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Macrofungi of Ayder (Rize/Turkey) high plateau

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Abstract

This study was conducted on the macrofungi specimens collected from Ayder high plateau (Rize) between 2001 and 2004. As a result 127 macrofungi taxa belonging to 11 orders, 40 families and 69 genera within the divisions *Ascomycota* and *Basidiomycota*, were identified. Three of them, *Spooneromyces helveticus* Breitenbach & Krazlin, *Cortinarius odorifer* Britzelm and *Russula melzeri* Zvára. are new records for the macramycota of Turkey.

Key words: biodiversity, macrofungi, Rize, Turkey

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Ayder Yaylası Makrofungusları

Özet

Bu çalışma 2001 – 2004 yılları arasında Ayder (Rize) yaylasından toplanan makromantar örnekleri üzerinde gerçekleştirilmiştir. Çalışma sonucunda *Ascomycota* ve *Basidiomycota* bölümlerine ait 11 ordo, 40 familya ve 69 cins içinde yer alan 127 makrofungus taksonu teşhis edilmiştir. Bunlardan üç tanesi, *Spooneromyces helveticus* Breitenbach & Krazlin, *Cortinarius odorifer* Britzelm ve *Russula melzeri* Zvára. ülkemiz makromikotası için yeni kayıttır.

Anahtar kelimeler: biyoçeşitlilik, makromantarlar, Rize, Türkiye

1. Introduction

Ayder is a high plateau within the boundaries of Çamlıhemşin district of Rize province (Figure 1). The high plateau is situated between 40°54' - 40°58' north latitudes and 41°04' - 41°09' east longitudes, in Eastern Black Sea Region, and in A8 according to the Davis' grid square system (Davis, 1965). The area is generally covered by forests which are mainly composed of the plant species such as *Pice orientalis* (L) Link, *Abies nordmanniana* (Stev.) Spach, *Pinus sylvestris* L., *Fagus orientalis* Lipsky. The research area is among the most rainy regions of Turkey. The annual precipitation is generally over 2300 mm and the annual average temperature is about 14 °C.

Though some studies (Demirel, 1999; Sesli, 2007; Akata et al, 2011; Kaya et al., 2013) were carried out at Eastern Black Sea region, currently there isn't any mycological study related to the macrofungal biodiversity of the Ayder high plateau. The aim of this study is to determine the macrofungal diversity of the region and to make a contribution to the mycobiota of Turkey.

2. Materials and methods

The materials of this study were collected from different localities (Table 1) through field trips carried out at Ayder high plateau between 2001 and 2004. Ecological characteristics of the specimens were recorded and some of them were photographed at their natural habitats. Then they were brought to the fungarium. After obtaining spore prints

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they were dried and preserved in polyethylene bags containing thymol crystals. Identification of the specimens was performed with the help of Phillips (1981), Breitenbach and Kränzlin (1984-2000), Buczacki (1989), Moser (1993), Jordan (1995), Bessette et al. (1997) and some studies carried out on macromycota of Turkey (Türkekul, 2003; Kaya et al., 2012; Türkoğlu and Yağız, 2012). The samples are kept in the Herbarium of Yüzüncü Yıl University, Department of Biology.

