

MACROMYCETES SPECIES INCLUDED IN THE BERN CONVENTION APPENDIX I IN THE RED LIST IN ROMANIA AND THE RARE PRESENCE IN THE HISTORICAL MARAMURES COUNTY

Marta Béres

ABSTRACT

The ground under research is situated in the North of Romania, named Historical Maramureș, on the South bank of the Tisa River and its surface is 3.375,16 km².

From geographical point of view it encloses the Depression of Maramureș and the surrounding mountains, the altitudes being situated between 204 m. and 2305 m.

The protection of macromycetes became a vital issue nowadays. Based on the criteria of the International Union of Nature Conservation (IUCN), 33 species of endangered European macromycetes were included into the Bern Convention Annex, out of which 11 species are to be found in Romania too, and 2 species in the Historical Maramureș.

Based on their own studies, prof. Dr. C. Tănase and Dr. A. Pop made up a Red List of rare macromycetes, endangered in Romania. Out of the 179 species to be found on the list, 24 species have been also identified on the mentioned ground taken under research by us.

A list of very rarely found species is also presented (13 sp.) as well as the one containing the very first findings (5 sp.) in this county, in the Maramureș area.

The presented naturalized mushrooms on the three are stored in the collection of the Maramureșului Museum in Sighetu Marmăției, Section of Natural Sciences, prepared using the Herpell method improved by Bohus, and some of them through drying.

Causes of the imminent endangering are shown along with our suggestions for the protection of macromycetes in the studied territory.

KEYWORDS: Red List National, new and rare macromycetes, historical Maramures County, Romania,

INTRODUCTION

The land that has been researched is in the northern Romania, called the historical Maramures and it is situated to the south of the Tisa River having a 3375.16 km² area. From administrative point of view, it occupies the northern Maramureș County. Geographically, it includes the Maramureș Depression and the surrounding mountains, respectively the Mountains of Maramures, Rodnei, Țibleș, Gutâi, Igniș with the maramures volcanic plateau and lower formations: hills along the valleys, and strips of fields. The geological substrate is composed of sedimentary rocks, metamorphic and volcanic, which formed different types of soils. The historical Maramures belongs to a moderate-continental climate, the

weather too, varies by altitudinal relief. The average annual temperature in the low depression is 8°C, and is 2°C in the high mountainous area. Annual rainfall is between 800 mm to 1400 mm (in the high mountains). Local vegetation varies with altitude: alpine with dwarf bushes, short grassland, taller bushes in the subalpine level, glade of limit spruce, the boreal forest floor of *Picea abies* or associated with *Fagus sylvatica*, the nemoral forest floor of *Fagus sylvatica* and *Quercus petraea* in the undergrowth below, within the forest there are secondary grasslands formed by deforestation. Occasionally, there are plant species belonging to azon vegetation (vegetation in wetlands, salty, rocky, limestone, acid etc.) Maramures provides ecological conditions, optimal habi-

tats for the formation and development of macromycetes in diverse species.

MATERIALS AND METHODS

The present material is based on observations, field collecting and macromycetes preparations carried out by the author between 1977-2009, in the researched area, historical Maramures. The collected macromycetes were determined macroscopically and microscopically in laboratory by using different chemical substances. Some critical species were revised and or determined by famous mycologists, their initials being included in the text in each case, using the following abbreviations:

N: = North, S: = South, E: = East, W: = West, alt. = altitude, val. = valley, m. = meter, exp. = exposure, no. inv. n. = inventory number, obs. = observed, det. = determined, rev = revised, R.B.P.R. = Biological Reserve Pietrosul Rodnei, P.N.M.M. = Natural Park of Maramures Mountain, K. L. = Kálmán László, D.P. = Dionisie Pázmány. M. B. = Marta Béres.

