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PRELIMINARY CHECKLIST OF MYXOMYCOTA AND ASCOMYCOTA FROM FRUŠKA GORA MOUNTAIN

ABSTRACT: Fruška Gora mountain represents very important source of natural and semi-natural forest ecosystems in the northern part of the Republic of Serbia and therefore it is important source of habitats for different groups of fungi. As opposed to coordinated inventory and monitoring projects of fungi established around Europe long ago, mycological researches in Serbia are still sporadic and insufficiently coordinated by authorities and experts. In accordance with that, available data concerning the state of fungi in Serbia are scarce. The aim of this work was to collect all relevant unpublished data considering fungi in Fruška Gora and to present checklist of two fungal phyla: Myxomycota and Ascomycota. In the presented checklist, 23 recorded species of Myxomycota (known as fungal analogues) were distributed in 2 classes, 5 orders, and 7 families. The first class (Protosteliomycetes) contained only one species – *Ceratiomyxa fruticulosa* (fam. Ceratiomyxaceae). The largest order was Trichiales (9 species), while the dominant families were Stemonitidaceae and Trichiaceae, each with 6 species recorded. The most abundant species was *Lycogala epidendrum* (fam. Reticulariaceae), with 13 records. Phylum Ascomycota was represented with 95 species belonging to 6 classes, 12 orders and 29 families. The most highly represented classes were Leotiomycetes (32 species) and Pezizomycetes (31 species). The most abundant species were: *Xylaria polymorpha* (17 records), *Xylaria hypoxylon* (14 records), and *Sarcoscypha coccinea* (14 records).

KEY WORDS: Ascomycota, Checklist, Database, Fruška Gora mountain, Fungi, Myxomycota

INTRODUCTION

Despite recommendations of mycological experts and institutions (EC-CF-European Council for the Conservation of Fungi, IMA-International Mycological Association, EMA-European Mycological Association, BMS-British Mycological Society, etc.) for coordinated inventory and monitoring of fungi worldwide and global efforts of mycological society in this task, mycological researches in Serbia are still sporadic, uncoordinated and mostly neglected by

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experts (Ivančević, 1995; Karaman, 1997). Although some important but individual and unofficial projects for inventory and mapping of fungi in Serbia exist, they are mostly done by mycological societies (Lukić, 2008; Ivančević, 2010b) and no checklists or databases have been unveiled recently. Some of the most comprehensive works concerning fungi in Serbia were published by Ivančević (1995, 2002) and Uzelac (2009).

Surrounded by flat, mostly agricultural land, Fruška Gora mountain represents very important source of natural and semi-natural forest ecosystems, and thus represents a main center of interest for the investigation of fungi in the northern part of the Republic of Serbia. It was proclaimed a National Park in December 1960, with active protection area of 25.525 ha. Fruška Gora is on the border of continental climate, but the influence of height gradient and forest cover gives it the characteristics of subcontinental climate. The base of ecosystem is represented by the sessile oak forest with butcher's-broom (*Aculeo-euero Carpinetata serbicum* Jov.) (Stevanović, 1995). Diversity of forest vegetation, specific geological substrate, and climate influenced the rich biodiversity, with fungi as an essential component.

Research of fungi in Fruška Gora has been represented only in a few papers (Ranković, 1955; Lisiewska and Jelić, 1971; Karaman, 1997, 2005). Cooperation between National park Fruška Gora and researchers from Department of Biology and Ecology (University of Novi Sad) has resulted in the creation of a *Database of Fungi of Fruška Gora mountain*, which represents summary of findings available to the authors from previous unpublished data. Therefore, the aim of this work was to present in the form of checklist a part of this database, concerning two divisions – Myxomycota and Ascomycota.

Slime molds, although no longer included in the kingdom Fungi but placed inside the kingdom Protozoa, are still being studied by some mycologists as protozoan fungal analogues, reaching the number of 1165 taxa (Kirk et al., 2008). As opposed to Fungi, slime molds have phagotrophic nutrition and somatic stages in the form of protoplasts bounded by plasma membranes, without cell walls (Mehrotra and Neja, 1990). Since there are only two published works about slime molds in Serbia (Ing and Ivančević, 2000; Ivančević, 2010a), we included them in this checklist, as well.