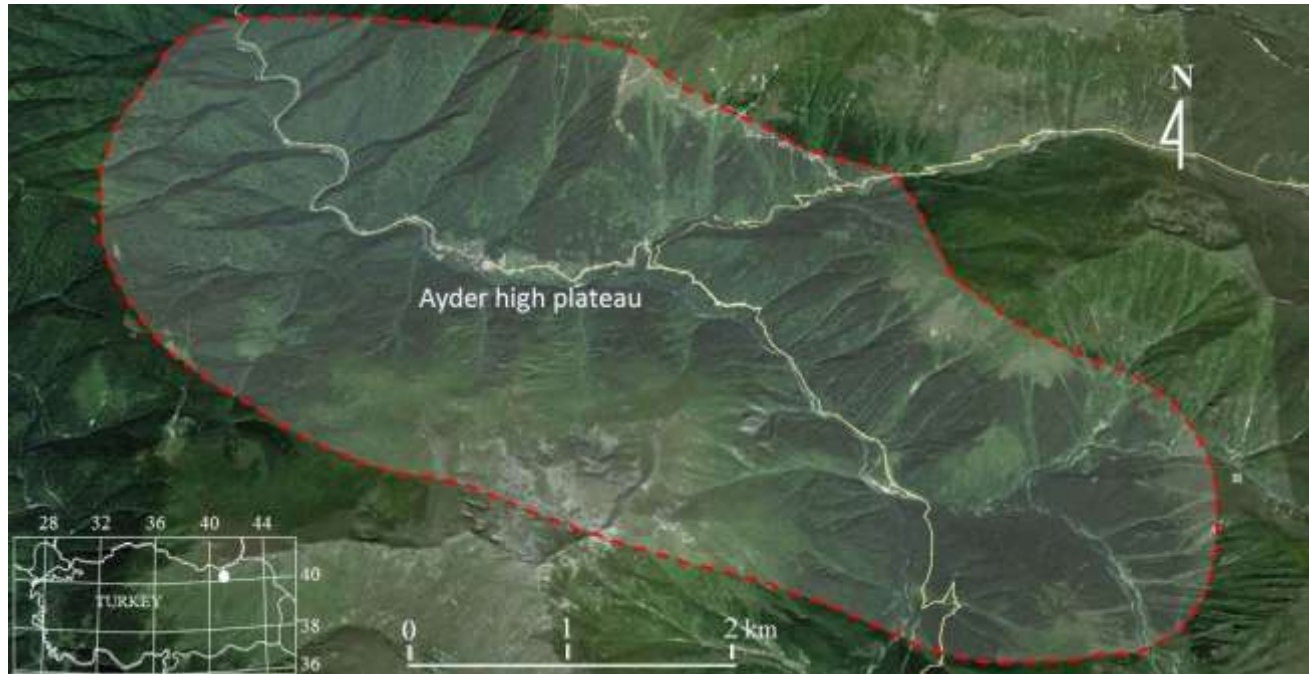


Figure 1. The research area (modified from Google Earth)

Table 1. Macrofungi sampling localities

Tablo 1. Macromantar örneklem lokaliteleri

No	Localities	Coordinates	Altitudes (m)
1	Ayder, around thermal spring facilities	40° 57' K, 41° 05' D	1212 m
2	Ayder, around festival area	40° 57' K, 41° 06' D	1330 m
3	Ayder, around Gürgendibi picnic area	40° 56' K, 41° 06' D	1330 m
4	Ayder, around Gürgendibi picnic area	40° 57' K, 41° 06' D	1343 m
5	Ayder, around Gürgendibi picnic area	40° 57' K, 41° 07' D	1402m
6	Ayder, around Avusor Butic Hotel	40° 57' K, 41° 06' D	1415 m
7	Ayder, around Avusor Butic Hotel	40° 57' K, 41° 07' D	1771 m
8	Ayder, around Kavrın road	40° 56' K, 41° 08' D	1631 m
9	Ayder, around Palakçur road	40° 55' K, 41° 09' D	1766 m
10	Ayder, around Kavrın road	40° 54' K, 41° 08' D	1710 m
11	Ayder, Kaçkar Mountain slopes	40° 54' K, 41° 09' D	1843 m
12	Ayder, Kaçkar Mountain slopes	40° 55' K, 41° 09' D	1799 m
13	Ayder, around Kavrın road	40° 56' K, 41° 07' D	1476 m
14	Ayder, around Aşağı Kaçkar road	40° 58' K, 41° 06' D	1654m
15	Ayder, around Çamlıhemşin road	40° 58' K, 41° 04' D	1254 m
16	Ayder, above festival area	40° 57' K, 41° 06' D	1520 m
17	Ayder, Kaçkar Mountain slopes	40° 55' K, 41° 08' D	1667 m
18	Ayder, around Kaçkar road	40° 56' K, 41° 08' D	1707 m
19	Ayder, around Kaçkar road	40° 57' K, 41° 07' D	1513 m
20	Ayder, around Kavrın road	40° 55' K, 41° 08' D	1703 m

3. Results

Taxa, determined in the research area are listed below in alphabetical order together with the fungarium numbers (F). The systematics of the taxa are in accordance with Cannon & Kirk (2007) and Kirk et al. (2008). Short description of the newly recorded taxa for Turkish mycobiota are given together with their photographs.

