

Red list and threat status of Bulgarian macromycetes

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The present article is a preliminary checklist of the Bulgarian threatened macromycetes.

Research on Bulgarian macromycetes dates back from the early twentieth century. The first significant mycological contributions are those of BURZAKOV (1926, 1928, etc.). The beginning of mycoecological investigations in Bulgaria can be traced to HINKOVA's book "Die hoheren Pilze des Witoscha-Gebirges" (HINKOVA, 1954). A bibliography of the contributions of Bulgarian and foreign mycologists to the knowledge of Bulgarian threatened macromycetes is supplied below (Appendix).

The protection of fungi in Bulgaria has been carried out for a short time compared with that of wild plants and animals, and measures for fungi protection are still insufficient (DRUMEVA-DIMCHEVA & GYOSHEVA-BOGOEVA, 1998). The creation of "A national programme for monitoring of threatened fungi" is expected soon, as well as preparation of legislative measures for protection. The threat of human impact and the rarity of some species highlight the need for this investigation.

The fungi have not been included in the Bulgarian Red Data Book (VELCHEV, 1984). The aim of the present paper is to propose a preliminary Red List of threatened macromycetes in Bulgaria, together with their threat status, as a step towards a Red Data Book of Bulgarian fungi. In the proposed list, 19 ascomycetes and 106 basidiomycetes are enumerated in alphabetical order (Table 1). The evaluation of the macromycetes as threatened species is based on both published and original data relating to rare and vulnerable Bulgarian fungi.

The threat categories (TC) and their abbreviations in Table 1 are in accordance with IUCN Red Data Book Categories (WALTER & GILLETT, 1998): E - endangered, V - vulnerable, R - rare, I - indeterminate (taxa known to be endangered, vulnerable, or rare but where there is not enough information to say which of the three categories is appropriate). The distribution of the fungi follows the map of floristic regions of Bulgaria (JORDANOV, 1966). The following numbers are used throughout for the floristic regions: (1) Black Sea coast, (2) Northeastern Bulgaria, (3) Danubian Plain, (4) Forebalkan, (5) Balkan Range, (6) Sofia region,



Fig. 1. Map of floristic regions of Bulgaria

(7) Znepole region, (8) Vitosha Mt., (9) West Frontier Mts., (10) Valley of Strouma River, (11) Belasitsa Mt., (12) Slavyanka Mt., (13) Valley of Mesta River, (14) Pirin Mts., (15) Rila Mts., (16) Sredna Gora Mts., (17) Rhodope Mts., (18) Thracian Lowland, (19) Toundzha Hilly Country, (20) Strandzha Mt. (Fig. 1).

Table 1

Checklist of the Bulgarian threatened macromycetes

No	Taxa	Distribution	TC
Ascomycetes			
1	<i>Choironomyces maeandriiformis</i> Vittad.	8, 15	R
2	<i>Discina perlata</i> (Fr.) Fr.	5, 8	R
3	<i>Disciotis venosa</i> (Pers. : Fr.) Boud.	2, 7, 8, 15	R
4	<i>Elaphomyces granulatus</i> Fr.	1, 10	R
5	<i>Geoglossum glutinosum</i> Pers. : Fr.	16	R
6	<i>Gyromitra gigas</i> (Krombh.) Cooke	5, 8, 16	E
7	<i>Leotia lubrica</i> (Scop.) Pers.	8	R
8	<i>Mitrella paludosa</i> Fr.	15	R
9	<i>Morchella conica</i> Pers.	1, 8, 15, 17	V
10	<i>M. elata</i> Fr.	8, 15, 17	V
11	<i>Olidea alutacea</i> (Pers.) Masseur	3	R
12	<i>O. onolica</i> (Pers.) Fuckel	1, 8, 14, 17	R
13	<i>Sarcosphaera coronaria</i> (Jacq.) J. Schröt.	7, 17	V
14	<i>Spathularia flavida</i> Pers. : Fr.	8, 14, 15, 17	R
15	<i>Tuber aestivum</i> Vittad.	10	I
16	<i>T. puberulum</i> Berk. & Broome	17	I

17	<i>Urnula craterium</i> (Schwein. : Fr.) Fr.	2	I
18	<i>Verpa bohemica</i> (Krombh.) J. Schröt.	8, 15, 16	V
19	<i>V. conica</i> (O.F. Müll. : Fr.) Swartz	6, 8, 17	V

