

Contributions to the Macrofungi Flora of Bitlis Province

Abdullah KAYA

Gaziantep University, Adiyaman Education Faculty, 02030 Adiyaman - TURKEY

Received: 30.10.2000

Accepted: 20.04.2001

Abstract: This study was carried out on macrofungi samples collected in Bitlis province between 1997 and 2000. As a result of field and laboratory studies, 60 species belonging to 17 families were identified. Four of them, *Coprinus xanthotrix* Romagn., *Psathyrella atomata* (Quél) Fr., *Rhodocybe fallax* (Quél) Sing. and *Polyporus meridionalis* (David) Jahn., are new records for Turkey.

Key Words: Macrofungi, taxonomy, new records, mycoflora, Turkey.

Bitlis Yöresi Makrofungus Florasına Katkılar

Özet: Bu çalışma 1997-2000 yılları arasında Bitlis il sınırları içinde kalan yörelerden toplanan makrofungus örnekleri üzerinde gerçekleştirilmiştir. Arazi ve laboratuvar çalışmaları sonucunda, 17 familyaya ait 60 tür teşhis edilmiştir. Bunlardan 4 tanesi, *Coprinus xanthotrix* Romagn., *Psathyrella atomata* (Quél) Fr., *Rhodocybe fallax* (Quél) Sing. ve *Polyporus meridionalis* (David) Jahn., Türkiye için yeni kayıttır.

Anahtar Sözcükler: Makrofunguslar, taksonomi, yeni kayıtlar, mikoflora, Türkiye.

Introduction

In Turkey, the number of mycofloristic studies has increased, especially in the last two decades. However, the macrofungi flora of many provinces have not been identified yet. According to a review of the current literature, two studies on edible (Kaya, 2000a) and poisonous (Kaya, 2000b) mushrooms growing in the area were carried out and some new records (Kaya, 2000c) were given.

Bitlis is an East Anatolian vilayet with a surface area of 8551 km² (Figure 1), and located mainly in B9 according to Davis' grid square system.

The climate of the area is Mediterranean according to Emberger's formula (Akman, 1990). The rainfall in the region is 605-1041 mm and the annual average temperature is around 9°C. The common soil types are limeless brown soils, alluvial soils and regosols.

Phytogeographically the area is in the Irano-Turanian flora sector. The main vegetation types are forests and

anthropogenic steppes. The forest area is mainly characterized by *Quercus* L., in particular *Q. infectoria* subsp. *boissieri* Reuter in higher parts (over 1800 m) of the area. In lower parts and at streamsides *Populus* L., *Salix* L. and *Ulmus* L. spp. form the main clumps of trees.

The aim of this study was to determine the macrofungi flora of the province and to contribute to the macrofungal flora of Turkey with the addition of new records.

Materials and Methods

The specimens were collected during field trips in Bitlis province between 1997 and 2000. The morphological and ecological characteristics of the macrofungi were recorded and they were photographed in their natural habitats. The specimens were then taken to the laboratory and spore prints were obtained. After necessary microscopic investigations, they were identified with the help of the work of Moser (1993), Phillips