Ascomycota Whittaker

Pezizales J. Schröt.

Pyronemataceae Corda

1. *Humaria hemisphaerica* (F.H. Wigg.) Fuckel: On wood remnants, coniferous forest, 10.08.2001, locality 5, F. 2041.

2. *Otidea alutacea* (Pers.) Masee: On soil, 20.09.2001, locality 5, F. 2238.

3. *Spooneromyces helveticus* J. Breitenb. & F. Kränzl.: On soil in coniferous forest, 16.06.2001, locality 3, F. 1981.

Fruiting body 5-15 mm across, rounded to cup-shaped to somewhat flat, hymenium orange to orange-red, margin ciliated and projecting above the hymenium, outer surface concolorous (Figure 2a) and loosely set with brown hairs. Spores $19-21 \times 8.5-9 \mu\text{m}$, elliptical, hyaline (Figure 2b). Asci $260 \times 12 \mu\text{m}$, cylindrical, eight spored. Paraphyses cylindrical, septate, sometimes forked at apex.



Figure 2: *Spooneromyces helveticus*, a. ascocarps, b. ascospores

Basidiomycota R.T. Moore

Agaricales Underw.

Agaricaceae Chevall.

4. *Agaricus sylvicola* (Vittad.) Peck: Under conifer trees, 12.09.2001, locality 9, F. 2152.

5. *Agaricus langei* (F.H. Möller) F.H. Möller: Under conifer trees, 20.08.2001, locality 1, F. 2103; 24.07.2002, locality 3, F. 2769.

6. *Agaricus lanipes* (F.H. Möller & Jul. Schäff.) Hlaváček: Under conifer trees, 12.09.2001, locality 12, 2163.

7. *Bovista plumbea* Pers.: Meadow, coniferous forest clearing, 10.06.2002, locality 17, F. 3695.

8. *Chlorophyllum rachodes* (Vittad.) Vellinga: Under conifer trees, 12.09.2001, locality 4, F. 2161.

9. *Coprinus comatus* (O.F. Müll.) Pers.: Meadow, coniferous forest clearing, 12.09.2001, locality 7, F. 2207.

10. *Leucoagaricus nymphaeum* (Kalchbr.) Bon: Under conifer trees, 16.06.2001, locality 1, F. 1980.

11. *Lycoperdon excipuliforme* (Scop.) Pers.: Meadow, coniferous forest clearing, 20.08.2001, locality 15, F. 2125; 12.09.2001, locality 13, F. 2230.

12. *Lycoperdon lividum* Pers.: Under conifer trees, 10.08.2001, locality 18, F. 2056; 12.09.2001, locality 1, F. 2211; 29.07.2002, locality 9, F. 2825.

13. *Lycoperdon molle* Pers.: Under conifer trees, 16.06.2001, locality 3, F. 1990; 10.08.2001, locality 12, F. 2055.

14. *Lycoperdon perlatum* Pers.: Under conifer trees, 10.08.2001, locality 6, F. 2054; 20.08.2001, locality 9, F. 2143. 24.07.2002, locality 9, F. 2774.

15. *Lycoperdon pratense* Pers.: Meadow, coniferous forest clearing, 12.09.2001, locality 17, F. 2231.

16. *Lycoperdon pyriforme* Schaeff.: On conifer stump, 12.09.2001, locality 12, F. 2216.

17. *Macrolepiota procera* (Scop.) Singer: Under conifer trees, 10.08.2001, locality 6, F. 2057; 22.09.2001, locality 10, F. 2151.

Amanitaceae R. Heim ex Pouzar

18. *Amanita caesarea* (Scop.) Pers.: Under conifer trees, 12.09.2001, locality 1, F. 2155.

19. *Amanita gemmata* (Fr.) Bertill.: Under conifer trees, 12.09.2001, locality 9, F. 2178.

20. *Amanita muscaria* (L.) Lam.: Under conifer trees, 12.09.2001, locality 20, F. 2172; locality 12, F. 2216; 09.08.2002, locality 10, F. 3705.

