, deciduous tree (fallen branch), 18.03.2018; Karadzhica Mt.: beech and fir forest, *Fagus sylvatica* (rotten wood), 25.04.2018.
149. *Neonectria ditissima* (Tul. & C. Tul.) Samuels & Rossman  
Syn. *Nectria galligena* Bres.  
References: Papazova-Anakieva *et al.* [5].
150. *Neophloeospora maculans* (Berenger) Videira & Crous  
Syn. *Mycosphaerella mori* (Fuckel) F.A. Wolf  
References: Papazova-Anakieva *et al.* [6].
151. *Ophiognomonium leptostyla* (Fr.) Sogonov  
Syn. *Gnomonia leptostyla* (Fr.) Ces. & De Not.  
References: Papazova-Anakieva *et al.* [6].
152. *Ophiostoma ulmi* (Buisman) Melin & Nannf.  
References: Papazova-Anakieva *et al.* [6].
153. *Orbilium xanthostigma* (Fr.) Fr.  
Syn. *Calloria xanthostigma* (Fr.) W. Phillips  
Mavrovo NP: mixed deciduous forest (alder, hazel and sycamore), deciduous tree (rotten wood), 18.09.2010; Osogovski Planini Mt.: beech forest, *Fagus sylvatica* (rotten wood), 29.10.2014; Shar Planina Mt.: beech forest, *Fagus sylvatica* (rotten wood), 24.04.2018.
154. *Otidea abietina* (Pers.) Fuckel  
Syn. *Aleuria abietina* (Pers.) Gillet  
References: Karadelev *et al.* [20, 22], Kajevska *et al.* [36].



155. *Otidea alutacea* (Pers.) Masse  
References: Kajevska *et al.* [36].
156. *Otidea auricula* (Schaeff.) Sacc.  
References: Kajevska *et al.* [36].
157. *Otidea bufonia* (Pers.) Boud.  
References: Kajevska *et al.* [36].
158. *Otidea cantharella* (Fr.) Quél.  
Syn. *Flavoscypha cantharella* (Fr.) Harmaja  
References: Karadelev *et al.* [23], Kajevska *et al.* [36].
159. *Otidea cochleata* (L.) Fuckel  
References: Kajevska *et al.* [36].
160. *Otidea concinna* (Pers.) Sacc.  
References: Karadelev *et al.* [22], Karadelev & Murati [26], Kajevska *et al.* [36].
161. *Otidea leporina* (Batsch) Fuckel  
Kichevo: pine plantation, soil, 01.09.2006;  
Mavrovo NP: mixed forest, 13.10.2009; Shar  
Planina Mt.: spruce forest, soil, 11.07.2013.
162. *Otidea onotica* (Pers.) Fuckel  
Syn. *Peziza onotica* Pers.  
References: Tortić [2], Karadelev & Nastov  
[12], Kajevska *et al.* [36].
163. *Pachyella violaceonigra* (Rehm) Pfister  
References: Karadelev & Rusevska [1].
164. *Perrotia flammea* (Alb. & Schwein.) Boud.  
Syn. *Lachnella flammea* (Alb. & Schwein.) Fr.  
Galichica NP: oak forest, deciduous tree (rotten  
wood), 30.07.2007; Jasen Reserve: mixed pine  
and oak forest, deciduous tree (fallen branch),  
15.10.2010.
165. *Pestalotiopsis funereoides* Steyaert  
