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THE CONSPECTUS OF MUSHROOMS COLLECTED FOR THE TEMPORARY EXHIBITION “THE WORLD OF MUSHROOMS”, THE 17TH EDITION

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ABSTRACT

The temporary exhibition "The World of Mushrooms" - the 17th edition was organized by the "Ion Borcea" Natural Sciences Museum Complex of Bacău and was open to the public between October 12-15, 2023.

The mycological material was collected during mycological applications carried out between October 9-10, 2023, in forests within the localities of: Dărmănești, Ciobănuș and Valea Budului.

During the temporary exhibition of fresh mushrooms, the public had the opportunity to discover the diversity of mushroom species that grow in Bacău County. The fresh mushrooms were exhibited in the temporary exhibition and belong to 2 phyla (Ascomycota – 5 species and Basidiomycota – 100 species), 2 classes, 7 orders, 33 families and 60 genera.

The list contains 2 species included in the Red List of Romanian Macrofungi species: *Asterophora parasitica* (Bull.) Singer 1951 and *Lactarius salmonicolor* R. Heim & Leclair 1953.

Key words: fungi, macrofungi, mushroom, macromycetes, exhibition, museum, Bacău, România.

Introduction

"The "World of Mushrooms" temporary exhibition is an annual cultural event organized by the Natural Sciences Museum Complex "Ion Borcea" of Bacău with the aim of presenting the diversity of wild mushrooms to the general public.

The exhibition aimed to make known the diverse world of mushrooms and to make visitors aware of the main species of toxic and edible mushrooms. The visitors had the opportunity to admire samples of fresh mushroom species, collected from the forests of Bacău County.

Material and method

The organization of the temporary exhibition involved a series of specific activities: mycological applications in the forests of Bacău County, the creation of information and popularization materials, the identification of collected wild mushrooms and the thematic organization of the exhibition.

Between October 9 and 10, 2023, 2 mycological applications were carried out to collect mushrooms from coniferous, mixed and deciduous forests around the following localities in Bacău County: Dărmănești, Ciobănuș and Valea Budului (Fig.1).

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The collected mushrooms specimens were identified using the mycological literature and database (2, 3, 4, 5, 6, 7,8, 9, 14).

Taxa and their authors were given according to on amended Index Fungorum (11).

The classification of the macromycetes regarding the ecological categories, their use and importance for people was made after G. Sălăgeanu (9), C. Tănase (11), E. Boa (1) and databases (13,14).

The species of wild mushrooms that were collected in the mycological applications were determined and presented within the temporary exhibition. The exhibition "The World of Mushrooms" - the 17th edition was organized by the "Ion Borcea" Natural Sciences Museum Complex of Bacău and was open to the public between October 12-15, 2023.

Fig. 1 – Distribution of forests in Bacău County

Results and discussions

The macromycetes list includes includes 105 species of macrofungi belonging to: 1 kingdom (Fungi), 2 phylums (Ascomycota – 6 species and Basidiomycota – 144 species), 2 classes, 7 orders, 33 families and 60 genera (tab. 1).

The most wild mushrooms (81 species) were collected from deciduous and coniferous forests in the surroundings of the Dărmăneşti, located on the Uz River in the Nemira Mountains (Eastern Carpathians), on October 9, 2023. (tab. 1).

The orders with the most numerous species are Agaricales (49 species), Russulales (17 species) and Polyporales (16 species). The genera with the most numerous species are Russula with 11 species and Mycena with 6 species (tab.1).

The macromycete species belong to 7 ecological categories (tab. 1). The ecological spectrum is generally dominated by saprotrophic fungi on dead wood (27 species) and mycorrhizal species (25 species) (tab.1, fig. 2).

From the point of view of economic importance the most numerous are the inedible species – 50, followed by the edible species – 26, poisonous species -12, food species – 6, medicinal mushrooms species – 8 and deadly poisonous species – 1 (tab.1, fig. 3).