Ascomycota represent the largest group of Fungi, accounting approximately 75% of all described fungi (Taylor et al., 2012), including lichenized forms and most of the fungi that lack evident sexual stage. In presented checklist, only non-lichenized part of Ascomycota is given.

MATERIAL AND METHODS

Database of Fungi in Fruška Gora mountain contains a list of species recorded by numerous authors in two time periods: 1983-1996 and 2004-2011, from 28 localities (Fig. 1), nine of which (number 3, 7, 8, 13, 15, 16, 24, 25, 28) covers the areas with the first degree of protected regime in the National park.

The first period of investigation comprised data gathered from private lists with the courtesy of legators, while records made in the second investigation period were confirmed by mycological group of Department of Biology and Ecology in Novi Sad. Determination was conducted on the basis of morphological and anatomical characteristics of the fruiting bodies, microscopic characteristics of spores and other relevant structures (Olympus BX51, Japan) and the specific chemical reactions. Literature of Department's Library, on-line books, keys (Denis, 1986), and specialized mycological sites were consulted during determination and systematic representation. Some of the photos made during fieldwork are available on the website by Dagiša Savić: <http://www.naturefg.com/>. In the presented checklist, names of legators were abbreviated (full names in Results), while localities were marked with numbers and presented on map (Fig. 1). Taxa determined to the level of genus were also included. Each species in the checklist was placed within relevant higher ranks (phylum, class, order, and family) and presented with the following data: year of finding, locality, and collector (legator). Classification and nomenclature was done in accordance with *Species 2000 & ITIS Catalogue of Life: 2011 Annual Checklist* (Bisby et al., 2011) and *Index Fungorum* (Kirk, 2012).



Fig. 1. – Map of Fruška Gora mountain with localities of fungal recording:
 1. Andrevlje, 2. Beočin, 3. Brankovac, 4. Bukovac, 5. Crveni čot, 6. Dumbovo, 7. Glavica, 8. Grgeteg, 9. Hopovo, 10. Iriški venac, 11. Iriški venac – predajnik, 12. Kamenički park, 13. Kraljeve stolice, 14. Ledinci, 15. Letenka, 16. Papratski do, 17. Paragovo, 18. Pavlovci, 19. Petrovaradinski rit, 20. Popov čot, 21. Popovica, 22. Rakovac, 23. Sr. Kamenica, 24. Stražilovo, 25. Veliki Gradac, 26. Vorovo, 27. Vrdnik, 28. Zmajevac

RESULTS

Part of the database presented in this work contains 2 phyla (Myxomycota and Ascomycota) with 9 classes, 17 orders, 36 families, 78 genera, and 118 species (Tab. 1).

Twenty-three species in the checklist belonged to the phylum Myxomycota/Mycetozoa. They were distributed in 2 classes (Protosteliomycetes,

Tab. 1. – Number of taxa (Myxomycota and Ascomycota) recorded on the Fruška Gora Mountain

Phyla	Class	Order	Family	Genus	Species
Myxomycota	2	5	7	15	23
Ascomycota	6	12 (+ 1*) incert)	29 (+3*)	63	95
Total	8	17	36	78	118

* Incertae sedis

Myxomycetes), 5 orders (Protosteliales, Liceales, Physarales, Stemonitales, Trichiales), 7 families (Ceratiomyxaceae, Reticulariaceae, Didymiaceae, Physaraceae, Stemonitidaceae, Arcyriaceae, Trichiaceae), and 15 genera. Class *Protosteliomycetes* had only one family – Ceratiomyxaceae, with one species *Ceratiomyxa fruticulosa*. The largest order of Myxomycetes was Trichiales, with 9 species. Dominant families were Stemonitidaceae and Trichiaceae. *Lycogala epidendrum* was the most abundant species, with 13 records.