Basidiomycetes

20	<i>Agaricus abruptibulbus</i> Peck	1, 8, 16, 20	R
21	<i>A. altipes</i> (F.H. Moller) F.H. Moller	20	R
22	<i>A. bohussii</i> Bon	18	I
23	<i>A. macrosporus</i> (F.H. Moller & Schaeff.) F.H. Moller	5	R
24	<i>A. phacolepidotus</i> (F.H. Moller) F.H. Moller	18	I
25	<i>A. squamulifer</i> (F.H. Moller) F.H. Moller	1, 7, 18	R
26	<i>Albatrellus cristatus</i> (Schaeff. : Fr.) Kotl. & Pouzar	14, 15	R
27	<i>A. pes-caprae</i> (Pers. : Fr.) Pouzar	17	V
28	<i>Amanita battarrae</i> Boud.	5, 14	I
29	<i>A. caesarea</i> (Scop. : Fr.) Pers.	1, 5, 7, 8, 15, 16, 17	V
30	<i>A. ovoidea</i> (Bull. : Fr.) Link	1, 17	R
31	<i>A. strobiliformis</i> (Paulet ex Vittad.) Bertill.	1, 7, 15, 17	E
32	<i>A. vittadini</i> (Moretti) Vittad.	18	R
33	<i>Armillaria rickenii</i> Bohus	18	I
34	<i>Boletus appendiculatus</i> Schaeff.	1, 7, 16, 19	R
35	<i>B. gabretae</i> Pilát	5	I
36	<i>B. lupinus</i> Fr.	7	R
37	<i>B. pulverulentus</i> Opat.	1, 2, 7	R
38	<i>B. radicans</i> Pers. : Fr.	1, 5	I
39	<i>B. regius</i> Krombh.	1, 5, 7, 8, 18	V
40	<i>B. rhodopurpureus</i> Smotl.	1, 19	R
41	<i>B. rhodoxanthus</i> (Krombh.) Kallenb.	1, 16	R
42	<i>B. rubinus</i> W.G. Sm.	1	E
43	<i>B. satanas</i> Lenz	5, 7, 15	V
44	<i>B. torosus</i> Fr.	5, 17	I
45	<i>Bovista graveolens</i> Schwalb	1, 5, 16, 17	R
46	<i>Calocybe ionides</i> (Bull. : Fr.) Donk	1, 17	R
47	<i>C. onychina</i> (Fr.) Donk	15	R
48	<i>Cantharellus friesii</i> Quél.	8, 17	E
49	<i>Catathelasma imperiale</i> (Quél.) Singer	8, 17	E
50	<i>Clathrus archeri</i> (Berk.) Dring	1	R
51	<i>C. ruber</i> Pers. : Pers.	1, 8, 20	R
52	<i>Clavariadelphus ligula</i> (Schaeff. : Fr.) Donk	5, 8, 14	R
53	<i>C. pistillaris</i> (L. : Fr.) Donk	2, 7, 8, 15, 16, 17	R
54	<i>C. truncatus</i> (Quél.) Donk	17	R
55	<i>Clitopilus giovanellae</i> (Bres.) Singer	9, 10	R
56	<i>Coltricia cinnamomea</i> (Jacq. : Gray) Murr.	17	I
57	<i>Cortinarius bulliardii</i> (Pers. : Fr.) Fr.	7, 15, 17	R
58	<i>C. praestans</i> (Cord.) Gill.	8, 16	E
59	<i>C. violaceus</i> (L. : Fr.) Gray	8	E
60	<i>Creolophus cirrhatus</i> (Pers. : Fr.) P. Karst.	1, 2, 5, 8, 15-17, 20	R
61	<i>Crinipellis mauretanicus</i> Maire	18	I
62	<i>Cyathus stercoreus</i> (Schwein.) De Toni	12	R
63	<i>Elasmomyces mattirolianus</i> Cavara	15	I