21. *Amanita ovoidea* (Bull.) Link: Under conifer trees, 29.07.2002, locality 6, F. 2773.

22. *Amanita pantherina* (DC.) Krombh.: Under conifer trees, 30.07.2001, locality 4, F. 2021.

23. *Amanita rubescens* Pers.: Under conifer trees, 10.08.2001, locality 1, F. 2081; 25.07.2002, locality 3, F. 2781.

24. *Amanita vaginata* (Bull.) Lam.: Under conifer trees, 16.06.2001, locality 8, F. 1999; 20.08.2001, locality 9, F. 2106.

Clavariaceae Chevall.

25. *Clavaria acuta* Sowerby: Under shrubs, in conifer forest. 12.09.2001, locality 1, F. 2200.

Cortinariaceae R. Heim ex Pouzar

26. *Cortinarius odorifer* Britzelm.: Under conifer trees, 12.09.2001, locality 18, F. 2199.

Pileus 35-70 mm across, at first hemispherical, then convex to plane, surface smooth, not umbonate, lubricous when moist, margin even and acute. Flesh light greenish-yellow, taste mild. Lamellae green-yellow when young, later olive-yellow to reddish brown, narrowly attached. Stipe 35-60 $\times$ 8-15 mm, cylindrical, bulbous at the base, fragile, surface green-yellow and longitudinally fibrillose when young, later brownish. Spores 9-14 $\times$ 5.5-7.5 μm , amygdaliform to citriform, with warts, ocher-yellow. Basidia 30-40 $\times$ 7.5-11 μm , cylindrical to clavate, with 4 sterigmata.



Figure 3: *Cortinarius odorifer*, a. basidiocarp, b. basidiospores

27. *Hebeloma crustuliniforme* (Bull.) Quél.: Coniferous forest clearance. 12.09.2001, locality 19, F. 2219.

Entolomataceae Kotl. & Pouzar

28. *Clitopilus prunulus* (Scop.) P. Kumm.: Under conifer trees, 12.09.2001, locality 8, F. 2196.

Hydnangiaceae Gäum. & C.W. Dodge

29. *Laccaria bicolor* (Maire) P.D. Orton: Under conifer trees, 10.08.2001, locality 17, F. 2088; 12.09.2001, locality 13, F. 2203; 25.07.2002, locality 10, F. 2782.

Hygrophoraceae Lotsy

30. *Ampulloclitocybe clavipes* (Pers.) Redhead, Lutzoni, Moncalvo & Vilgalys: Under conifer trees, 20.08.2001, locality 19, F. 2105.

31. *Hygrophorus agathosmus* (Fr.) Fr.: Under conifer trees, 29.07.2002, locality 3, F. 2811.

32. *Hygrophorus poetarum* R. Heim: Under conifer trees, 29.07.2002, locality 7, F. 2815.

Inocybaceae Jülich

33. *Inocybe asterospora* Quél.: Under conifer trees, 16.06.2001, locality 16, F. 2002.

34. *Inocybe calida* Velen.: Coniferous forest clearance. 12.09.2001, locality 17, F. 2223; 20.08.2001, locality 19, F. 2232.

35. *Inocybe nitidiuscula* (Britzelm.) Lapl.: Under conifer trees, 16.06.2001, locality 20, F. 1985.

36. *Inocybe rimosa* (Bull.) P. Kumm.: Under conifer trees, 29.07.2002, locality 12, F. 2812.

Marasmiaceae Roze ex Kühner

37. *Marasmius bulliardii* Quél.: Under conifer trees, 16.06.2001, locality 3, 2007.

38. *Marasmius oreades* (Bolton) Fr.: Meadows, coniferous forest clearance. 16.06.2001, locality 17, F. 1995.

Mycenaceae Overeem

39. *Mycena xantholeuca* Kühner: Under conifer trees, 12.09.2001, locality 11, F. 2215.

Omphalotaceae Bresinsky

40. *Gymnopus nivalis* (Luthi & Plomb) Antonín & Noordel.: Under conifer trees, 10.08.2001, locality 1, F. 2039.

41. *Gymnopus ocior* (Pers.) Antonín & Noordel.: On conifer stump, 16.06.2001, locality 13, F. 1996.