The documentary material for fungi was prepared using wether the Herpell method, improved by Bohus, or dehydration. The prepared macromycetes are stored in the Maramures Museum, department of Natural Sciences in Sighetu Marmatiei. Most of the rarities are photographed in situ and on preparations. In order to determine the macromycetes the author used the specialty literature of the following authors: C. L. Alessio 1985, F. Bellu 1982, G. Bohus et al. 1951, 1953, B. Cetto I-IV 1978, L. Hollós 1904, 1911, G. Malençon 1979, Michael/Hennig/Kreisel IüVI 1971ü1975, M. Moser 1963, 1978, D. Pázmány 1985, 1998, I. Rimóczi & J. Vetter 1990, Gh. Sălăgeanu & Anișoara Sălăgeanu, 1985, R. Singer 1962.

The macromycetes presented in this paper, found in the historical Maramures are included in lists according to the alphabetical order of their scientific denominations. The lists contain the following data: scientific denomination of the species, endangered category, location, habitat, altitude and exposure, date of collection, inventory number, and initials of the person who determined or revised the specie.

RESULTS AND DISCUSSIONS

Suitable ecological conditions in the area ensured the formation of various and rich species of macromycetes. Protecting the fungi means protecting

biodiversity and vice versa.

Based on the criterias established by the International Union of Conservation Nature (I.U.C.N.) categories were established in terms of threat to fungi in Europe - with the aim of determining priority of their protection. The categories are: Critically Endangered –CR; Endangered –EN, Vulnerable –VU, Near threatened –NT, Data Deficiencies –SD.

33 species of endangered macromycetes, found in Europe were included in the Bern Convention Appendix I., out of which 11 species are reported in Romania as well and two species in historical Maramures too, which are:

1. *Gomphus clavatus* (Pers.: Fr.) Gray, and

2. *Hgrocybe calyptriformis*. (Berk. & Broome) Fayod

They are included in the National Red List, and therefore are included in the list below.

Based on a detailed study of data on the macromycetes known in the country according to the criteria established by the IUCN, Prof. Dr. C. Tănase and Dr. Biol. Adriana Pop, in 2005, prepared and submitted to regulation the Red List of macromycetes in Romania. Out of the 179 species on this list, we have identified so far the existence of 24 species in historical Maramures.

The following species from the list of macromycetes were identified in the Historical Maramures:

1. *Albatrellus cristatus* (Pers. :Fr.) Kotl. & Pouz. – CR-

-Strămtura, Carpino-fagetum, on the ground, 400 m alt., NW exp, 07.VIII.1979, inv. n.1705/5, leg/det. M.B.

-Bărsana- Secătura, oakwood, on soil, alt.450 m, exp. S, 14.VIII.1981, inv. n. 2109/409, leg/det. M.B.

Săpânța, Nireș valley, in a beech forest, on wet soil, 600 m alt., leg/det. M.B.

Munții Rodnei, R.B.P.R.,mixed forest (beech and spruce), 800 m. alt., N exp., 01.IX.1993, leg/det. M.B.

2. *Amanita caesarea* (Scop. : Fr.) Pers. -VU – (Anexa. Foto. 1.)

-Rona de Sus –Coștiui, Dealul Cugli, *Quercus petraea* woods with *Quercus cerris*, on the ground, 500 m alt., S exp., 18.VIII.1981, inv. n. 2142/442, leg/det. M.B.

-Bărsana -Secătura, Dealul Măgura in Valea Morii, oak with hornbeam forest, on the soil, 350-400

m alt., E exp., 21.VIII.1986, inv. n. 2144/444 ; and observed in: 16.VIII.1987 ; 13.VIII.1995 ; 01.VIII.1997 ; 17.X.2001. leg/det. M.B.

-Bărsana-Nănești, was originally a forest of *Quercus petraea*, after desforestation it was planted with *Pinus sylvestris* and *Robinia pseudacacia*, 500 m alt., S exp., steep slopes, 17.VII.1992, inv. n. 2145/445, leg/det. M.B.

-Bărsana-Valea Muntelui, the edge of the forest of *Quercus petraea*, 500 m alt., S exp., inv. n. 2146/446, leg/det. M.B.

3. *Amanita regalis* (Fr.) Michael – NT -

-R.B.P.R.-Izvorul Dragoș valley, spruce forest, under a lone *Picea abies* in the pasture above the laboratory house, 1300 m alt., W exp., 16.VII. 1985, inv. 3960/1260 ; 3961/1261, leg. M.B. rev. K.L.