In the phylum Ascomycota, 95 non-lichenized species were recorded, belonging to 6 classes (Dothideomycetes, Pezizomycetes, Leotiomycetes, Orbiliomycetes, Sordariomycetes, Taphrinomycetes), 12 orders, 29 families, and 63 genera. The most represented classes were Leotiomycetes (32 species) and Pezizomycetes (31 species), with Pezizales being the most represented order. Dominant families in the phylum Ascomycota were Erysiphaceae (11), Xylariaceae (9), Pyronemataceae (7), Morchelaceae (7), and Helotiaceae (6). The most abundant species were *Xylaria polymorpha* (17 records), *Xylaria hypoxylon* (14 records), and *Sarcoscypha coccinea* (14 records).

LIST OF LEGATORS/COLLECTORS

SD – Savić Dragiša, JM/KM – Jarić/Karaman Maja, MM – Matavulj Milan, RD – Radnović Dragan, RP – Radišić Predrag, TA – Tepavčević Andrea, MM & MA – Maksimović M. & Mihajlović A, KI – Kadar Irenka, SA – Sopka Ana, VD – Vranješ D, KK – Kujundžić Kristina

CHECKLIST OF SPECIES

MYXOMYCOTA

PROTOSTELIOMYCETES

Protosteliales

Ceratiomyxaceae

1. *Ceratiomyxa fruticulosa* (O. F. Müll.) T. Macbr. – 17 (RD, 1995)

MYXOMYCETES

Liceales

Reticulariaceae

2. *Dictydiaethalium plumbeum* (Schumach.) Rostaf. ex Lister – 16 (SD, 2007)
3. *Lycogala epidendrum* (J. C. Buxb. ex L.) Fr. – 3 (RD, 1996), 6 (SD, 2004), 7 (MM & MA, 1996. x2), 10 (KI, 1989), 24 (JM, 1996; JM & SA, 1996), 16

(MM & JM, 1996), 17 (TA, 1993; TA, 1995; SD, 2002), 21 (RD & MM, 1995. x2)

4. *Lycogala flavofuscum* (Ehrenb.) Rostaf. – 28 (JM, 1996)

5. *Reticularia lycoperdon* Bull. – 16 (SD, 2007)

Physarales

Didymiaceae

6. *Didymium* sp. – 23 (SD, 2007)

Physaraceae

7. *Physarum* sp. – 26 (SD, 2007)

8. *Fuligo septica* (L.) F. H. Wigg. – 7 (RD, 1995), 17 (TA, 1994)

Stemonitales

Stemonitidaceae

9. *Comatricha laxa* Rost. – 11 (RD, 1996)

10. *Comatricha nigra* (Pers.) J. Schröt. – 17 (RD, 2007)

11. *Lamproderma* sp. – 22 (SD, 2008)

12. *Stemonitis axifera* (Bull.) T. Macbr – 7 (RD, 1995), 16 (SD, 2007)

13. *Stemonitis fusca* Roth – 7 (MM & MM, 1996)

14. *Stemonitis herbatica* Peck – 11 (RD, 1996)

Trichiales

Arcyriaceae

15. *Arcyria cinerea* (Bull.) Pers. – 10 (SD, 2008)

16. *Arcyria denudata* (L.) Wettst. – 6 (SD, 2008)

17. *Arcyria pomiformis* (Leers) Rostaf. – 10 (SD, 2007)

Trichiaceae

18. *Hemitrichia* sp. – 17 (SD, 2008)

19. *Hemitrichia serpula* (Scop.) Rostaf. – 17 (SD, 2010)

20. *Metatrichia vesparium* (Batsch) Nann.-Bremek. Ex G.W. Martin & Alexop. – 10 (SD, 2008)

21. *Trichia botrytis* (J. F. Gmel.) Pers. – 10 (SD, 2006), 17 (RD, 1995)

22. *Trichia favoginea* (Batsch) Pers. – 17 (SD, 2007)

23. *Tubifera ferruginosa* (Barsch) J. F. Gmel. – 27 (MM & MM, 1996)

ASCOMYCOTA (non-lichenized)