42. *Omphalotus olearius* (DC.) Singer: Under *Caprinus* sp. trees, 12.09.2001, locality 5, F. 2180.

43. *Rhodocollybia maculata* (Alb. & Schwein.) Singer: Under conifer trees, 12.09.2001, locality 20, F. 2177.

Pleurotaceae Kühner

44. *Pleurotus dryinus* (Pers.) P. Kumm.: On conifer stump, 22.09.2001, locality 12, 1934.

Pluteaceae Kotl. & Pouzar

45. *Volvopluteus gloiocephalus* (DC.) Vizzini, Contu & Justo: Meadow, coniferous forest clearing, 16.06.2001, locality 19, F. 2006.

Physalacriaceae Corner

46. *Armillaria cepistipes* Velen.: On conifer stump, 29.07.2002, locality 2, 2810.

47. *Armillaria ostoyae* (Romagn.) Herink: On conifer stump, 10.08.2001, locality 16, F. 2079.

48. *Hymenopellis radicata* (Relhan) R.H. Petersen: On rotten wood remnants, coniferous forest. 16.06.2001, locality 2, F. 1984; 30.07.2001, locality 16, F. 2023; 10.08.2001, locality 13, F. 2043; 2078; 12.09.2001, locality 16, F. 2207.

Psathyrellaceae Vilgalys, Moncalvo & Redhead

49. *Coprinellus ephemerus* (Bull.) Redhead, Vilgalys & Moncalvo: Under conifer trees, 10.08.2001, locality 2, F. 2062.

Schizophyllaceae Quél.

50. *Schizophyllum commune* Fr.: On conifer stump, 16.06.2001, locality 3, F. 1994.

Strophariaceae Singer & A.H. Sm.

51. *Gymnopilus penetrans* (Fr.) Murrill: Under conifer trees, 10.08.2001, locality 1, F. 2026; 12.09.2001, locality 4, F. 2156; 29.07.2002, locality 7, F. 2213.

52. *Hypholoma fasciculare* (Huds.) P. Kumm.: On coniferous stump, coniferous forest. 10.08.2001, locality 1, F. 2047.

53. *Pholiota limonella* (Peck) Sacc.: On conifer stump, 29.07.2002, locality 9, F. 2815.

54. *Pholiota subochracea* (A.H. Sm.) A.H. Sm. & Hesler: On conifer stump, 16.06.2001, locality 7, F. 3972.

55. *Pholiota tuberculosa* (Schaeff.) P. Kumm.: On wood remnants in coniferous forest. 16.06.2001, locality 9, F. 1983.

56. *Stropharia aeruginosa* (Curtis) Quél.: Under conifer trees, 29.07.2002, locality 18, F. 2813.

Tricholomataceae R. Heim ex Pouzar

57. *Clitocybe gibba* (Pers.) P. Kumm.: Under conifer trees, 20.08.2001, locality 2, F. 2146; 24.07.2002, locality 18, F. 2771.

58. *Clitocybe inornata* (Sowerby) Gillet: Under conifer trees, 12.09.2001, locality 9, F. 2201.

59. *Clitocybe phyllophila* (Pers.) P. Kumm.: Under conifer trees, 29.07.2002, locality 12, F. 2807.

60. *Lepista nuda* (Bull.) Cooke: *Carpinus* sp. trees, 16.06.2001, locality 5, 1979.

61. *Pseudoclitocybe cyathiformis* (Bull.) Singer: Under conifer trees, 12.09.2001, locality 6, F. 2159.

62. *Tricholoma fulvum* (Fr.) Bigeard & H. Guill.: Under conifer trees, 20.08.2001, locality 16, F. 2109.

63. *Tricholoma orirubens* Quél.: Under conifer trees, 10.08.2001, locality 6, 2083.

64. *Tricholoma populinum* J.E. Lange: Under *Populus* sp. trees. 10.08.2001, locality 11, F. 2065.