Syn. *Pestalotia funerea* Desm.  
References: Papazova-Anakieva *et al.* [5].
166. *Peziza arvernensis* Boud.  
Belasica Mt.: beech forest, soil, 01.05.2002;  
Dobra Voda Mt.: oak forest, soil, 30.05.2012;  
Kitka Mt.: beech forest, soil, 11.05.2002; Ko-  
zhuf Mt.: beech forest, soil, 03.08.1984;  
Kozjak Mt.: mixed beech and pine forest, soil,  
16.05.2004; Osogovski Planini Mt.: beech for-  
est, soil, 10.06.2007, 22.06.2018; Mavrovo  
NP: mixed forest, soil, 03.06.2018, Maleshev-  
ski Planini Mt.: beech and fir forest, *Fagus  
sylvatica* (rotten wood), 21.06.2018.
167. *Peziza badia* Pers.  
References: Karadelev & Nastov [12].
168. *Peziza buxea* Quél.  
Syn. *Humaria buxea* (Quél.) Sacc.  
Bistra Mt.: beech and fir forest, *Fagus sylvati-  
ca* (decaying wood), 05.06.2009.
169. *Peziza celtica* (Boud.) M.M. Moser  
Syn. *Pachyella celtica* (Boud.) Häffner  
References: Karadelev *et al.* [23], Karadelev &  
Murati [26].
170. *Peziza cerea* Sowerby  
Syn. *Pustularia cerea* (Sowerby) Rehm  
References: Tortić [2], Grujoska & Papazov  
[14].
171. *Peziza depressa* Pers.  
Bistra Mt.: beech forest, soil, 09.09.2017.
172. *Peziza domiciliana* Cooke  
Syn. *Aleuria domiciliana* (Cooke) McLennan  
& Halsey  
References: Karadelev & Murati [26].
173. *Peziza howsei* Roze & Boud.  
Syn. *Galactinia howsei* (Roze & Boud.) Boud.  
Bistra Mt.: oak forest with hazel and maple,  
soil, 10.05.2007.
174. *Peziza indiscreta* W. Phillips & Plowr.  
Vodno Mt.: mixed forest, soil, 11.05.2016.
175. *Peziza praetervisa* Bres.  
Bogdanci: oak forest, *Quercus frainetto*  
(stump), 03.09.1982; Pchinja river: riparian  
vegetation, soil, 29.04.2014.
176. *Peziza repanda* Pers.  
References: Karadelev *et al.* [23].
177. *Peziza saniosa* Schrad. ex J.F. Gmel.  
References: Karadelev & Nastov [12].
178. *Peziza sicula* Inzenga  
Slan Dol: fallow land, soil, 17.03.2018.
179. *Peziza succosa* Berk.  
Syn. *Otidea succosa* (Berk.) Thüm.  
Syn. *Aleuria succosa* (Berk.) Gill.  
Shar Planina Mt.: spruce forest, soil,  
29.08.2018.
180. *Peziza varia* (Hedw.) Alb. & Schwein.  
References: Karadelev [17], Karadelev & Ru-  
sevaska [30].
181. *Peziza vesiculosa* Bull.  
Syn. *Helvella vesiculosa* (Bull.) Bolton  
References: Karadelev & Murati [26].
182. *Pezizella alniella* (Nyl.) Dennis  
References: Karadelev *et al.* [22].
183. *Phyllactinia corylea* (Pers.) P. Karst.  
Syn. *Phyllactinia guttata* (Wallr.) Lév.