DOTHIDEOMYCETES

Capnodiales

Mycosphaerellaceae

24. *Mycosphaerella millegrana* (Cooke) J. Schrot. – 10 (SD, 2011)

25. *Ramularia rubella* (Bonord.) Nannf. – 24 (SD, 2011)

26. *Septoria urticae* Roberge ex Desm. – 24 (SD, 2011)

Incertae sedis

Polystomellaceae

27. *Dothidella ulmi* (C.-J. Duval) G. Winter – 23 (SD, 2011)

Incertae sedis

28. *Catinella olivacea* (Batsch.) Boud. – 4 (SD, 2008)

Pleosporales

Montagnulaceae

29. *Microsphaeropsis hellebori* (Cooke & Masee) Aa – 1 (SD, 2011)

Pleosporaceae

30. *Alternaria alternata* (Fr.) Keissl. – 18 (SD, 2011)

PEZIZOMYCETES

Pezizales

Discinaceae

31. *Gyromitra esculenta* (Pers.) Fr. – 17 (RP, 1984)
32. *Gyromitra infula* (Schaeff.) Quél. – 15 (SD, 2004)

Helvellaceae

33. *Helvella acetabulum* (L.) Quél. – 4 (SD, 2004), 7 (MM & MA, 1996. 2x)
34. *Helvella crispa* (Scop.) Fr. – 7 (MM & MA, 1996. 2x), 14 (SD, 2002; SD, 2005), 17 (TA, 1994; RP, 1996; SD, 2003), 23 (IA & RP, 1996)
35. *Helvella elastica* Bull. – 17 (TA, 1994; RP, 1996; SD, 2003)
36. *Helvella lacunosa* Afzel. – 7 (MM & MA, 1996. 2x), 23 (RP, 1996), 27 (RP, 1996)
37. *Helvella monachella* (Scop.) Fr. – 17 (TA, 1995)

Morchellaceae

38. *Disciotis venosa* (Pers.) Arnould – 10 (RP, 1990), 17 (SD, 2003), 12 (TA, 1995)
39. *Mitrophora semilibera* (DC.) Lév. – 24 (SD, 2004)
40. *Morchella costata* (Vent.) Pers. – 23 (SD, 2010)
41. *Morchella crassipes* (Vent.) Pers. – 4 (SD, 2006)
42. *Morchella vulgaris* (Pers.) Boud. – 19 (RP, 1984.; RP, 1985)
43. *Ptychoverpa bohémica* (Krombh.) Boud. – 21 (TA, 1994)
44. *Verpa conica* (O.F. Müll.) Sw. – 19 (RP, 1985)

Pezizaceae

45. *Peziza badia* Pers. – 7 (MM & MA, 1996), 10 (RP, 1990; KI, 1990)
46. *Peziza cerea* Sowerby – 21 (JM & RD, 1995)
47. *Peziza echinospora* P. Karst. – 10 (RP, 1990)
48. *Peziza repanda* Wahlenb. – 4 (SD, 2004)
49. *Peziza vesiculosa* Bull. – 10 (RP, 1990), 23 (RP, 1989)

Pyronemataceae

50. *Aleuria aurantia* (Pers.) Fuckel – 10 (SD, 2003)
51. *Humaria hemisphaerica* (F. H. Wigg.) Fuckel – 17 (TA, 1995; SD, 2005)
52. *Otidea alutacea* (Pers.) Masee – 8 (SD, 2005)
53. *Otidea onotica* (Pers.) Fuckel – 17 (TA, 1993; SD, 2003)
54. *Scutellinia scutellata* (L.) Lambotte – 6 (SD, 2002), 7 (MM & MA, 1996), 10 (KI, 1990), 15 (SD, 2005), 17 (TA, 1994; SD, 2004), 27 (MM & MA, 1996)
55. *Scutellinia umbrorum* (Fr.) Lambotte – 24 (JM & SA, 1996)
56. *Tarzetta catinus* (Holmsk.) Korf & J. K. Rogers – 24 (DM, 2001)

Sarcoscyphaceae

57. *Sarcoscypha coccinea* (Jacq.) Boud. – 6 (SD, 2002), 7 (JM & KK, 1997), 10 (KI, 1989, 1989, 1990. x2, RP, 1996), 16 (MM & JM, 1996. x2), 17 (TA, 1993; SA & VD, 1996; SD, 2002), 21 (JM & SA, 1997), 24 (JM & SA, 1996)

Sarcosomataceae

58. *Urnula craterium* (Schwein.) Fr. – 26 (SD, 2007)

Tuberaceae

59. *Tuber aestivum* Vittad.