65. *Tricholoma sulphurescens* Bres.: Under conifer trees, 29.07.2002, locality 8, F. 2805.
66. *Tricholoma ustaloides* Romagn.: Under conifer trees, 12.09.2002, locality 7, F. 4017.
67. *Tricholoma vaccinum* (Schaeff.) P. Kumm.: Under conifer trees, 29.07.2002, locality 7, F. 2816.
68. *Tricholoma virgatum* (Fr.) P. Kumm.: Under conifer trees, 10.08.2001, locality 10, F. 2028.
- Boletales** E.-J. Gilbert
- Boletaceae** Chevall.
69. *Boletus erythropus* Pers.: Under conifer trees, 16.06.2001, locality 18, F. 1991.
70. *Boletus impolitus* Fr.: Under conifer trees, 12.09.2001, locality 1, F. 2235.
71. *Boletus radicans* Pers.: Under *Carpinus* sp. trees, 12.09.2001, locality 5, F. 2157.
72. *Buchwaldoboletus lignicola* (Kallenb.) Pilát: Under conifer trees, 12.09.2001, locality 16, F. 2162.
73. *Chalciporus piperatus* (Bull.) Bataille: Under conifer trees, 12.09.2001, locality 9, F. 2169.
74. *Leccinum pseudoscabrum* (Kallenb.) Šutara: Under *Carpinus* sp. trees, 10.08.2001, locality 5, F. 2076.
75. *Strobilomyces strobilaceus* (Scop.) Berk.: Under *Carpinus* sp. trees, 10.08.2001, locality 5, F. 2049.
76. *Tylopilus felleus* (Bull.) P. Karst.: Under conifer trees, 12.09.2001, locality 14, F. 2154.
77. *Xerocomellus chrysenteron* (Bull.) Šutara: Under conifer trees, 20.08.2001, locality 10, F. 2094; 12.09.2001, locality 18, F. 2184; 29.07.2002, locality 1, F. 2806.
- Gomphidiaceae** Maire ex Jülich
78. *Chroogomphus rutilus* (Schaeff.) O.K. Mill.: Under conifer trees, 12.09.2001, locality 2, F. 2191.
- Hygrophoropsidaceae** Kühner
79. *Hygrophoropsis aurantiaca* (Wulfen) Maire: On conifer stump, 16.06.2001, locality 6, F. 1977.
- Paxillaceae** Lotsy
80. *Paxillus involutus* (Batsch) Fr.: Under conifer trees, 10.08.2001, locality 11, F. 2027; 10.08.2001, locality 4, F. 2063; 12.09.2001, locality 2, F. 2182.
- Sclerodermataceae** Corda
81. *Scleroderma areolatum* Ehrenb.: On moss in coniferous forest. 23.08.2003, locality 15, F. 4121.
82. *Scleroderma bovista* Fr.: On moss in coniferous forest. 10.08.2001, locality 16, F. 2061.
83. *Scleroderma citrinum* Pers.: On moss in coniferous forest clearance. 12.09.2001, locality 7, F. 2228.
- Cantharellales** Gäum.
- Cantharellaceae** J. Schröt.
84. *Cantharellus cibarius* Fr.: Under conifer trees, 20.08.2001, locality 14, F. 2098; locality 10, F. 2122; 24.07.2002, locality 16, F. 2776.
85. *Cantharellus friesii* Quél.: Under conifer trees, 20.08.2001, locality 5, F. 2118; 29.07.2002, locality 17, F. 2824.
86. *Pseudocraterellus undulatus* (Pers.) Rauschert: On moss in coniferous forest. 10.08.2001, locality 15, F. 2025; 10.08.2001, locality 9, F. 2033.

Clavulinaceae Donk

87. *Clavulina cinerea* (Bull.) J. Schröt.: Under conifer trees, 10.08.2001, locality 20, F. 2029; 20.08.2001, locality 9, F. 2119; 29.07.2002, locality 1, F. 2804.

88. *Clavulina coralloides* (L.) J. Schröt.: Under conifer trees, 10.08.2001, locality 18, F. 2030.

Hydnaceae Chevall.

89. *Hydnum repandum* L.: Under conifer trees, 30.07.2001, locality 1, F. 2015; 10.08.2001, locality 20, F. 2025.

90. *Hydnum rufescens* Pers.: Under conifer trees, 12.09.2001, locality 16, F. 2179; 20.08.2001, locality 18, F. 2253.

Dacrymycetales Henn.

Dacrymycetaceae J. Schröt.

