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Contributions to the Macrofungi Flora of Antalya Province

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Abstract: We recorded 81 macrofungal species collected from the Antalya region. They are distributed within 29 families, 7 belonging to the Ascomycetes and 74 to the Basidiomycetes.

Key Words: Macrofungi, flora, taxonomy

Antalya Yöresi Bazı Makrofungus Florası

Özet : Bu çalışmada Antalya il sınırları içinde yetişen 7'si Ascomycetes, 74'ü Basidiomycetes sınıfına ait 29 familyaya bağlı 81 taxon saptanmıştır.

Anahtar Sözcükler: Makrofungus, flora, taksonomi.

Introduction

The macrofungi of Turkey have been studied by many researchers (1). The first investigations on the macrofungi of Antalya were done by Işıloğlu (2). In our work, we aim to contribute to the macrofungi flora of the region. The specimens were collected in 1995 and 1997, during spring and autumn, from different localities in Antalya (Figure 1).

We identified the specimens using the literature on macrofungi by Moser (3), Bon (4), Breitenbach and Kranzlin (5), Ellis (6), Phillips (7) and Işıloğlu (8). The dried material is preserved in the herbarium at the University of Muğla, Department of Biology.

Results

Ascomycetes

Morchellaceae

1. *Gyromitra esculenta* (Pers.) Fr.

Kaş, Palamut village, in *Pinus pinea* forest (20.4.1996, Gezer 484).

2. *Morchella conica* (Pers.) Boud.

Kaş, Yeşilköy in pine forest (20.3.1996, Gezer 452); Alanya, Yayla road, Tepe area, in mixed forest (18.4.1996, Gezer 462); Elmalı, Çiğlıkara protected area, Kabakçılar and Dokuzgöller, (22.5.1996, Gezer

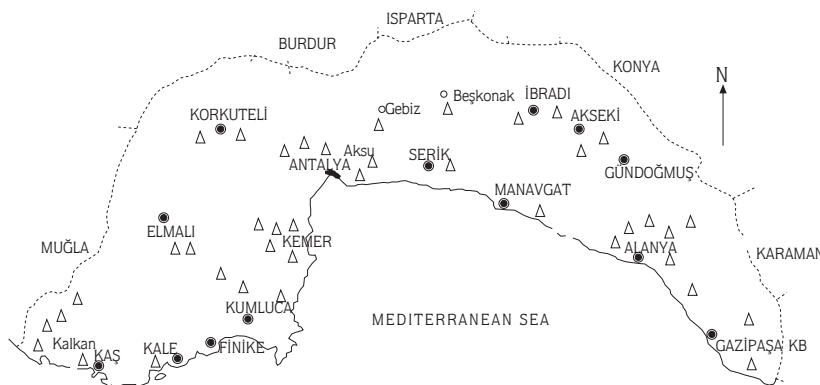


Figure 1. Study area

562); Kaş, Palamut village (20.4.1996), Gezer 476). Akseki (22.5.1996, Gezer 563); Serik, Akbaş village (20.4.1996, Gezer 486).

3. Morchella esculenta (L.) Pers.

Kaş, Palamut village, in pine forest (20.4.1996, Gezer 477); Elmalı, Çiğlıkara protected area, Dokuzgöller (22.5.1996, Gezer 463); Serik, Gebiz village (20.4.1996, Gezer 485).

Helvellaceae

4. Helvella leucomelaena (Pers.) Nannf.

Kaş, Kalkan, İslamlar village, in mixed forest (26.4.1996 Gezer, 490); Kalkan Yeşilköy, in pine forest (28.3.1997, Gezer 691).

Pezizaceae

5. Peziza vesiculosa Bull.

Finike, lemon orchard (22.3.1997, Gezer 682); Kaş, Yeşilköy, in pine forest (28.3.1997 Gezer 690).