60. *Tuber brumale* Vittad.
 61. *Tuber melanosporum* Vittad.

LEOTIOMYCETES

Erysiphales

Erysiphaceae

62. *Erysiphe aquilegiae* DC. (host: *Ranunculus repens*) – 10 (SD, 2011)
 63. *Erysiphe cichoracearum* var. *cichoracearum* DC. – 23 (SD, 2011) (host: *Sonchus oleraceus*), 10 (SD, 2011) (host: *Sonchus arvensis*), 10 (SD, 2011) (host: *Cirsium arvense*)
 64. *Erysiphe convolvuli* var. *convolvuli* DC. – 23 (SD, 2011) (host: *Convolvulus arvensis*)
 65. *Erysiphe depressa* (Wallr.) Schltld. – 10 (SD, 2011) (host: *Arctium lappa*)
 66. *Erysiphe platani* (Howe) U. Braun & S. Takam. – 23 (SD, 2011) (host: *Platanus occidentalis*)
 67. *Erysiphe polygoni* DC. (host: *Polygonum aviculare*) – 23 (SD, 2011)
 68. *Microsphaera berberidis* (DC.) Lév. (host: *Berberis thunbergii*) – 23 (SD, 2011)
 69. *Microsphaera trifolii* (Grev.) U. Braun (host: *Galega officinalis*) – 1 (SD, 2011)
 70. *Neoerysiphe galeopsidis* (DC.) U. Braun – 1 (SD, 2011) (host: *Glechoma hirsuta*), 1 (SD, 2011) (host: *Stachys silvatica*)
 71. *Phyllactinia guttata* (Wallr.) Lév. – 23 (SD, 2011) (host: *Syringa vulgaris*)
 72. *Sawadaea bicornis* (Wallr.) Homma (host: *Acer platanoides*) – 10 (SD, 2011)

Helotiales

Dermataceae

73. *Marssonina brunnea* (Ellis & Everh.) Magnus – 2 (SD, 2011)
 74. *Marssonina salicina* Tehon – 2 (SD, 2011)
 75. *Mollisia cinerea* (Batsch) P. Karst. – 17 (SD, 2007)

Bulgariaceae

76. *Bulgaria inquinans* (Pers.) Fr. – 7 (MM & MA, 1996), 17 (TA, 1994; RP, 1996), 24 (JM & SA, 1996), 26 (JM, 1996)
 77. *Holwaya mucida* (Schulzer) Korf & Abawi – 16 (SD, 2007), 10 (SD, 2008)

Helotiaceae

78. *Hymenoscyphus calyculus* (Sowerby) W. Phillips – 10 (KI, 1989)
 79. *Hymenoscyphus fructigenus* (Bull.) Gray – 14 (SD, 2005)

Hyaloscyphaceae

80. *Arachnopeziza aurata* Fuckel – 10 (SD, 2007)
 81. *Lachnellula subtilissima* (Cooke) Dennis – 13 (SD, 2007)
 82. *Lachnum virgineum* (Batsch) P. Karst. – 17 (SD, 2007), 5 (SD, 2007)
 83. *Pezizella alniella* (Nyl.) Dennis – 17 (SD, 2009)

Incertae sedis

84. *Ascocoryne cylichnium* (Tul.) Korf – 6 (SD, 2008)
 85. *Ascocoryne sarcooides* (Jacq.) J. V. Groves & D. E. Wilson – 10 (KI, 1989), 17 (SD, 2002)