- Kozhuf Mt.: beech forest, *Fagus sylvatica* (leaves), 24.10.2005.
184. *Phialina separabilis* (P. Karst.) Huhtinen & Scheuer  
Syn. *Hymenoscyphus separabilis* (P. Karst.) Dennis  
References: Karadelev & Murati [26].
185. *Pithya cupressina* (Batsch) Fuckel  
References: Karadelev & Rusevska [1].
186. *Pithya vulgaris* Fuckel  
References: Karadelev *et al.* [20].
187. *Plectania melastoma* (Sowerby) Fuckel  
Vodno Mt.: deciduous forest, deciduous tree (branch), 05.05.2017.
188. *Polydesmia pruinosa* (Berk. & Broome) Boud.  
Galichica Mt.: oak forest, Sordariomycetes (ascocarp), 10.10.2000.
189. *Poronia punctata* (L.) Fr.  
References: Karadelev & Rusevska [1], Karadelev *et al.* [22], Karadelev & Rusevska [31].
190. *Propolis farinosa* (Pers.) Fr.  
Syn. *Propolis versicolor* (Fr.) W. Phillips  
References: Karadelev & Nastov [12], Irbe *et al.* [15], Karadelev *et al.* [18, 23].
191. *Pseudoplectania nigrella* (Pers.) Fuckel  
Jablanica Mt.: oak forest with planted pines, soil, 11.03.2017; Pchinja river: riparian vegetation, soil, 29.04.2014.
192. *Ptychoverpa bohémica* (Krombh.) Boud.  
Syn. *Verpa bohémica* (Krombh.) J. Schröt.  
References: Karadelev & Murati [26], Rusevska & Karadelev [32], Karadelev *et al.* [34].
193. *Rhabdocline pseudotsugae* Syd.  
References: Papazova-Anakieva *et al.* [5].
194. *Rhytisma acerinum* (Pers.) Fr.  
References: Karadelev & Nastov [12], Karadelev *et al.* [18, 23], Karadelev & Murati [26].
195. *Rhytisma salicinum* (Pers.) Fr.  
Shar Planina Mt.: beech forest, *Salix caprea* (leaves), 08.07.1998.
196. *Rosellinia callosa* G. Winter  
Skopje: tree nursery, deciduous tree (rotten wood), 09.03.2018.
197. *Rutstroemia bolaris* (Batsch) Rehm  
References: Karadelev *et al.* [19].
198. *Rutstroemia bulgarioides* (Rabenh.) P. Karst.  
References: Karadelev & Rusevska [1], Karadelev *et al.* [22].
199. *Rutstroemia conformata* (P. Karst.) Nannf.  
Syn. *Ciboria conformata* (P. Karst.) Svrcek  
Skopje: deciduous forest, *Populus* sp. (fallen leaves), 03.05.2018
200. *Rutstroemia echinophila* (Bull.) Höhn.  
Demir Hisar: oak forest with chestnut plantation, *Castanea sativa* (fruits), 15.10.2011; Shar Planina Mt.: chestnut forest, *Castanea sativa* (fallen fruits), 17.10.2009; Skopska Crna Gora Mt.: oak forest with chestnut plantation, *Castanea sativa* (fallen fruits), 15.10.2006.
201. *Rutstroemia firma* (Pers.) P. Karst.  
Mavrovo NP: oak forest, *Quercus cerris* (fallen branch), 10.10.2010.
202. *Rutstroemia petiolorum* (Roberge ex Desm.) W. L. White  
Mavrovo NP: oak forest, woody debris, 02.10.2010; Skopje: deciduous forest, *Populus* sp. (fallen leaves and stems), 27.04.2018.
203. *Sarcoscypha austriaca* (Beck ex Sacc.) Boud.  
Deshat Mt.: beech forest, *Fagus sylvatica* (rotten wood), 12.05.2007; Matka: deciduous forest, *Quercus* sp. (fallen branch), 1.04.2000; Vodno Mt.: deciduous forest, deciduous tree (fallen branch), 15.03.2018.
204. *Sarcoscypha coccinea* (Scop.) Lambotte  
Syn. *Peziza aurantiaca* Bull  
References: Tortić [2], Karadelev & Nastov [12], Karadelev & Murati [26], Rusevska & Karadelev [32].
205. *Sarcosphaera coronaria* (Jacq.) J. Schröt.  
Syn. *Sarcosphaera crassa* (Santi) Pouzar  
References: Karadelev & Rusevska [1], Karadelev *et al.* [19], Rusevska & Karadelev [32].
206. *Sawadaea bicornis* (Wallr.) Miyabe  
References: Karadelev *et al.* [23].
207. *Schmitzomia radiata* (L.) W. Phillips  
Syn. *Stictis radiata* (L.) Pers.  
Skopje: tree nursery, deciduous tree (fallen branch), 08.02.2018.
208. *Sclerotinia pseudotuberosa* (Rehm) Rehm  
Syn. *Ciboria batschiana* (Zopf) N.F. Buchw.  
Syn. *Ciboria pseudotuberosa* Rehm  
Dobra Voda Mt.: oak forest, *Quercus* sp. (fallen twigs), 23.10.2007; Mavrovo NP: oak forest, rotten wood, 10.10.2010; Skopje (vicinity): oak forest, *Quercus* sp. (fallen acorns),