The list contains 2 species included in the Red List of Romanian Macrofungi species: *Asterophora parasitica* (Bull.) Singer 1951 and *Lactarius salmonicolor* R. Heim & Leclair 1953.

The opening of the "The World of Mushrooms", 17th edition exhibition was organized in the Sensory Garden of the Museum of Natural Sciences, on October 12, 2023. (fig. 4).

The participants in the event and the visitors had the opportunity to admire the diversity of mushroom species that grow in the forests of Bacău County.

Table 1 - Macromycete species

No.	Sistematic positions and species name	Ecological category	Economic importance of fungi	D	C	VB
	Kingdom FUNGI					
	Phylum Ascomycota					
	Class Sordariomycetes					
	Order Xylariales					
	Family Xylariaceae					
1.	*Xylaria hypoxylon* (L.) Grev. 1824	Sl	inedible	x	x	
2.	*Xylaria polymorpha* (Pers.) Grev. 1824	Sl	inedible	x	x	x
	Family Hypoxylaceae					
3.	*Hypoxylon fragiforme* (Pers.) J. Kickx f. 1835	Sl	inedible	x	x	
4	*Hypoxylon rutilum* Tul. & C. Tul 1863	Sl	inedible	x		x
5	*Hypoxylon fuscum* (Pers.) Fr 1849.	Sl	inedible	x		
	Phylum Basidiomycota					
	Class Agaricomycetes					
	Order Agaricales					
	Family Agaricaceae					
1.	*Agaricus sylvicola* (Vittad.) Peck 1872	St	edible	x		
2.	*Chlorophyllum rhacodes* (Vittad.) Vellinga 2002	St	inedible	x	x	x
3.	*Coprinus comatus* (O.F. Müll.) Pers. 1797	St	food	x		
	Family Hydnangiaceae					
4.	*Laccaria amethystina* Cooke 1844	M	edible	x	x	
	Family Hygrophoraceae					
5.	*Hygrophorus eburneus* (Bull.) Fr. 1838	M	edible	x	x	
	Family Hymenogastraceae					
6.	*Hebeloma sinapizans* (Paulet) Gillet 1876	M	poisonous	x	x	
	Family Inocybaceae					
7.	*Inocybe geophylla* P. Kumm. 1871	M	poisonous	x		
8.	*Crepidotus variabilis* (Pers.) P. Kumm. 1871	Sl	inedible		x	
	Family Lycoperdaceae					
9.	*Apioperdon pyriforme* (Schaeff.) Vizzini 2017	Sl	edible	x	x	x