86. *Bisporella citrina* (Batsch) Korf & S. E. Carp. – 4 (SD, 2003), 6 (SD, 2002; SD, 2004), 10 (KI, 1990; RD, 1995), 16 (MM & JM, 1996), 24 (JM & SA, 1996)
87. *Chlorociboria aeruginascens* (Nyl.) Kan. Ex Ram., Korf & L.R. Batra – 1 (SD, 2007. x2)

Leotiaceae

88. *Leotia lubrica* (Scop.) Pers. – 17 (RP, 1996), 19 (TA, 1994)

Rutstroemiaceae

89. *Rutstroemia bolaris* (Batsch) Rehm – 17 (SD, 2009)
90. *Rutstroemia firma* (Pers.) P. Karst. – 14 (SD, 2005)

Sclerotiniaceae

91. *Dumontinia tuberosa* (Bull.) L. M. Kohn – 10 (SD, 2007)

Rhytismatales

Rhytismataceae

92. *Propolis farinosa* (Pers.) Fr. – 5 (SD, 2007)
93. *Rhytisma acerinum* (Pers.) Fr. – 10 (SD, 2011)

ORBILIOMYCETES

Orbiliales

Orbiliaceae

94. *Orbilia sp.* – 17 (SD, 2007)

SORDARIOMYCETES

Coronophorales

Chaetosphaerellaceae

95. *Chaetosphaerella phaeostroma* (Durieu & Mont.) E. Müll. & C. Booth – 25 (SD, 2007)

Hypocreales

Clavicipitaceae

96. *Claviceps purpurea* (Fr.) Tul. – 24 (SD, 2008)
97. *Elaphocordyceps ophioglossoides* (Ehrh.) G. H. Sung, J. M. Sung & Spatafora – 16 (MM & JM, 1996)
98. *Epichloë typhina* (Pers.) Tul. & C. Tul. – 17 (SD, 2009)

Nectriaceae

99. *Nectria cinnabarina* (Tode) Fr. – 7 (MM & MA, 1996; JM & KK, 1996), 16 (MM & JM, 1996)
100. *Nectria coccinea* (Pers.) Fr. – 10 (SD, 2007)
101. *Nectria peziza* (Tode) Fr. – 12 (SD, 2007)

Incertae sedis

102. *Stilbella byssiseda* (Pers.) Seifert – 21 (SD, 2008)

Xylariales

Diatrypaceae

103. *Eutypella scoparia* (Schwein.) Ellis & Everh. – 17 (SD, 2007)
104. *Diatrype disciformis* (Hoffm.) Fr. – 1 (SD, 2005), 16 (MM & JM, 1996), 28 (JM, 1996)
105. *Diatrypella quercina* (Pers.) Cooke – 17 (SD, 2010)

Xylariaceae

106. *Biscogniauxia nummularia* (Bull.) Kuntze – 7 (JM & KK, 1996), 16 (MM & JM, 1996; SD, 2005), 21 (MM & RD, 1995; JM & SA, 1997), 28 (JM, 1996)

107. *Daldinia concentrica* (Bolton) Ces. & De Not. – 6 (SD, 2002)
108. *Hypoxylon fragiforme* (Pers.) J. Kickx f. – 10 (KI, 1990; KI, 1990), 16 (MM & JM, 1996), 17 (SA & VD, 1996; SD, 2002), 21 (JM & SA, 1997), 28 (JM, 1996)
109. *Hypoxylon howeanum* Peck – 16 (SD, 2007)
110. *Kretzschmaria deusta* (Hoffm.) P. M. D. Martin – 10 (KI, 1990; KI, 1990; RP, 1990), 21 (MM & RD, 1995. x2)
111. *Xylaria carpophila* (Pers.) Fr. – 17 (TA, 1994), 28 (JM, 1996)
112. *Xylaria hypoxylon* (L.) Grev. – 6 (Savić, D., 19.10.2004.), 10 (KI, 1989. x2, 1990. x3; RP, 1990; MM & JM, 1996), 15 (SD, 2002), 16 (MM & JM, 1996), 17 (TA, 1994; SA & VD, 1996), 21 (JM & SA, 1997), 24 (JM & SA, 1996)
113. *Xylaria longipes* Nitschke – 10 (KI, 1990; KI, 1990. x2), 16 (SD, 2007), 24 (JM & SA, 1996), 28 (JM, 1996)
114. *Xylaria polymorpha* (Pers.) Grev. – 6 (SD, 2002), 7 (MM & MA, 28.06. 1996. x2), 9 (RD, 1995), 10 (RP, 1988; KI, 1989. x2; KI, 1990. x4; RD, 1995), 17 (TA, 1994; RP, 1996), 12 (JM, 1995; RP, 1988), 26 (JM, 1996)