- 24.10.2007; Suva Gora Mt.: oak forest, *Quercus* sp. (fallen acorns), 12.10.2011.
209. *Sclerotinia sclerotiorum* (Lib.) de Bary  
References: Karadelev *et al.* [24].
210. *Scutellinia cejpü* (Velen.) Svrček  
References: Kajevska *et al.* [36].
211. *Scutellinia kerguelensis* (Berk.) Kuntze  
Syn. *Lachnea kerguelensis* (Berk.) Sacc.  
References: Kajevska *et al.* [36].
212. *Scutellinia crinita* (Bull.) Lambotte  
Skopje: deciduous forest, deciduous tree (rotten wood), 26.04.2018; Skopska Crna Gora Mt.: oak and hornbeam forest, deciduous tree (rotten wood), 05.05.2018, Kitka Mt.: oak and hornbeam forest, deciduous tree (rotten wood), 13.05.2018; Goleshnica Mt.: riparian vegetation, deciduous tree (fallen branch), 16.05.2018.
213. *Scutellinia scutellata* (L.) Lambotte  
References: Karadelev & Nastov [12], Karadelev *et al.* [19, 23], Kajevska *et al.* [36].
214. *Scutellinia umbrorum* (Fr.) Lambotte  
Syn. *Peziza umbrorum* Fr.  
References: Kajevska *et al.* [36].
215. *Seiridium cardinale* (W. W. Wagener) B. Sutton & I.A.S. Gibson  
Syn. *Coryneum cardinale* W. W. Wagener  
References: Papazova-Anakieva *et al.* [5, 6].
216. *Sowerbyella radiculata* (Sowerby) Nannf.  
Skopje: *Cupressus* plantation (soil, among fallen leaves), 19.02.2018.
217. *Spathularia flavida* Pers.  
References: Karadelev & Rusevska [1], Karadelev *et al.* [20].
218. *Tapesia fusca* (Pers.) Fuckel  
Syn. *Mollisia fusca* (Pers.) P. Karst  
References: Karadelev & Nastov [12].
219. *Taphrina deformans* (Berk.) Tul.  
Dojran Lake area: kermes oak forest, *Prunus webbi* (leaves), 06.05.2013; Mariovo: orchard, *Prunus persica* (leaves), 15.05. 2005 and 12.06.2005; Kitka Mt.: orchard, *Prunus persica* (leaves), 03.05.2007; Kumanovo: garden in the monastery, *Prunus persica* (leaves), 02.06.2005; Star Dojran: city park, *Prunus persica* (leaves); 25.04.2004.
220. *Taphrina pruni* Tul.  
Karadzhica Mt.: beech forest (fruits of *Prunus domestica*), 29.05.2011; Shar Planina Mt.: deciduous forest, *Prunus* sp. (fruits), 25.05.2009.
221. *Tarzetta catinus* (Holmsk.) Korf & J. K. Rogers  
References: References: [12], [36].
222. *Tarzetta cupularis* (L.) Svrcek  
References: Kajevska *et al.* [36].
223. *Tarzetta gaillardiana* (Boud.) Korf & J. K. Rogers  
Shar Planina Mt.: beech forest, *Petasites albus* (dry stem), 24.04.2018.
224. *Terfezia terfezioides* (Mattir.) Trappe  
Taorska Klisura and Badar: oak forest (hypogeous), 10.12.2015.
225. *Tolypocladium ophioglossoides* (Ehrh. ex J. F. Gmel.) Quandt  
Syn. *Cordyceps ophioglossoides* (Ehrh.) Link  
Syn. *Torrubia ophioglossoides* (Ehrh.) Tul. & C. Tul.  
Kozhuf Mt.: beech forest, *Elaphomyces* (ascocarps), 24.10.2005.
226. *Trichoglossum hirsutum* (Pers.) Boud.  
References: Karadelev & Rusevska [1], Karadelev *et al.* [24].
227. *Trichophaea hemisphaerioides* (Mouton) Graddon  
Syn. *Humaria hemisphaerioides* (Mouton) Eckblad  
References: Kajevska *et al.* [36].
228. *Trichophaeopsis bicuspis* (Boud.) Korf & Erb  
References: Kajevska *et al.* [36].
229. *Tuber aestivum* (Wulfen) Spreng.  
References: Karadelev *et al.* [22].
230. *Tuber aestivum* var. *uncinatum* (Chatin) I. R. Hall  
Syn. *Tuber uncinatum* Chatin  
Mavrovo: beech forest (hypogeous), 07.11.2017
231. *Tuber belonei* Quél.  
Syn. *Tuber bellonae* Quél.  
Shar Planina Mt.: beech forest (hypogeous), 10.02.2017
232. *Tuber borchii* Vittad.  
Taorska Klisura and Badar: oak forest (hypogeous), 10.01.2015; Mavrovo NP: beech forest (hypogeous), 07.11.2017.
233. *Tuber brumale* Vittad.  
Karadzhica Mt.: oak forest (hypogeous), 10.01.2014.
234. *Tuber brumale* var. *moschatum* (Bull.) I. R. Hall  
Syn. *Tuber moschatum* Bull.  
Kitka Mt.: oak forest (hypogeous), 20.11.2016.