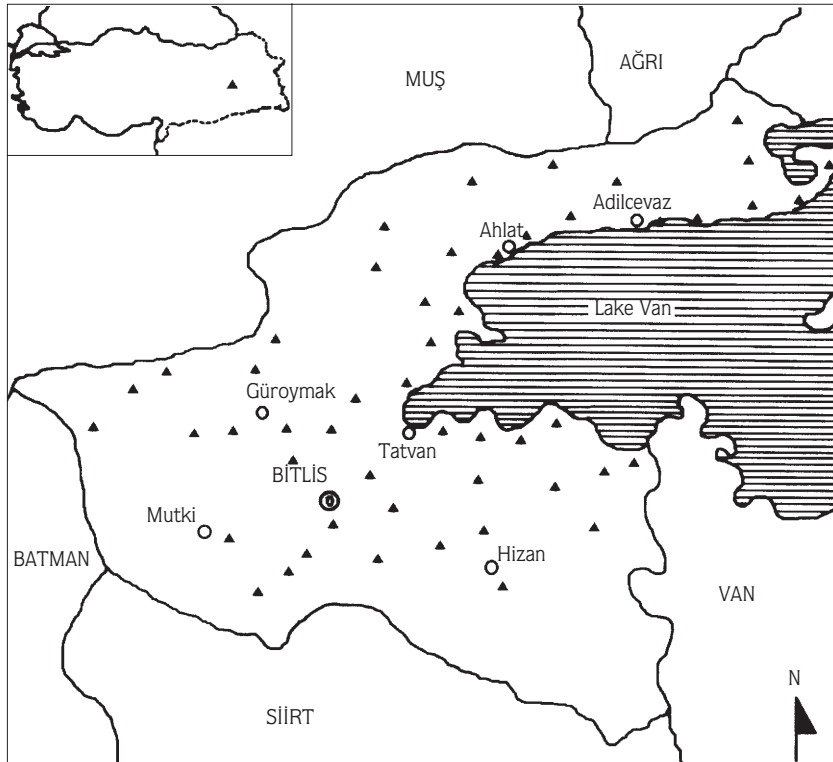


Figure 1. Macrofungi collection sites.

(1981), Buczacki (1992), Breitenbach and Kränzlin (1986), Jordan (1995), Moser and Jülich (1996) and Bresinsky and Besl (1990). With a general review of previous studies, which were listed by Baytop (1994), Baytop and Mat (1998) and Mat and Gücin (2000), new records were determined. The specimens are kept in Gaziantep University, Adiyaman Education Faculty.

Results

The species identified from the research area are listed below. The numbers indicate the personal herbarium numbers. New taxa for the Turkish mycoflora are indicated with an asterisk.

Ascomycetes

Helvellaceae

1. *Helvella lacunosa* Afz.: Fr.
Adilcevaz, streamside, on sandy soil, 16.5.2000, K. 991.
2. *Helvella leucopus* Pers.
Tatvan, Kuzgunkıran pass, under *Populus* sp., 16.6.1999, K. 883.

3. *Paxina acetabulum* (L. ex St.-Amans) Kuntze
Tatvan, Koruklu village, in poplar grove, 20.6.1998, K. 502.

Pezizaceae

4. *Peziza depressa* Pers. ex Fr.
Tatvan, Koyluca village, on damp soil around *Quercus* sp., 05.10.1998, K. 599.

Basidiomycetes

Agaricaceae

5. *Agaricus campestris* L.: Fr.
Adilcevaz, city cemetery, in grass, 12.6.1999, K. 885; Hizan, Boztepe village, in grass, 13.5.2000, K. 1000.
6. *Agaricus silvicola* (Vitt.) Peck
Adilcevaz, Kömürlü village, meadow, 23.5.98, K. 394.

Bolbitaceae

7. *Agrocybe paludosa* (Lge.) Kühn. & Romagn.
Bitlis, Güroymak, meadow, 27.4.1998, K. 175.