10.	*Lycoperdon excipuliforme* (Scop.) Pers. (1801)	Sh	edible	x	x	x
11.	*Lycoperdon perlatum* Pers. 1796	St	edible	x		
12.	*Lycoperdon verucosum* Sosin 1952	M	poisonous	x		
	Family Lyophyllaceae					
13.	*Lyophyllum decastes* (Fr.) Singer 1951	Sh	edible	x	x	
14.	*Asterophora parasitica* (Bull.) Singer 1951	Pf	inedible	x		
	Family Marasmiaceae					
15.	*Marasmius rotula* (Scop.) Fr. 1838	Sl	inedible	x	x	
16.	*Megacollybia platyphylla* (Pers.) Kotl. & Pouzar 1972	Sl	poisonous	x	x	x
	Family Mycenaceae					
17.	*Mycena galericulata* (Scop.) Gray 1821	Sl	inedible	x	x	x
18.	*Mycena polygramma* (Bull.) Gray 1821	Sl	inedible	x		
19.	*Mycena pelianthina* (Fr.) Quél. 1872	Sf	poisonous	x		x
20.	*Mycena pura* (Pers.) P. Kumm.1871	Sf	poisonous	x		
21.	*Mycena rosea* Gramberg 1912	Sf	poisonous	x	x	x
22.	*Mycena vitilis* (Fr.) Quél. 1872	Sf	inedible	x		
23.	*Panellus stipticus* (Bull.) P. Karst. 1879	SPl	inedible	x		
	Family Omphalotaceae					
24.	*Gymnopus dryophilus* (Bull.) Murrill (1916)	Sf	inedible	x	x	
25.	*Gymnopus peronatus* (Bolton) Antonín, Halling & Noordel. 1997	Sf	inedible	x		x
26.	*Mycetinis alliaceus* (Jacq.) Earle ex A.W. Wilson & Desjardin 2005	Sf	inedible	x	x	
	Family Physalacriaceae					
27.	*Armillaria mellea* (Vahl) P. Kumm. 1871	SPl	edible	x	x	x
28.	*Armillaria ostoyae* (Romagn.) Herink 1973	SPl	edible	x	x	
29.	*Hymenopellis radicata* (Relhan) R.H. Petersen 2010	Sl	edible	x	x	x
	Family Pluteaceae					
30.	*Pluteus cervinus* (Schaeff.) P. Kumm.1871	Sl	edible	x	x	
	Family Pleurotaceae					
31.	*Pleurotus ostreatus* (Jacq.) P. Kumm. 1871	SPl	food, medicinal	x		
	Family Psathyrellaceae					
32.	*Coprinopsis picacea* (Bull.) Redhead, Vilgalys & Moncalvo 2001	St	poisonous		x	
33.	*Coprinellus micaceus* (Bull.) Vilgalys, Hopple & Jacq. Johnson 2001	Sl	inedible	x	x	
	Family Schizophyllaceae					
34.	*Schizophyllum commune* Fr. 1815	SPl	inedible, medicinal	x	x	x
	Family Strophariaceae					
35.	*Hypholoma fasciculare* (Huds.) P. Kumm. 1871	Sl	poisonous	x	x	x
36.	*Hypholoma capnoides* (Fr.) P. Kumm. 1871	Sl	edible	x	x	x
37.	*Hypholoma lateritium* (Schaeff.) P. Kumm. 1871	Sl	inedible	x	x	x
38.	*Pholiota adiposa* (Batsch) P. Kumm. 1871	SPl	inedible	x		
39.	*Pholiota aurivella* (Batsch) P. Kumm. 1871	SPl	inedible	x		
40.	*Pholiota squarrosa* (Vahl) P. Kumm. 1871	SPl	inedible	x		
41.	*Stropharia aeruginosa* (Curtis) Quél. 1872	Sf	inedible	x		
	Family Tricholomataceae					
42.	*Tricholoma terreum* (Schaeff.) P. Kumm. 1871	M	poisonous	x		
43.	*Tricholomopsis rutilans* (Schaeff.) Singer 1939	Sl	inedible	x		
	Incertae sedis					
44.	*Clitocybe nebularis* (Batsch) P. Kumm. 1871	Sh	poisonous	x	x	x
45.	*Infundibulicybe gibba* (Pers.) Harmaja 1871	Sf	edible	x	x	
46.	*Lepista irina* (Fr.) H.E. Bigelow 1959	Sh	edible	x		
47.	*Lepista nuda* (Bull.) Cooke 1871	Sh	food	x	x	