235. *Tuber dryophilum* Tul. & C. Tul.  
Mavrovo NP: beech and fir forest; 11.01.2014.
236. *Tuber excavatum* Vittad.  
Karadzica Mt.: oak forest (hypogeous), 10.01.2014; Kitka Mt.: oak forest (hypogeous), 09.11.2014; Mavrovo NP: beech forest (hypogeous), 07.11.2017.
237. *Tuber foetidum* Vittad.  
Gradishtanska Planina Mt.: oak and hornbeam forest (hypogeous), 01.03.2016.
238. *Tuber fulgens* Quél.  
Mavrovo NP: beech forest (hypogeous), 07.11.2017.
239. *Tuber macrosporum* Vittad.  
Vardar valley, deciduous forest (hypogeous), 20.12.2016.
240. *Tuber magnatum* Pico  
Vardar valley, deciduous forest (hypogeous), 28.11.2016.
241. *Tuber melanosporum* Vittad. – planted  
Taorska Klisura and Badar: planted *Corylus avellana* (hypogeous), 28.01.2015.
242. *Tuber mesentericum* Vittad.  
Mavrovo NP: beech and fir forest (hypogeous), 11.01.2014.
243. *Tuber puberulum* Berk. & Broome  
Kozhuf Mt.: beech forest (hypogeous), 13.01.2014; Skopje (vicinity): oak forest (hypogeous), 25.12.2014.
244. *Tuber rufum* f. *ferrugineum* (Vittad.)  
Montecchi & Lazzari  
Syn. *Tuber ferrugineum* Vittad.  
Kitka Mt.: oak forest (hypogeous), 09.11.2014.
245. *Tuber rufum* f. *lucidum* (H. Bonnet) Montecchi  
& Lazzari  
Kitka Mt.: oak forest (hypogeous), 09.11.2014.
246. *Tuber rufum* f. *nitidum* (Vittad.) Montecchi &  
Lazzari  
Syn. *Tuber nitidum* Vittad.  
Valandovo: kermes oak forest (hypogeous), 10.12.2008; Galichica NP: oak forest (hypogeous), 03.06.2010.
247. *Urnula craterium* (Schwein.) Fr.  
References: Karadelev & Rusevska [1].
248. *Valsa sordida* Nitschke  
References: Papazova-Anakieva *et al.* [5].
249. *Venturia inaequalis* (Cooke) G. Winter  
Kichevo: roadside, *Malus* sp. (leaves of a living tree), 11.07.2010; Pelister NP: beech forest, *Prunus cerasifera* (fruit), 20.10.2005.
250. *Verpa conica* (O.F. Müll.) Sw.  
Syn. *Verpa digitaliformis* Pers.  
References: Karadelev & Rusevska [1], Karadelev *et al.* [34].
251. *Xylaria carpophila* (Pers.) Fr.  
Karadzica Mt.: beech and fir forest, *Fagus sylvatica* (fallen beechnuts), 29.05.2011; Mavrovo NP: beech forest, *Fagus sylvatica* (fallen beechnuts), 30.06.2010, 30.04.2018.
252. *Xylaria filiformis* (Alb. & Schwein.) Fr.  
References: Karadelev *et al.* [22].
253. *Xylaria hypoxylon* (L.) Grev.  
References: Tortić [2], Karadelev & Nastov [12], Karadelev [17], Karadelev *et al.* [18, 23], Karadelev & Murati [26], Tortić & Cekova [33].
254. *Xylaria longipes* Nitschke  
Mavrovo NP: beech forest, *Fagus sylvatica* (rotten wood), 30.06.2010; Plachkovica Mt.: beech forest, *Fagus sylvatica* (rotten wood), 10.07.2014; Slan Dol: riparian vegetation, deciduous tree (rotten wood), 23.12.2014; Mavrovo NP.: beech forest, *Fagus sylvatica* (rotten wood), 04.04.2018.
255. *Xylaria polymorpha* (Pers.) Grev.  
References: Tortić [2], Karadelev & Nastov [12], Grujoska [13], Karadelev [17], Karadelev *et al.* [18], Pilat & Lindtner [48].