91. *Calocera viscosa* (Pers.) Fr.: On conifer stump, 12.09.2001, locality 20, F. 2181.

Gastrales K. Hosaka & Castellano

Gaeastraceae Corda

92. *Gaeastrum fornicatum* (Huds.) Hook.: Under conifer trees, 20.08.2001, locality 10, F. 2147.

93. *Gaeastrum pectinatum* Pers.: Under conifer trees, 25.07.2002, locality 12, F. 2779.

Gomphales Jülich

Gomphaceae Donk

94. *Ramaria fennica* (P. Karst.) Ricken: Under conifer trees, 20.08.2001, locality 14, F. 2096.

95. *Ramaria formosa* (Pers.) Quél.: Under conifer trees, 20.09.2001, locality 8, F. 2247.

96. *Ramaria obtusissima* (Peck) Corner: Under conifer trees, 20.08.2001, locality 20, F. 2100.

Hymenochaetales Oberw.

Hymenochaetaceae Donk

97. *Phellinus igniarius* (L.) Quél.: On conifer stump, 12.09.2001, locality 18, F. 2225; locality 1, F. 2226.

98. *Fuscoporia ferruginosa* (Schrad.) Murrill: On bark of *Carpinus* sp., 20.08.2001, locality 5, F. 2141.

Polyporales Gäum.

Fomitopsidaceae Jülich

99. *Climacocystis borealis* (Fr.) Kotl. & Pouzar: On conifer stump, 10.08.2001, locality 18, F. 2051.

100. *Fomitopsis pinicola* (Sw.) P. Karst.: On conifer stump, 25.07.2002, locality 6, F. 2777; 29.07.2002, locality 1, F. 2803.

Ganodermataceae Donk

101. *Ganoderma lucidum* (Curtis) P. Karst.: On conifer stump, 24.07.2002, locality 13, F. 2778.

102. *Ganoderma resinaceum* Boud.: On conifer stump, 25.07.2002, locality 20, F. 2780.

Meripilaceae Jülich

103. *Grifola frondosa* (Dicks.) Gray: On conifer stump, 30.07.2001, locality 8, F. 2020.

Polyporaceae Fr. ex Corda

104. *Trametes trogii* Berk.: On conifer stump, 12.09.2001, locality 5, F. 2218.

Russulales Kreisel ex P.M. Kirk, P.F. Cannon & J.C. David

Albatrellaceae Nuss

105. *Albatrellus cristatus* (Schaeff.) Kotl. & Pouzar: Under conifer trees, 12.09.2001, locality 15, F. 2227.

Auriscalpiaceae Maas Geest.

106. *Lentinellus cochleatus* (Pers.) P. Karst.: On dead conifer wood, 10.08.2001, locality 9, F. 2034.

Russulaceae Lotsy

107. *Lactarius aurantiacus* (Pers.) Gray: Under conifer trees, 12.09.2001, locality 9, F. 2189.

108. *Lactarius pergamenus* (Sw.) Fr.: Under conifer trees, 20.08.2001, locality 4, F. 2120.

109. *Lactarius piperatus* (L.) Pers.: Under conifer trees, 30.07.2001, locality 11, F. 2017.

110. *Lactarius quietus* (Fr.) Fr.: Under conifer trees, 20.08.2001, locality 1, F. 2100.

111. *Lactarius volemus* (Fr.) Fr.: Under conifer trees, 20.08.2001, locality 7, F. 2101.

112. *Lactifluus bertillonii* (Neuhoff ex Z. Schaeff.) Verbeke: Under conifer trees, 20.08.2001, locality 12, F. 2111.

113. *Russula albonigra* (Krombh.) Fr.: Under *Carpinus* sp. trees, 24.07.2002, locality 5, F. 2768.

114. *Russula aquosa* Leclair: Under conifer trees, 10.08.2001, locality 20, F. 2072.

115. *Russula cyanoxantha* (Schaeff.) Fr.: Under conifer trees, 16.06.2001, locality 12, F. 1978.

116. *Russula delica* Fr.: Under conifer trees, 20.08.2001, locality 1, F. 2131; 12.09.2001, Under *Carpinus* sp. trees, 24.07.2002, locality 5, F. 2158; Under conifer trees, 12.09.2001, locality 7, F. 2160; 12.09.2001, locality 4, F. 2176; 12.09.2001, locality 1, F. 2195.