48.	*Paralepista flaccida* (Sowerby) Vizzini 2012	Sh	inedible		x	
49.	*Fistulina hepatica* (Schaeff.) With. 1801	SPl	edible			x
	Order Auriculariales					
	Family Auriculariaceae					
50.	*Auricularia auricula-judae* (Bull.) Quél. 1886	SPl	edible, medicinal	x		
	Order Boletales					
	Family Boletaceae					
51.	*Boletus edulis* Bull. 1782	M	food	x		
52.	*Neoboletus erythropus* (Pers.) C. Hahn 2015	M	edible	x	x	
53.	*Xerocomellus chrysenteron* (Bull.) Šutara 2008	M	edible	x	x	
	Family Paxillaceae					
54.	*Paxillus involutus* (Batsch) Fr. 1838	M	deadly poisonous	x	x	
	Order Hymenochaetales					
	Family Hymenochaetaceae					
55.	*Phellinus hartigii* (Allesch. & Schnabl) Pat. 1903	SPl	inedible	x		
56.	*Porodaedalea pini* (Brot.) Murrill 1905	Spl	inedible	x		
57.	*Xanthoporia radiata* (Sowerby) Ţura, Zmitr., Wasser, Raats & Nevo 2011	Sl	inedible		x	
	Order Polyporales					
	Family Ganodermataceae					
58.	*Ganoderma applanatum* (Pers.) Pat. 1887	SPl	inedible, medicinal	x	x	x
59.	*Ganoderma lucidum* (Curtis) P. Karst. 1881	SPl	inedible, medicinal	x		
	Family Fomitopsidaceae					
60.	*Fomitopsis pinicola* (Sw.) P. Karst. 1881	SPl	inedible, medicinal	x	x	
	Family Laetiporaceae					
61	*Laetiporus sulphureus* (Bull.) Murrill 1920	SPl	edible			x
	Family Meripilaceae					
62.	*Meripilus giganteus* (Pers.) P. Karst. 1882	SPl	inedible			x
	Family Meruliaceae					
63.	*Phlebia tremellosa* (Schrad.) Nakasone & Burds. 1984	SPl	inedible	x		
	Family Phanerochaetaceae					
64.	*Bjerkandera adusta* (Willd.) P. Karst. 1879	Sl	inedible	x	x	x
	Family Polyporaceae					
65.	*Daedaleopsis tricolor* (Bull.) Bondartsev & Singer 1941	Sl	inedible	x	x	x
66.	*Fomes fomentarius* (L.) J. Kickx f. 1867	SPl	inedible, medicinal	x	x	x
67.	*Lentinus arcularius* (Batsch) Zmitr. 2010	Sl	inedible			x
68.	*Picipes badius* (Pers.) Zmitr. & Kovalenko 2016	Sl	inedible		x	x
69.	*Trametes gibbosa* (Pers.) Fr. 1838	Sl	inedible	x	x	x
70.	*Trametes hirsuta* (Wulfen) Lloyd 1924	Sl	inedible	x	x	x
71.	*Trametes ochracea* (Pers.) Gilb. & Ryvarden 1987	Sl	inedible	x	x	x
72.	*Trametes pubescens* (Schumach.) Pilát 1939	SPl	inedible	x	x	x
73.	*Trametes versicolor* (L.) Lloyd 1921	Sl	inedible, medicinal	x	x	x
	Order Russulales					
	Family Bondarzewiaceae					
74.	*Heterobasidion annosum* (Fr.) Bref 1888	SPl	inedible	x	x	
	Family Russulaceae					
75.	*Lactarius controversus* Pers. 1800	M	inedible			x
76.	*Lactarius deterrimus* Gröger 1968	M	edible	x		

77.	*Lactarius salmonicolor* R. Heim & Leclair 1953	M	edible	x		
78.	*Russula chloroides* (Krombh.) Bres. 1900	M	edible	x		
79.	*Russula cyanoxantha* (Schaeff.) Fr 1863	M	food	x		
80.	*Russula foetens* Pers. 1796	M	poisonous	x	x	x
81.	*Russula integra* (L.) Fr. 1838	M	edible	x	x	
82.	*Russula nigricans* (Bull.) Fr. 1838	M	inedible	x	x	
83.	*Russula ochroleuca* Fr. 1838	M	edible			
84.	*Russula olivacea* (Schaeff.) Fr. 1838	M	edible	x		x
85.	*Russula rhodopus* Zvára 1928	M	inedible		x	
86.	*Russula vesca* Fr. 1836	M	food		x	
87.	*Russula violacea* Quél.	M	inedible	x		
88.	*Russula xerampelina* (Schaeff.) Fr. 1838	M	edible		x	
	Family Stereaceae					
89.	*Stereum hirsutum* (Willd.) Pers. 1800	SPl	inedible	x	x	x
90.	*Stereum subtomentosum* Pouzar	SPl	inedible	x		x
Total numbers of species - 95				81	54	36