Diaporthales

Gnomoniaceae

115. *Asteroma impressum* Fuckel – 24 (SD, 2011)
116. *Gloeosporium carpini* (Lib.) Desm. – 24 (SD, 2011)

TAPHRINOMYCETES

Taphrinales

Taphrinaceae

117. *Taphrina deformans* (Berk.) Tul. – 20 (SD, 2011)
118. *Taphrina pruni* Tul. – 10 (SD, 2011)

DISCUSSION

Species presented in this checklist were collected from 28 different localities (Fig. 1). The most thoroughly investigated localities were Iriški venac (33 species recorded) and Paragovo (30), Paparatski do (15), Glavica (14), Stražilovo (14), Sr. Kamenica (12), and Popovica (11).

List of Myxomycota known in Serbia, compiled by Ivana Čević (2010), contains 92 species collected mostly in central and southern parts of country. Our contribution to the knowledge of Myxomycota diversity in Serbia, with 23 species listed in this paper is modest but valuable. Additional significance lies in the fact that so far no data were published for the region of Fruška Gora. Furthermore, two species (*Stemonitis herbatica* and *Arcyria pomiformis*) were new in Serbia when compared to Ivana Čević records (2010).

The only data from surrounding countries available to us (concerning Myxomycota) were those from Austria, Bulgaria, and Turkey (<http://www.austria.mykodata.net>; Fakirova et al., 2000; Sesli and Denchev, 2009). When we compared recorded Myxomycota species of Fruška Gora with those in Austrian Fungi Database, only three were common to both lists: *Dictydiaethalium plumbeum* with 15 records, *Hemitrichia serpula* with 76 records,

and *Tubifera ferruginosa*, (syn: *Stemonitis ferruginea* Ehrenb) with only one record. In the published checklist of Bulgarian side of mountain Stara planina (Central Balkan Mountain) 18 species and 7 genera of Myxomycota were listed. Like in our records, *Lycogala epidendrum* was the most abundant, which is predictable since this species has cosmopolitan distribution (Stephenson et al., 2000). In the Turkish national fungal checklist 222 species of Myxomycota are noted within only 41 genera. Diversity of genera of Myxomycota in our checklist (15) was high when compared to the number of recorded species (23). Following of our data were in accordance with the Turkish checklist: *Ceratiomyxa fruticulosa* was the only species in the class Protosteliomycetes, *Lycogala epidendrum* was the most abundant species, and Stemonitidaceae was one of the dominant families. Species from our checklist which had no records in Turkey were *Dictydiaethalium plumbeum*, *Hemitrichia serpula*, and *Tubifera ferruginosa*. These species have wide distribution in both northern and southern hemisphere (<http://data.gbif.org>) hence these records could not be explained by the regional differences.

In the Database for Fruška Gora mountain, fungi belonging to the phylum Ascomycota are not as numerous as those of the phylum Basidiomycota – 108:443 (unpublished data). It seems that representatives of this large division of fungi are often overlooked during field investigations, due to their size or specific interest of investigators, and therefore neglected in checklists. In addition, Bulgarian checklist has 42 Ascomycota species and 319 Basidiomycota for the Central Balkan Mountain (Fakirova et al., 2000). Turkish checklist contains 152 species of Ascomycota and 1822 species of Basidiomycota. In comparison with these data that relate to whole country territory, number of Ascomycota reported for the region of Fruška Gora mountain is significant. The most abundant species were *Xylaria polymorpha* (17 records), *Xylaria hypoxylon* (14 records), and *Sarcoscypha coccinea* (14 records); they are widely distributed and dominating species in others checklists and databases (Ivančević, 1996; Fakirova et al., 2000; Dimitrova and Gyosheva, 2009; Sesi and Denchev, 2009; <http://www.austria.mykodata.net>).