4. *Anthurus archeri* (Berk.) Fischer – NT – (Anexa. Foto.2.)

-Sighetu Marmației, district Iapa, among the grassland, 400 m alt., NE exp., 23.VIII.1993, inv. N. 20.041, leg/det. M. B.

-Săpânța –Jilerescu, swamp, on the anthill with *Vaccinium vitis-idaea*, *Carex* sp., 800 m alt., 28.VII. 1993, obs/det. M.B.

-Sighetu Marmației : Dealul Solovan, among of *Scirpus sylvaticus*, 600 m alt., S exp., 01.X.1996, and in young forest of *Quercus petraea* with *Carpinus betulus*, 550 m alt., N exp., 01.X.1996 ; Mociar, valley of stream Ronișoara, underbrush of oak with hornbeam, 300 m alt., 29.VII.2008, obs/det M.B.

-Bărsana-Secătura, Preluca Mejdii, pasture hygromesophil, among moss and *Colchicum autumnale*. 900 m alt., E exp., 08.X.1996, obs/det. M.B.

-Vadul Izei-Valea Șugău, wet meadow, 400 m alt., NW exp., 30.IX.2001, leg. I.Măran det. M B.

-Bocicoi, fruit-garden, in grassy place, 2006.X. , leg. Huzum, Magdalena, det. B.M.

5. *Boletus appendiculatus* Sch. –NT –

-Sighetu Marmației –Bârlan, grassland with scattered beeches, 700 m alt., NE exp., 24.VIII. 1982, inv. n. 2297-2298/597-598, leg. M.B. rev. K. L.

6. *Boletus quélétii* Schulz – VU –

-Ocna Șugatag –Pădurea Crăiasca, forest with sessile and oak, 500 m alt., NE exp., 24.VIII.1984, inv. n. 2589-2590/889-890, leg. M. B., det. K.L.

-Bărsana, Valea Morii, forest of oak with hornbeam, 400 m alt., exp., 31.VII.1986, inv. n. 3979/1279, leg/det. M.B.

-Săpânța –Livada, forest of oak with sessile, 300 m alt., N exp., 26.IX.1994, inv.n. 20043/1343,

leg/det: M.B.

7. *Catathelasma imperiale* (Quél.) Sing. –VU –

-Sighetu Marmației- Strunga Țiganului, mixed forest, 830 m alt., N exp., 24.IX.1977, inv. n. 1785/85, and also there in 13.IX.1980, no inv. 1976/276, leg/det: M.B.

8. *Choiromyces venosus* (Fr.) Th. M. Fr. – VU –

-Sighetu Marmației, Pietra Șărâmpoului, forest floor, after *Fagus sylvatica*, young plantation of *Picea abies*, forest road, 950 m alt., VW exp., 12.IX.1980, inv.n. 2118/418, leg/det: M.B.

-Vadul Izei, valley of brook Șugău, glade with *Quercus petraea*, clay soil, 600 m alt., S exp., 12.IX.1982. obs/det. M.B.

9. *Cortinarius praestans* (Cordier) Gill. – NT

-Bistra, Mocnati, sessile forest, 800 m alt., S exp., 25.VIII.1979, inv. n. 1874/174, leg/det.M.B.

-Rona de Sus-Coștiui, Seneș, beech and oak mixed forest, 600 m alt., E exp., 20.VIII.1981, inv. n. 2186/486, led/det: M.B.

10. *Gomphus clavatus* (Pers.: Fr.) Gray – NT –

-Sighetu Marmației, Chișdâmb forest, mixed forest of beech and spruce planted, 740 m alt., W exp., 24.IX.1977, inv.n. 1731/31, leg. M.B., det. K. L.

11. *Grifola frondosa* (Dicks.: Fr.) Gray – NT –

-Rona de Sus, Dealul Hera, evergreen on oak, 600 m alt., S exp., 17.IX. 1981, inv. n. 2213/513, leg/det: M.B.

-Ocna Șugatag, Pădurea Crăiasca, oak grove and hornbeam, 500 m alt., SW exp., 28.08.1981, obs/det: M.B.