8. *Agrocybe pediades* (Fr.) Sing.
Adilcevaz, Çanakyayla village, in grass, 23.5.1998, K. 379; Tatvan, Anadere village, grassland, 30.5.1998, K. 426.
9. *Agrocybe vervacti* (Fr.) Sing.
Tatvan, Yelkenli village, in grass under *Quercus* sp. 30.5.1998, K. 431.
10. *Conocybe lactea* (Lge.) Métr.
Güroymak, meadow, 19.4.1998, K. 136; Adilcevaz, Yolçatı village, meadow, 06.5.2000, K. 993.
- Boletaceae**
11. *Xerocomus chrysenteron* (Bull.) Quéf.
Tatvan, Yelkenli village, under *Quercus* sp., 14.5.98, K. 1004.
- Coprinaceae**
12. *Coprinus atramentarius* (Bull.: Fr.) Fr.
Güroymak, Çayarası village, waste ground, 15.10.1999, K. 898.
13. *Coprinus comatus* (Muell.: Fr.) Pers.
Güroymak, Üzümlü village, steppe, 15.10.1999, K. 899.
14. *Coprinus disseminatus* (Pers.: Fr.) S.F.Gray
Adilcevaz, Erikbağı village, in garden on buried wood, 12.6.1999, K. 886; Hizan, around *Salix* stump, 13.5.2000, K. 1001.
15. *Coprinus domesticus* (Bolt.: Fr.) S.F.Gray
Tatvan, Koruklu village, under *Populus* sp., 20.6.1998, K. 504.
16. *Coprinus stanglianus* Bender & Gröger.
Adilcevaz, around the remains of *Populus* stump, 23.5.1998, K. 389.
17. * *Coprinus xanthothrix* Romagn.
Adilcevaz, on buried wood among grass, 18.10.1998, K. 621.
18. *Panaeolus fimicola* (Fr.) Gill
Adilcevaz, Karşıyaka village, meadow, 23.5.1998, K. 402.
19. * *Psathyrella atomata* (Fr.) Quéf.
Deliktaş village, in grass, 31.5.1998, K. 455.
20. *Psathyrella candolleana* (Fr.: Fr.) Mre.
16.5.1998, K. 291; Güroymak, around *Salix* sp., 19.4.1998, K. 147.; Adilcevaz, around *Populus* stump, 06.5.2000, K. 992.
21. *Psathyrella spadicea* (Schaeff.) Sing.
Ahlhat, Saka village, Poplar grove, 21.5.1998, K. 372.
22. *Psathyrella spadiceogrisea* (Schaeff.: Fr.) Mre.
Tatvan, Kuzgunkıran pass, under *Salix* sp., 15.5.1998, K. 260.
- Cortinariaceae**
23. *Hebeloma crustuliforme* (Bull.) Quéf.
Adilcevaz, under *Populus* sp., 24.9.1999, K. 915.
24. *Inocybe fibrosa* (Sow.) Gill
Adilcevaz, under *Populus* sp. 24.9.1999, K. 921.
- Entolomataceae**
25. *Entoloma sinuatum* (Bull. ex. Fr.) Kumm.
Tatvan, Koyluca village, under mixed wood, 14.5.2000, K. 1006.
26. *Entoloma undatum* (Fr.) Mos.
Tatvan, Yelkenli village, under *Quercus* sp., 30.5.1998, K. 433.
27. * *Rhodocybe fallax* (Quéf.) Sing.
Tatvan, Çayırönü village, under *Quercus* sp., 31.5.1998, K. 443.
- Ganodermataceae**
28. *Ganoderma applanatum* (Pers. ex Wallr.) Pat.
Bitlis, Narlıdere village, on dead *Populus* stump, 25.10.1998, K. 691.
- Hymenochaetaceae**
29. *Inonotus dryadeus* (Pers.:Fr.) Murr.
Bitlis, Sarıkonak village, on *Quercus* sp., 25.10.1998, K. 692.
30. *Inonotus hispidus* (Fr.) Karst.
Adilcevaz, on *Juglans* sp., 17.10.1998, K. 630.
31. *Phellinus igniarius* (L.: Fr.) Quéf.
Adilcevaz, on *Salix* stump, 15.10.1997, K. 114.
32. *Phellinus nigricans* (Fr.) Karst.
Narlıdere village, on *Quercus* sp., 18.4.1998, K. 131.

33. *Phellinus tuberculatus* (Baumg.) Niemala

Tatvan, Koruklu village, on *Prunus* sp., 30.4.1998, K. 188; Kaynarca village, 30.5.1998, K. 423; Adilcevaz, 17.10.1998, K. 632.

Lycoperdaceae

34. *Bovista plumbea* Pers.: Pers.

Hizan, Boztepe village, grassland, 13.5.2000, K. 999.

Pleurotaceae

35. *Lentinus cyathyformis* (Schaeff.) Bres.

Güroymak, on *Populus* stump, 27.4.1998, K. 176; Ahlat, Ovakişla village, on *Salix* stump, 24.5.1998, K. 413.

36. *Lentinus tigrinus* (Bull.: Fr.) Fr.

Adilcevaz, around *Salix* stump, 06.5.2000, K. 994.

Pluteaceae

37. *Pluteus salicinus* (Pers.: Fr.) Kumm.