64	<i>Endoptychum agaricoides</i> Czern.	5, 7, 16, 17, 18	E
65	<i>Flammulaster muricatus</i> (Fr.) Watling	1	I
66	<i>Fomitopsis rosea</i> (Alb. & Schwein. : Fr.) P. Karst.	15	R
67	<i>Gastrosporium simplex</i> Mattir.	1, 16	I
68	<i>Geastrum quadrifidum</i> Pers. : Pers.	15	I
69	<i>G. triplex</i> Jungb.	1, 8	I
70	<i>Gomphidius roseus</i> (Fr.) Fr.	15, 17	R
71	<i>Gomphus clavatus</i> (Pers. : Fr.) Gray	8, 15	V
72	<i>Grifola frondosa</i> (Dicks. : Fr.) Gray	7, 17	E
73	<i>G. umbellata</i> (Pers. : Fr.) Pilát	5	E
74	<i>Gyrodon lividus</i> (Bull. : Fr.) Sacc.	1, 14	I
75	<i>Hericium coralloides</i> (Scop. : Fr.) Gray	1, 5, 15, 16, 18, 20	V
76	<i>H. erinaceum</i> (Bull. : Fr.) Pers.	5, 17	E
77	<i>Hydnellum suaveolens</i> (Scop. : Fr.) P. Karst.	8, 14, 15, 17	I
78	<i>Hygrocybe coccinea</i> (Schaeff. : Fr.) P. Kumm.	5, 7, 8, 15	R
79	<i>H. punicea</i> (Fr. : Fr.) P. Kumm.	8, 15, 17	R
80	<i>Hygrophoropsis morgani</i> (Peck) H.E. Bigelow	10	I
81	<i>Hygrophorus arbustivus</i> (Fr.) Fr.	1, 17	R
82	<i>H. russula</i> (Schaeff. : Fr.) Quél.	1, 7, 8, 15, 16, 17	V
83	<i>Hymenogaster verrucosus</i> Buchholz	18	I
84	<i>Hypholoma udum</i> (Pers. : Fr.) Kühner	8, 15	R
85	<i>Kavinia himantia</i> (Schwein. : Fr.) J. Erikss.	17	I
86	<i>Lactarius acerrimus</i> Britzelm.	7, 19, 20	R
87	<i>L. bresadolianus</i> Singer	15, 17	R
88	<i>L. spinosulus</i> Quél.	8	R
89	<i>Leccinum quercinum</i> Pilát	16, 19	V
90	<i>Lentinellus omphalodes</i> (Fr.) P. Karst.	8, 17	R
91	<i>L. ursinus</i> (Fr.) Kühner	5, 15	R
92	<i>Lenzites warnieri</i> Durieu & Mont.	1	I
93	<i>Leucoagaricus macrorhizus</i> Locq. ex Hora	18	R
94	<i>L. wichanskiji</i> (Pilát) Singer	18	I
95	<i>Leucopaxillus compactus</i> (Fr.) Neuhoff	10, 17	E
96	<i>L. gentianeus</i> (Quél.) Kotl.	1, 10, 17	R
97	<i>L. paradoxus</i> (Costantin & Dufour) Boursier	5, 6, 15	R
98	<i>Limacolla glioderma</i> (Fr.) Maire	1, 8, 15	R
99	<i>Macrotyphula fistulosa</i> (Holmsk. : Fr.) R.H. Petersen	5, 8, 15, 16, 17	R
100	<i>Melanogaster variegatus</i> (Vittad.) Tul. & C. Tul.	7, 16, 20	R
101	<i>Meripilus giganteus</i> (Pers. : Fr.) P. Karst.	2, 7, 8, 15, 18	R
102	<i>Mulinus caninus</i> (Huds. : Pers.) Fr.	1, 8, 15, 16, 17	R
103	<i>Mycenastrum corium</i> (Guers.) Desv.	10, 16, 18	R
104	<i>Myriostoma coliforme</i> (With. : Pers.) Corda	1, 2, 10, 16	E
105	<i>Omphaliaster asterosporus</i> (J.E. Lange) Lamoure	5	R
106	<i>Phallus hadriani</i> Vent. : Pers.	1, 2, 5, 15, 16, 18	R
107	<i>Phylloporus pelletieri</i> (Lév.) Quél.	5, 6, 7, 14	E
108	<i>Phyllotopsis nidulans</i> (Pers. : Fr.) Singer	5, 14, 16	R
109	<i>Pisolithus arhizos</i> (Scop. : Pers.) S. Rauschert	1, 5, 7, 10, 15, 18	R
110	<i>Porphyrellus porphyrosporus</i> (Fr.) J.-E. Gilbert	5, 14, 15	R
111	<i>Pulveroboletus gentilis</i> (Quél.) Singer	1, 5, 16	E
112	<i>P. lignicola</i> (Kallenb.) Pilát	17	E

113 <i>Rozites caperatus</i> (Pers. : Fr.) P. Karst.	4, 16, 17	V
114 <i>Sparassis crispa</i> (Wulfen) Fr.	17	E
115 <i>Strobilomyces strobilaceus</i> (Scop. : Fr.) Berk.	5, 8, 14, 15, 17	R
116 <i>Suillus sibiricus</i> Singer	14, 15	V
117 <i>Tremiseus helvelloides</i> (DC. : Pers.) Donk	14, 15	R
118 <i>Trichaster melanocephalum</i> Czern.	5, 14, 15, 16, 18	E
119 <i>Tricholoma acerbum</i> (Bull. : Fr.) Quél.	2, 5, 7, 16, 17	R
120 <i>T. colossus</i> (Fr.) Quél.	5, 14, 17	E
121 <i>T. pessundatum</i> (Fr. : Fr.) Quél.	8, 17	R
122 <i>Tulostoma brumale</i> Pers. : Pers.	1, 6, 7, 10, 12	V
123 <i>T. fimbriatum</i> Fr.	10, 18	V
124 <i>Xerocomus armeniacus</i> (Quél.) Quél.	1, 18	I
125 <i>X. parasiticus</i> (Bull. : Fr.) Quél.	1	E

Appendix

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Червен списък и статус на застрашеност на българските макромидети

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(Резюме)

В статията се предлага Червен списък на застрашените макромидети в България, включително техният статус на застрашеност. Работата се разглежда като стъпка към написването на Червена книга на гъбите в България. Използваните категории са в съответствие с препоръчаните в IUCN Red list of threatened plants (WALTER & GILLET, 1998). Предлаганият списък с макромидети включва 19 торбести и 106 базидиални вида гъби. Посочени са флористичните райони, в които е установен всеки един от застрашените видове гъби. Приложена е и библиографска справка за трудовете на български и чужди миколози, в които за първи път са посочени цитираните в настоящия труд видове или има допълнителни хорологични данни за тях.