12. *Gyromitra infula* (Schaeff.: Fr.) Quél. – NT

–Săpânța, Colibi, mixed forest, on rotten trunk of spruce, 900 m alt., E exp., 12.X.1984, inv: n. 2698/998, leg/det: M.B.

-R.B.P.R. a./,Moisei, spruce forest, 1300 m alt., SE exp., 03.IX. 1983, inv. n. 2570/870, and

b/. Săcel Muntele Celaru near Tăul Muced, spruce area, on the wood in the ground, 1400 m alt., SE exp., obs/det: M.B.

-Sighetu Marmației, Strunga Țiganului forest, under planted spruce, 850 m alt., N exp., 07.VIII. 1992, obs/det: M.B.

13. *Hydnellum suaveolens* (Scop.: Fr.) – NT – (Anexa. Foto. 3.)

-Sighetu Marmației, Strunga Țiganului mixed forest, on soil under young spruce, 850 m alt., NW exp., inv. n. 20.0 15/1315, leg/det: M.B.

14. *Hygrocybe calyptriformis* (Berk. & Broome) Fayod - VU – (Anexa.Foto.4..)

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-Sighetu Marmăției, Bârlan, grassland, 800 m alt., N exp., 21.IX.1985, inv.n. 3911-8913/1211-1213; and Dealul Dobăieș, among grassland, 300 m alt., S exp., 08.IX.2005, obs/det: M.B.

15. *Hygrophorus russula* (Schaeff.: Fr.) Quél. – NT

-Sighetu Marmăției, Dealul Solovan, Quercus petraea forest, 400 m alt., N., 04.IX. 1978, inv.n. 1752/52, leg/det: M.B.

-Rona de Sus –Coștiui, Dealul Cugli, forest with hornbeam and oak, 450 m., E exp., 05.IX.1980, obs/det: M.B.

-Bistra-Tocarnea, hardwood forest on the ground, 800 m alt., W exp., 15.VIII.1981, obs/det: M.B.

16. *Mutinus caninus* (Huds.:Pers.) Fr. – NT –

-Bistra, Mocnati, beech and hornbeam forest, on the ground, 800 m alt., W exp., 27.IX.1984, inv. n. 3892/1192, leg/det: M. B.

-Desești, Muntele Ștedea, beech forest, 1000 m alt., SE exp., 27.VIII.1984, obs: M.B.

17. *Nyctalis asterophora* FR. – NT – (Anexa. Foto.5.)

-Bistra, Tostei forest, on a decaying mushroom hat, 800 m alt., W exp., 24.VIII.1979, inv. n. 1782/82, leg/det: M.B:

-Ocna Șugatag, Pădurea Crăiasca, on rotten *Russula* sp.,500 m alt., SW exp., 18.IX.1980, obs./det. M.B.

18. *Strobilomyces strobilaceus* (Scop.: Fr.) Berk. – NT –

-Oncești, Creasta Văratec, meadow, under *Corylus avellana*, 1 specimen, 500 m alt., SE exp., 18.VIII.1979, inv. n. 1875/175, leg/det. M.B.

-Săpânța, valley of tream Săpânța, beech forest, 400 m alt., e exp., 02.IX.1990, inv. n.3941/1241, leg. C.Albu, det. B.M.

-Bistra, Dealul Hera, beech forest, 500 m alt., SE exp., 06.IX.1991, inv. n. 3983/1283, leg/det. M.B.

19. *Suillus grevillei* (Klotsch in Fr.) Sing. – VU – in larch plantation:

- Sighetu Marmăției: Câmpu Negru,300 m alt., E., 05.IX. 1977, no. inv. 1878/178; Dealul Dobăieș, 500 m alt., E exp., 22.VIII.1983, no. inv. 2433/733, leg/det: M.B.

-Rona de Sus-Coștiui, 300-500 m alt., NE exp., 09.IX.1978, no. inv. 1881/181, leg/det. M.B.

-Ocna Șugatag, Pădurea Crăiasca, 500 m alt., SW exp., 05.VIII.1978, obs/det: M.B.