117. *Russula foetens* Pers.: Under conifer trees, 10.08.2001, locality 10, F. 2044; 2077.

118. *Russula fragilis* Fr.: Under conifer trees, 12.09.2001, locality 5, F. 2165; 12.09.2001, locality 1, F. 2174.

119. *Russula grata* Britzelm.: Under conifer trees, 12.09.2001, locality 2, F. 2181.

120. *Russula melzeri* Zvára: Under conifer trees, 20.08.2001, locality 9, F. 2124.

Plieus 15-30 mm across, at first hemispherical, later convex to plane, surface smooth, somewhat indented at the center, carmine red, sometimes darker in the center and paler toward the margin. Flesh white, fragile, taste mild. Lamellae whitish when young, later pale ocher. Stipe 20-30 × 5-10 mm, cylindrical, solid, surface even to longitudinally venose. Spores 6.5-8.5 × 5.5-7 µm, subglobose, with solitary warts. Basidia 30-40 × 10-13 µm, clavate, with four sterigmata.



Figure 3: *Russula melzeri*, a. basidiocarps, b. basidiospores

121. *Russula nigricans* Fr.: Under conifer trees, 22.09.2001, locality 7, F. 1944; 12.09.2001, locality 8, F. 2153.

122. *Russula parazurea* Jul. Schäff.: Under conifer trees, 20.08.2001, locality 1, F. 2095.

123. *Russula subfoetens* W.G. Sm.: Under conifer trees, 20.08.2001, locality 16, F. 2107; 20.08.2001, locality 14, F. 2117.

124. *Russula taeniospora* Einhell.: Under conifer trees, 20.08.2001, locality 9, F. 2097.

125. *Russula vinosa* Lindblad: Under conifer trees, 12.09.2001, locality 10, F. 2166.

Thelephorales Corner ex Oberw.

Bankeraceae Donk

126. *Sarcodon imbricatus* (L.) P. Karst.: Under conifer trees, 12.09.2001, locality 4, F. 2183.

Sarcodon scabrosus (Fr.) P. Karst.: Under conifer trees, 30.07.2001, locality 4, F. 2016; 10.08.2001, locality 20, F. 2057, 2085.

4. Conclusions

As a result of this study, 127 macrofungi taxa within 11 orders, 40 families and 69 genera were identified. Three of them belong to the division Ascomycota and 124 belong to Basidiomycota. Among them, 54 (%42.52) are edible, 59 (%46.46) are inedible. *Cantharellus cibarius*, *Russula delica*, *Macrolepiota procera*, *Agaricus essettei*, *A. lanipes* and *A. langei* are collected and consumed locally. Though 14 (%11.02) poisonous taxa exist in the region, no incidence were reported officially. The most common families in research area are *Russulaceae*, *Agaricaceae*, *Tricholomataceae*, *Boletaceae*, *Amanitaceae*, *Strophariaceae*. These families are represented with 19, 14, 12, 9, 7 and 6 taxa in the region respectively.

Three of the 127 taxa, *Spooneromyces helveticus* (Turuncu disk mantarı), *Cortinarius odorifer* (Parfümlü mantar) and *Russula melzeri* (Kırmızı pelüş mantarı) are new records for the macramycota of Turkey. Among them, *Cortinarius odorifer* and *Russula melzei* are new at species level while *Spooneromyces helveticus* is new at genus level (Solak et al., 2007; Sesli and Denchev, 2008).

The taxa determined in the region bare similarities with the findings of the studies conducted its close environs. These studies and the similarity percentages are given in Table 2. The reason of this similarity may be the common climate and vegetation.

Table 2. Similarity percentages of neighboring studies with Ayder high plateau.

Tablo 2. Yakın çevrede gerçekleştirilen çalışmaların Ayder yaylası ile benzerlik oranları

	Number of identical taxa	Total taxa	Similarity percentage (%)
Sesli (1993)	20	64	31,25
Demirel et al. (2003)	30	114	26,00
Demirel et al. (2010)	34	124	27,00
Demirel (1999)	15	56	26,80

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