Among the species of Ascomycota recorded on Fruška Gora mountain, *Morchella vulgaris* (morel) and *Tuber aestivum* (summer truffle) are on the list of wild species protected by law in Serbia (*The Regulation on designation and protection of strictly protected and protected wild species of plants, animals and fungi*); *Tuber aestivum* is also on the list of wild species protected from collecting activities, use, and trafficking (*The Regulation on putting under control the use and trade of wild flora and fauna*) (<http://www.ekoplan.gov.rs/src/1-2-Pravilnici-288-document.htm>). *Ptychoverpa bohemica* (DD) and *Verpa conica* (NT) are included in preliminary Red-list of Serbia (Ivančević, 1998).

CONCLUSION

Database of Fungi in Fruška Gora Mountain includes 574 species of fungi (Ascomycota, Basidiomycota) and fungal analogues (Myxomycota), containing

over 2.000 records. Undoubtedly, these records represent just a part of total diversity of fungi in Fruška Gora and it is expected that the number of species should rise as the research continues and gets more organized. Many of the valuable, unknown, data are in the hands of hobbyists, enthusiasts from mycological societies and unknown individuals who spend the most time in nature and have a great passion, knowledge, and experience in field mycology. Future work on this Database should include them as well, of course with the guidance of professionals.

In conclusion, it should be stressed out that joint action and creation of integrated database of fungi is the first step on the way to better understanding of fungal distribution and population, which could result in a future protection of these unique organisms in Serbia and surrounding countries. Natural and semi-natural ecosystems are an indispensable basis for the conservation of biological diversity; it provides us with important data about living organisms that would be lost if these ecosystems were destroyed or converted to intensive use. This work supports and advocates further investigation of fungi in our region in the future.

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ПРЕЛИМИНАРНА ЛИСТА ГЉИВА ФРУШКЕ ГОРЕ
– РАЗДЕЛИ МУХОМУСОТА И ASCOMУСОТА

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Резиме

Фрушка гора представља важан извор природних и полуприродних шумских екосистема у северном делу Србије, а самим тим и важан извор станишта за различите групе гљива. За разлику од добро организованих пројеката инвентаризације и мониторинга гљива који се већ дуго спроводе у већини европских земаља, миколошка истраживања у Србији су још увек спорадична и недовољно координисана од стране професионалних миколога. Циљ овог рада је био да се прикупе и у виду листе представе сви релевантни, до сада необјављени подаци о присуству гљива из раздела Мухомусота и Ascomycota на Фрушкој гори. У представљеној листи налазе се 23 врсте Мухомусота, распоређене у оквиру 2 класе, 5 редова и 7 породица. Прва класа (Protosteliomycetes) представљена је свега једном врстом – *Ceratiomyxa fruticulosa* (фам. Ceratiomycetaceae). Ред Trichiales је најзаступљенији (9 врста), а Stemonitidaceae и Trichiaceae су доминантне породице, свака са по 6 забележених врста. Најзаступљенија врста је *Lycogala epidendrum* (фам. Reticulariaceae), са 13 налаза. Раздео Ascomycota је представљен са 95 врста које су сврстане у 6 класа, 12 редова и 29 породица. Најзаступљеније класе су Leotiomycetes (са 32 врсте) и Pezizomycetes (са 31 врстом). Најзаступљеније врсте овог раздела су: *Xylaria polymorpha* (17 налаза), *Xylaria hypoxylon* (14 налаза) и *Sarcoscypha coccinea* (14 налаза).

КЉУЧНЕ РЕЧИ: Ascomycota, база података, гљиве, листа, Мухомусота, Фрушка гора

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