-Mara, Munții Gutâi, near national highway 18, 1000 m alt, N exp., 12.IX.1983, inv. n.2432/732, leg.

L. Varga, det. M.B.

-Vadul Izei-Valea Stejarului, 400 m alt., S., 18.IX.1984, inv. n. 2431/731, leg/det: M.B.

-Moisei, R.B.P.R., Dragoș valley, 780 m alt., N exp, near the forest planted in *Larix decidua*, near the forestier's cabin, 26.IX.1993, obs/det. M.B.

20. *Suillus plorans* (Roll.) Sing. – VU –

-R.B.P.R., La Gropi, under *Pinus cembra*, 1700 m alt., E., 05.VIII.1982, inv. n. 2235-2236/ 535-536, leg/det: M B., rev. K.L.

21. *Tremiscus helvelloides* (DC.: Fr.) Donk. – NT

-R.B.P.R., Izvorul Fântâniei valley, 830 m alt., W exp., on the ground among *Petasites* sp.,in groups, 01.IX.1993, obs/det. M.B.

22. *Tricholoma orirubens* Quél. – NT –

-Bistra, Dealul Hera, beech forest, on the soil, 650 m alt, N exp., 18.X.1984, inv. n. 3751/1051, leg/det. M. B.

23. *Volvariella bombycina* (Schff.: Fr.) Sing. – VU – (Anexa Foto.6.)

-Ieud, Idișor brook valley, on *Salix* sp. in hollow on the banks.15.VII.2004, obs/foto/leg. M.B.

24. *Xerocomus parasiticus* (Bull.: Fr.) Quél – VU – (Anexa. Foto. 7.)

-Călinești-Văleni, Măgura Vălenilor, on *Scleroderma citrinum* on soil clay, 400m alt., 08.X.1996, foto, leg/det: M.B.

Macromycetes of **first alert** in the country gathered in historical Maramures:

1. *Limacella furnacea* (Let.) R. Mre.

-Sighetu Marmăției, in art gallery, near the wall of beech parquet,cca 600 m., 04.VIII.1987, inv. n. 20.033/1331, leg. M. B. det.D.P (in Not. Bot. Agrobot., 1988-1989)

2. *Omphalina discorosea* (Pilát) Herink & Kotl.(Anexa. Foto. 8.)

-Bârsana, Dealul Hera, 600 m alt., S exp, on rotten beech trunk, numerous linear specimens, 05.X.1981, inv. n. 2396-2398/696-698, and was also there in 19.IX.1982, inv. n. 2399/699. After that date no longer found. Leg. M.B. det. K.L.

3. *Pluteus variabilicolor* Babos (Anexa.Foto.9.)

-Sighetu Marmăției, near dam Tisa river, ruderal place much sawdust on the floor with another 272 m alt, 20.VIII.1980, inv. n. 2011/311; 703 - 706/2403 - 2406, Leg. M. B., det. Margit, Babos.

4. *Pulveroboletus lignicola* (Kallenb.) Pilát,

(Anexa. Foto. 10.)

-Moisei, R.B.P.R., Dragoș valley, 1300 m alt., W exp., spruce wood, on rotting conifer stumps, 2 specimens, 17.VIII.1985, inv. n. 3908/1208., leg. M. B. det.L.K.

5. *Pholiota nana* E. Horak

-Borșa, R.B.P.M., Zănoaga Mare, 1700 m alt., VE, coniferous wood-edge, 27.VIII.1984, inv. n. 3977/1277, leg. M. B. det. Margit.Babos

Other **macromycetes with rare presence** in the historical Maramures county:

1/. *Boletus rhodopurpureus* Smotl.

-Bârsana, Dealul Măgura in valley of brook Morii, 350 m alt., E exp., *Quercus petraea* forest, on steep slope and oak wood, on soil, 21.VIII.1986, inv. n. 3980/1280, leg. M.B. det. K.L.

2/. *Caloscypha fulgens* (Pers.) Boud.

-Sighetu Marmației, Strunga Țiganului, 900 m alt., N exp., on the ground among fallen needles, 25.V.1980, inv. n. 2162/462, leg/det. M. B. rev. K.L.