Tatvan, Obuz village, under *Quercus* sp., 20.9.1999, K. 909.

38. *Volvariella speciosa* (Fr.: Fr.) Sing.

Ahlat, Selçuklu cemetery, 12.6.1999, K. 887; Hizan, Gökçimen village, meadow, 13.5.2000, K. 1002.

Polyporaceae

39. *Bjerkandera adusta* (Willd.: Fr.) Karst.

Tatvan, on dead stump of *Populus* sp., 05.10.1998, K. 597.

40. *Cerrena unicolor* (Fr.) Murr.

Deliktaş village, on *Quercus* trunk, 18.4.1998, K. 134.

41. *Fomes fomentarius* (L.: Fr.) Kickx

Hizan, Geçitbaşı village, on *Salix* sp, 24.10.1998, K. 687; Tatvan, Koyluca village, on *Salix* sp., 14.5.2000, K. 1007.

42. *Funalia trogii* (Berk.) Bond. & Sing.

Adilcevaz, on *Salix* stump, 24.5.1998, K. 242; Tatvan, on remains of *Populus* sp., 05.10.1998, K. 601.

43. *Meripilus giganteus* (Pers.: Fr.) Karst.

Tatvan, Çayırönü village, under *Quercus* sp. 23.10.1998, K. 676.

44. * *Polyporus meridionalis* (David) Jahn.

Deliktaş village, on dead twigs, 31.5.1998, K. 454.

45. *Polyporus squamosus* Huds.: Fr.

Ahlat, Uludere village, 12.6.1999, K. 888.

46. *Trametes versicolor* (Fr.) Pil.

Narlıdere village, on *Quercus* stump, 17.4.1999, K. 874.

Sclerodermataceae

47. *Scleroderma verrucosum* (Bull.) Pers.

Tatvan, Yelkenli village, on sandy soil under *Quercus* sp., 11.6.1997, K. 045.

Schizophyllaceae

48. *Schizophyllum commune* Fr.

Narlıdere village, on dead *Prunus* stump, 18.4.1998, K. 122.

Strophariaceae

49. *Pholiota aurivella* (Batsch: Fr.) Kumm.

Adilcevaz, 16.10.1999, K. 900.

50. *Pholiota lucifera* (Lasch) Quéf.

Tatvan, Koyluca village, under *Quercus* sp. 05.10.1998, K. 589; Hizan, Bölük yazı village, under *Salix* sp., 24.10.1998, K. 685.

51. *Stropharia coronilla* (Bull.: Fr.) Quéf.

Adilcevaz, Erikbağı village, meadow, 10.5.1999, K. 880.

52. *Stropharia semiglobata* (Batsch: Fr.) Quéf.

Güroymak, Tahtalı village, meadow, 17.5.1998, K. 294.

53. *Tubaria furfuracea* (Pers.: Fr.) Gill

Narlıdere village, under mixed wood, 16.5.1998, K. 275.

Tricholomataceae

54. *Collybia dryophila* (Bull.: Fr.) Kumm.

Tatvan, Yelkenli village, among leaf litter under *Quercus* sp, 30.5.1998, K. 428.

55. *Collybia nivalis* (Luthy & Plomb) Mos.

Narlıdere village, on buried wood remains, 17.4.1999, K. 903.

56. *Lepista personata* (Fr.: Fr.) Cke.
Tatvan, Bolalan village, under *Populus* sp.,
14.5.2000, K. 1008.
57. *Marasmius rotula* (Scop.: Fr.) Fr.
Adilcevaz, Erikbağı village, on dead twigs,
06.5.2000, K. 996.
58. *Marasmius scorodoni* (Fr.: Fr.) Fr.
Tatvan, Yelkenli village, under *Quercus* sp.,
15.5.1998, K. 258.
59. *Melanoleuca excissa* (Fr.) Sing.
Tatvan, Koyluca village, meadow, 14.5.2000, K.
1011.
60. *Tricholoma populinum* Lge.
Tatvan, Obuz village, under *Populus* sp., 20.9.1999,
K. 910.