## RESULTS AND DISCUSSION

Presented species checklist establishes the current knowledge of the diversity of so far registered ascomycetes taxa in the Republic of Macedonia. The phylum Ascomycota is the most diverse and the largest taxonomic category in *Fungi* with approximately 64000 known taxa (Kirk *et al.* [49]). Unfortunately, compared to Basidiomycota it is the least explored fungal group in Macedonia with total number of 255 registered taxa estimated up to date. A majority of the listed ascomycetes belong to the class Pezizomycetes (106), followed by the Leotiomycetes (70) and Sordariomycetes (47), while the Dothideomycetes, Eurotiomycetes, Geoglossomycetes, Orbiliomycetes, Lecanoromycetes and Taphrinomycetes were each represented by little or few species only. Families with highest species diversity are Pyronemataceae with total number of 35 taxa, followed by 20 Helotiaceae species including one variety and 18 Pezizaceae species. The most abundant genera are: *Peziza* with 16 registered species, *Helvella* represented by 12 species and *Tuber*

represented by 18 taxa (14 species) including two varieties and three forms. Among the taxa listed, 107 species, three varieties and three forms are reported for the first time for the country. Regarding their trophic affiliation, most newly recorded ascomycetes have been registered as humicolous, lignicolous and plant debris saprobes (124), mycorrhizal taxa are represented with 86 species and there are 45 fungal and plant parasites. To date, the following 18 ascomycetes are categorized in the Macedonian Red List of Fungi (MRLF): *Cudonia circinans*, *Discina parma*, *Disciotis venosa*, *Helvella atra*, *H. ephippium*, *Heyderia abietis*, *Microglossum viride*, *Microstoma protractum*, *Mitrula paludosa*, *Morchella elata*, *Pithya cupressina*, *Poronia punctata*, *Rutstroemia bulgaroides*, *Sarcosphaera crassa*, *Spathularia flavida*, *Trichoglossum hirsutum*, *Urnula craterium* and *Verpa conica* (Karadelev & Rusevska [1]). The majority data for the ascomycetes in Macedonia are from the most visited localities, such as: Shar Planina Mt., Pelister NP, Karadzha Mt., Mavrovo NP and the wider area of Skopje. Current biogeographical data and many records of apparently rare and noteworthy species indicate that the diversity of ascomycetes in Macedonia is still incompletely known and underlines the need for a research in a greater depth.

**Acknowledgements:** First and foremost, the authors are indebted to all current and past MSc students from the Institute of Biology, who have been instrumental in compilation of the current macromycetes checklist by collecting, determining of fungal material, and providing laboratory assistance. A great debt of gratitude is also owed to the Faculty of Natural Science in Skopje for its continuous support of our scientific efforts. Our special thanks go to the NGO's (Macedonian Mycological Society, Biology Students' Research Society and Macedonian Ecological Society, etc.) and all domestic and international funding authorities and donors, who have donated to the Mycological Laboratory or financed our mycological research projects over the years. We would like also to express our gratitude to Dr. Matthias Theiß and Tome Jovanovski for their great contribution in collecting and documenting of fungi material. Reviewers are thanked for valuable comments and suggestions.

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## ЛИСТА НА АСКОМИЦЕТИ ВО РЕПУБЛИКА МАКЕДОНИЈА

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Во оваа студија за првпат е претставен детален список на сите познати и досега регистрирани видови аскомицети од Македонија. Целта на овој труд е да се сумираат сите податоци за видови од типот Ascomycota (торбести габи), со што ќе се придонесе кон познавањето на оваа голема група габи во Македонија. Информациите за овој список се добиени врз основа на податоци собрани од досегашните миколошки истражувачки терени, податоци на видови документирани во постоечката научна литература, податоци од ревидирано испитување на суви примероци од Македонската колекција на габи (Macedonian Collection of Fungi, MCF) како и податоци од базата MACFUNG1. Од досегашните истражувања е забележано присуство на вкупно 255 таксони од кои 107 вида, три вариетета и три форми претставуваат нови наоди за земјата, но во споредба со претставниците на Basidiomycota, овие габи се многу послабо истражувани кај нас. Во Црвената листа на габи на Македонија се вклучени 18 вида аскомицети. Сопоред податоците презентирани во овој труд, педесетина видови се ретки и можат да послужат за дополнување на Црвената листа на габи на Македонија.

**Клучни зборови:** листа на габи; Ascomycota; таксономија; номенклатура; Македонија