-Moisei, R.B.P.R., 1100 m alt., N exp., on the ground among conifer needles, 27.V.1987, inv. n. 20.033/1333, leg. S. Horj, det. M.B.

3/. *Clavariadelphus pistillaris* (Fr.) Donk

-Sighetu Marmației, Strunga Țiganului forest, 800 m alt., NE exp., 13.IX.1980, inv. n. 1963/263, leg/det. M.B.

4*Macrolepiota fuliginosquarrosa* sensu Pázmány non Malençon

-Vadul Izei, Valea Stejarului, 300 m alt., NW exp., grassland, 02.XI.1984, inv. n. 3732/132, leg/det. M.B., rev. D.P.

5/. *Macrolepiota subsquarrosa* ss. non Pázmány (Lasq.) Bon.

-Bârsana, Valea Caselor, 550 m alt., N exp., glade, among grassland, 12.IX.1985, inv. n. 3740/1040, Leg. M.B., det. D.P.

6/. *Melanogaster broomeanus* Berk.

-Sighetu Marmației, Dealul Solovan, 600 m alt., S exp., valley of brook Someș, under mosses and herbaceous laver under *Corylus avellana*, 10.IX.1981, inv. n. 3928/1228, leg. R. Szálka and M.B., det. D.P.

7/. *Melanoleuca brevipes* sensu Lange

-Sighetu Marmației, 260 m alt., at the outskirts of the town, ruderal place, much sawdust, large groups, 24.IV.1983, inv. 2511-2522/811-822, leg. M.B., det. K.L.

8/. *Mitrula paludosa* Fr.

-Moisei, R.B.P.R., Izvorul Verde forest, 1400 m alt., SW exp., spruce forest, on fallen needles and cones in smoothly flowing water, 20.VII.1986, and observed in a backyard laboratory in a watery, 1300 m alt., 17.VII.1988. inv. n. 3943/1243, leg/det: M.B.

9/. *Omphalotus olearius* (DC.) Singer

-Sighetu Marmației, Dealul Bagna, Urdea's garden, 300 m alt., NW exp., orchard, on rotten wood, 17.VIII.1980, no. inv.2004/304, leg/det. M.B.

10/. *Pseudoplectania nigrella* (Pers.: Fr.) Fuck

-Sighetu Marmației, Agriș, 680 m alt., N exp., among moss under planted *Picea abies*, 17.IV.1983, inv. n. 2458/758, leg/det. M.B., rev. K.L.

11/. *Spathularia flavida* Pers.

-Rona de Sus- Coștiui, Dealul Cugli, 430-570 m alt., NE exp., under *Larix decidua* cultu, 05.VIII.1979, inv.n. 1702-1703/2-3, leg/det: M.B.

-Moisei, R.B.P.R., 800 m.alt, N exp., beech forest mixed with spruce needles fallen among some specimens, 01.IX.1989, inv. n. 2070/370, leg/det. M.B.

12/. *Urnula craterium* (Schw.) Fr.

-Ocna Șugatag, Pădurea Crăiasca, 450 m alt., SW exp., oak forest, on fallen branches covered with earth, inv. n. 2034/334, leg. M.B., det. K.L.

-Rona de Sus, Pădurea Ronișoara, 500 m alt., SE exp., *Quercus petraea* forest, a rotten branch on ground, 12.V.1984, inv. n. 2455/755, leg/det: M.B. rev. K.L.

13/. *Phaeolepiota aurea* (Matt.: Fr.) Mre. is a specie more frequently met in the mountainous regions in historical Maramures, however we consider as necessary its inventory, being proposed for the mapping of this specie in Europe. In the studied territory it was signaled in the following places:

-Bistra, Luhei valley, 400 m alt, NW exp., near the and among *Alnus glutinosa*, *Urtica dioica*, 22.VIII.1976, inv. n.1828/128, and 01.IX.1989, inv. n. 3936/1236, leg/det: M.B.