Discussion and Conclusions

In previous studies carried out on edible (Kaya, 2000a) and poisonous (Kaya, 2000b) mushrooms, 51 macrofungi species were recorded from the research area. With the addition of the findings of this study, the number increased to 101. Among these 101 species, 6

(6%) belong to *Ascomycetes* and 95 (94%) to *Basidiomycetes*.

Only three species, *Pleurotus eryngii* (DC. ex fr.) Quél., *P. ostreatus* (Jacq. ex Fr.) Kummer and *Agaricus campestris* (L.) Fr., are consumed in all regions of the province, but *Pleurotus eryngii*, which is known as “Çaşır mantarı”, “Çarçur mantarı” or “Heliz mantarı” almost equivalent with the term “mushroom”, is the only economically important one, especially for some mountain villagers. During spring, this mushroom is sold along the highways by the villagers or in city centres by pedlars. In addition, *Agaricus arvensis* (Schaeff.) Kumm., *Bovista plumbea* Pers., *Volvariella speciosa* (L. ex Fr.) Sing., *Polyporus rhizophilus* Pat. and *P. squamosus* Huds. ex Fr. are also collected and eaten locally in some regions.

The percentage of poisonous species growing in the study area is 15.8% (16 species). None of them are known by the people living there and species which are not familiar to the local people are considered to be poisonous. This is also the case in some other Eastern Anatolian provinces (Demirel, 1996).

With this study 4 species, *Coprinus xanthotrix* Romagn., *Psathyrella atomata* (Quél) Fr., *Rhodocybe fallax* (Quél) Sing. and *Polyporus meridionalis* (David) Jahn., were added as new records to the Turkish macrofungal flora.

References

- Akman Y (1990). *İklim ve Biyoiklim*. Ankara: Palme Yayınları. Müh. Serisi No:103.
- Baytop A (1994). Türkiye'nin Makrofungusları ile İlgili Bir Yayın Listesi. *Turk J Bot* 18: 175-185.
- Baytop A, Mat A (1998). Türkiye'nin Makrofungusları ile ilgili bir yayın listesi (Ek Liste 1). In: Mat A (ed.) *Türkiye'de Mantar Zehirlenmeleri, Zehirli Mantarlar*. pp. 180-183 Ankara: Tübitak Başvuru Kitapları.
- Breitenbach J, Kränzlin F (1986). *Fungi of Switzerland* vol 2. Lucerne: Verlag Mykologia.
- Bresinsky A, Besl H (1990). *A Colour Atlas of Poisonous Fungi*. Stuttgart: Wolfe Publishing Ltd.
- Buczacki S (1992). *Mushrooms and Toadstools of Britain and Europe*. London: W. Collins Sons & Co Ltd.
- Demirel K (1996). Van Yöresi Makrofungusları. *Turk J Bot* 20: 165-169.
- Jordan M (1995). *The Encyclopedia of Fungi of Britain and Europe*. UK: David & Charles Book Co.
- Kaya A (2000a). Poisonous Macrofungi Determined in Muş and Bitlis Provinces (Turkey). 2nd *International Balkan Botanical Congress May 14-18, 2000 Abstracts* 43. İstanbul – Turkey.
- Kaya A (2000b). Muş ve Bitlis Yörelerinde Tespit Edilen Yenen Makrofunguslar. *Türkiye VI. Yemeklik Mantar Kongresi 20-22 Eylül 2000 Bildirileri* pp. 112-115. Bergama. İzmir.
- Kaya A (2000c). Two New Genus Records for the Mycoflora of Turkey. *Turk J Bot* 24: 285-288.
- Mat A, Gücin F (2000). Türkiye'nin Makrofungusları ile ilgili bir yayın listesi (Ek Liste 2). In: Mat A (ed.) *Türkiye'de Mantar Zehirlenmeleri Zehirli Mantarlar*. pp 212-217. Ankara: Tübitak Başvuru Kitapları.
- Moser M (1983). *Keys to Agarics and Boleti*. Stuttgart: Gustav Fischer.
- Moser M, Jülich W (1996). *Colour Atlas of Basidiomycetes*. Stuttgart: Gustav Fischer.
- Phillips R (1981). *Mushrooms and other fungi of Great Britain & Europe*. London: Pan Books.