Legend:			
Ecological category	**Species number**	**Categories of economic importance of fungi**	**Species number**
M - ectomycorrhizal fungi	24	**food** - eatable, very good	6
Sh - saprotrophic fungi on humus	6	**edible** - eatable, good, low food value	26
St - saprotrophic fungi on soil or humus	5	**inedible -** inedible, not recommended	50
Sf - saprotrophic fungi on litter	9	**medicinal** - used as medicine or with medicinal properties	8
Sl - saprotrophic fungi on dead wood	27	**poisonous** - do not eat; mushrooms which cause intoxications	12
SPl - saproparasitic fungi on wood	23	**deadly poisonous -**	1
Pf - fungal parasite	1		
Locality and date of collection: Dărmăneşti (D), 9.10.2023; Ciobanuş (C), 10.10.2023; Valea Budului (VB), 10.10.2023			

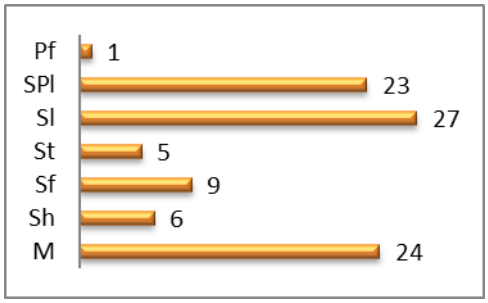

Fig. 2 - The spectrum of ecological categories

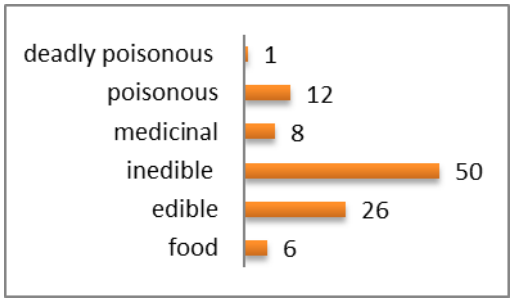

Fig. 3 - The spectrum of economic importance categories

Conclusions

The temporary exhibition "The World of Mushrooms" - the 17th edition was organized by the "Ion Borcea" Natural Sciences Museum Complex of Bacău and was open to the public between October 12-15, 2023.

During the temporary exhibition of fresh mushrooms, the public had the opportunity to discover the diversity of mushroom species that grow in Bacău County. The fresh mushrooms were exhibited in the temporary exhibition and belong to: 2 phylums, 2 classes, 7 orders, 33 families and 60 genera.

Rezumat

Expoziţia temporară „Lumea ciupercilor”, ediţia a XVII - a a fost deschisă în Grădina Sezorială a Muzeului de Ştiinţele Naturii (unitate a Complexului Muzeal de Ştiinţele Naturii „Ion Borcea” Bacău), în perioada 12-15 octombrie 2023.

Expoziţia temporară a fost organizată cu scopul de a face cunoscută lumea diversă a

ciupercilor şi de a conştientiza publicul larg cu privire la principale specii de ciuperci toxice şi comestibile, care cresc în pădurile din judeţul Bacău.

În cadrul expoziţiei, vizitatorii au admirat eşantioane de ciuperci proaspete colectate din habitate naturale din judeţul Bacău. Materialul micologic a fost colectat de către specialiştii Muzeului de Ştiinţele Naturii, în perioada 9 – 10 octombrie 2023 şi a fost expus tematic în cadrul expoziţiei pe grupe sistematice.

Conspectul sistematic al macromicetelor include 105 de specii, care aparţin la: 2 încrengături (Ascomycota – 5 specii, Basidiomycota -105 specii), 2 clase, 7 ordine, 33 familii ş i60 genuri. Speciile aparţin la 7 categorii ecologice. Din punct de vedere al importanţei economice, cele mai numeroase macromicete au fost speciile necomestibile –50, urmate de comestibile – 26 specii, toxice -12, comestibile (foarte bune) - 6 specii, specii medicinale – 8 specii şi 1 specie letală.

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Fig. 4 - Images from the opening of the temporary exhibition "The World of Mushrooms", 17th edition