-Remeți, Cărbunărești valley, 300 m alt., NW exp., under alder trees near the creek, 17.X.1984, inv. n. 2691/991, leg/det. M.B.

-Bistra, Polonenca Mountain, 1300 m alt., S exp., pasture, including *Urtica dioica*, 20.IX.1986, inv. n. 3933-3935/1233-1235, leg/det. M.B.

-Săpânța, valley of tream Săpânța, 700 m alt., N., *Fagus sylvatica* forest, near shore, 01.IX.1990, inv. n. 3937-3938/1237-1238, leg/det. M.B.

-Vișeu de Sus, P.N.M.M., Bardău valley, 900 m alt., V exp., in grassvat roadsides making up linear

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groups, 07.VI.2007, obs. M.B.

-Poienile de sub Munte, P.N.M.M., Rica valley, 900 m alt., W exp., near the forest road, leg. I. Pop, det. M.B.

The macromycetes in Maramures are exposed to different types of **hazards caused** by man and nature, which are largely identical to those in the other countries.

The endangering factors of macromycetes in Maramures are:

- conversion and habitat destruction,
- deforestation,
- disappearance of old trees,
- increasing land settlements, development of the infrastructure,
- excessive and improper collection of macromycetes
- lack of informative materials regarding the role of the macromycetes in biodiversity

Proposals for the protection of the macromycetes:

- publication of informative materials for a better knowledge about the macromycetes,
- prohibiting collection of macromycetes in the natural reserves,
- promote good forestry practices to protect areas of threatened or rare species with vigorous populations, for example: Bârsana- Dealul Măgura for *Amanita caesarea*,
- restriction of collection in qualitative terms (before the release of spores) and recommendations of ways of collection
- educating local communities, the young, introduction of topics in the curriculum with the purpose of protecting macromycetes.

CONCLUSIONS

The purpose of this paper is to contribute to the completion of the national inventory and a database of species considered threatened macromycetes and those requiring urgent protection at national and local levels, to contribute to the ongoing knowledge and supplement to the National Red List of Macromycetes.

This paper sets out 2 species of macromycetes considered endangered in Europe included in the Bern Convention Appendix I, 24 species listed in the National Red List, and also 5 species first docu-

mented in Maramures in the country and 13 species of rarerly found macromycetes in Maramures until now.

It is necessary to take measures to protect the habitats where dense populations of endangered mushrooms were reported and to limit the collection in order to assure the preservation of the biodiversity.

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APPENDIX I:

MACROMYCETES SPECIES INCLUDED IN THE BERN CONVENTION APPENDIX I IN THE RED LIST IN ROMANIA

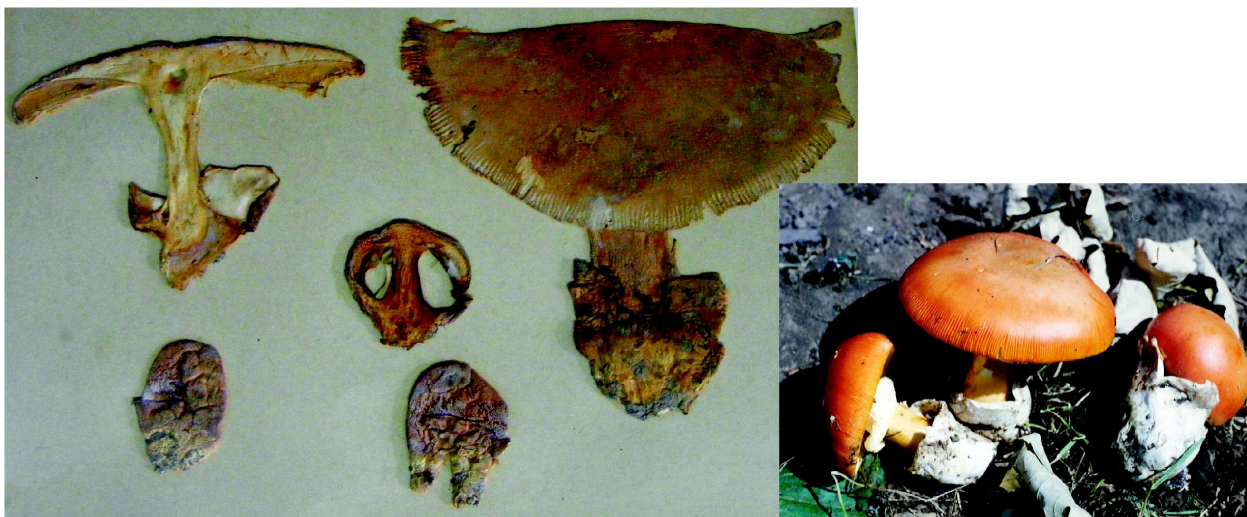


Foto 1: *Amanita caesarea* (Scop.: Fr.) Pers. –VU-



Foto 2: *Anthurus (Lathrus) archeri* (Berk.) Fischer - /N



Foto. 3. *Hydnellum suaveolens* (Scop.> Fr.) Karst./NT.

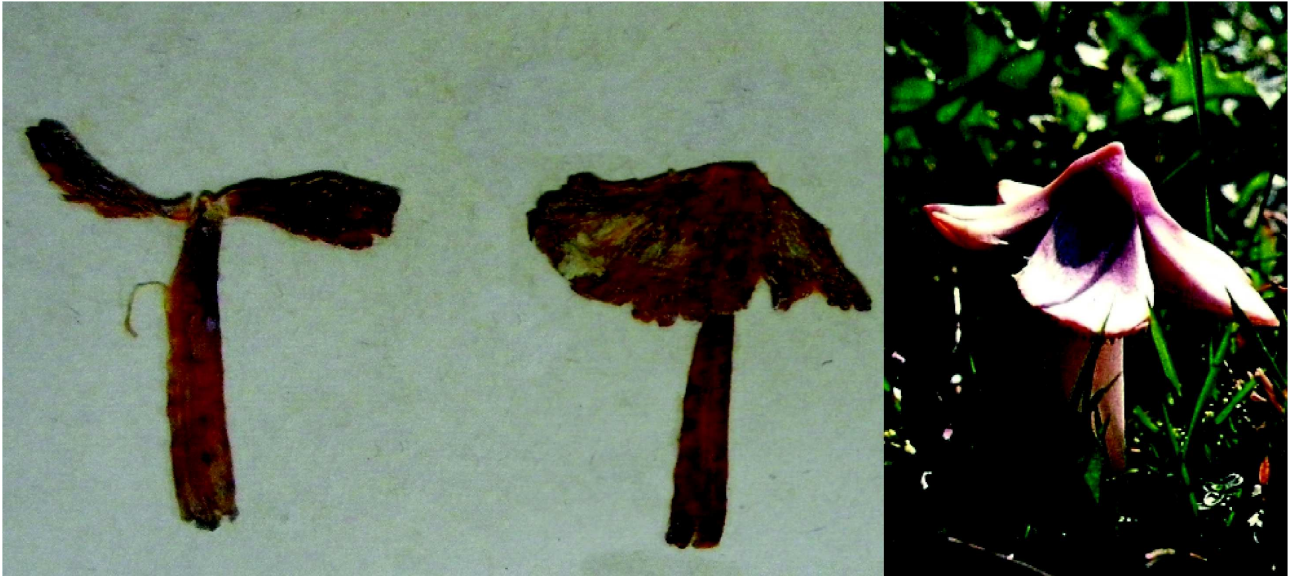


Fig. 4. *Hygrocybe calyptriformis* (Berk. & Broome) Fayod /NU



Foto. 5. *Nyctalis asterophora* Fr. /NT.



Foto. 6. *Volvariella bombycina* (Schff.: Fr.) Sing. VU.



Foto. 7. *Xerocomus parasiticus* (Bull.> Fr.) Quél /VU.

**MACROMYCETES OF FIRST ALERT IN THE COUNTRY
GATHERED IN HISTORICAL MARAMURES**



**Foto 8. *Omphalina discorosea* (Pilát)
Herink & Kotl**



Foto 9. *Pluteus variabilicolor* Babos



Foto 10. *Pulveroboletus lignicola* (Kallenb.) Pilát