6. Sarcosphaera crassa (Santi : Steudel) Pouz.

Kaş, Yeşilköy, in pine forest (20.3.1996, Gezer.453).

Sarcoscyphaceae

7. Sarcoscypha coccinea (Fr.) Lamb.

Kaş, Yeşilköy around the cemetery, on twigs (20.4.1996, Gezer 475).

Basidiomycetes

Bankeraceae

8. Phellodon niger (Fr.: Fr.) Karst.

Alanya, Toros mountain, Çirioğlu peak, pine forest (3.12.1995, Gezer 396).

Ganodermataceae

9. Ganoderma adspersum (Schulz) Donk.

Kemer, Kuzdere, Çınaraltı restaurant road junction, on Pistacia trees in mixed forest (16.11.1995, Gezer 326). Kaş, Palamut village, in pine forest (30.12.1996, Gezer 552).

Stereaceae

10. Stereum hirsutum (Wild.: Fr.) S.F. Gray

Kemer, Çınaraltı restaurant road, on pine and Platanus trees (16.11.1995, Gezer 332), Kemer, Ovacık village pasture, pine forest (16.11.1995, Gezer 336); Korkuteli road, Düzlerçamı (18.11.1995, Gezer 347); Kalkan, upper part of Patena (26.4.1996, Gezer 489).

Polyporaceae

11. Fomes fomentarius Fr.

Kalkan, İslamlar village, on poplar trees (26.4.1996, Gezer 491).

12. Funalia trogii (Berk.) Bond. & Singer

Elmalı, Çiğlıkara protected area, Kabakçılar and Dokuzgöller on cut cedar (17.11.1995, Gezer 352); Kalkan, Patara in pine forest (2.2.1997, Gezer 627).

13. Lenzites betulina (L.:Fr) Fr.

Kemer, Ovacık village pasture (16.11.1995, Gezer 340); Korkuteli road, Düzlerçamı forest station rest house, back side on beech trees (18.11.1995, Gezer 360).

Schizophyllaceae

14. Schizophyllum commune Fr.

Kemer, Gedelma village, in pine forest (16.11.1995, Gezer 320); Kaş, Palamut village, in pine forest (30.12.1996, Gezer 556); Akseki in mixed forest (2.3.1997, Gezer 642).

Hymenochaetaceae

15. Phellinus igniarius (L.:Fr.) Quél.

Alanya, on almond trees (14.11.1995, Gezer 312); Kaş, Kalkan, İslamlar village (24.4.1996, Gezer 487).

16. Phellinus pini (Brot.: Fr.) Ames

Akseki, in mixed forest (16.1.1997, Gezer 612); Serik, Gebiz village, in pine forest (6.1.1997, Gezer 608).

17. Phellinus ribis (Schum.: Fr.) P. Karst

Kemer, Kuzdere, Çınaraltı restaurant road junction (16.11.1995, Gezer 328).

18. Phellinus torulosus (Pers.) Bourd. & Galz.

Kemer, Kuzdere, (16.11.1995, Gezer 327); Kaş, İslamlar village (24.4.1996, Gezer 488).

Hydnaceae

19. Hydnum repandum L.: Fr.

Alanya, Gedeve Yaylası, in mixed forest (15.11.1995, Gezer 316).

20. Hydnum rufescens Fr.

Alanya, Toros mountain, Çirioğlu peak, in pine forest (8.12.1995, Gezer 416).

Sclerodermataceae**21. Pisolithus arhizus** (Pers.) Rauschert

Alanya, Gedeve Yaylası (15.11.1995, Gezer 315); Alanya, Toros mountain, in pine forest (8.12.1995, Gezer 405); Kaş, Kalkan, Palamut village roadside (15.11.1996, Gezer 515).

Geastraceae**22. Geastrum pectinatum** Pers.

Antalya, Yenice village (Termesos) in pine forest (18.11.1995, Gezer 372); 26 km. on Antalya – Korkuteli roadside in mixed forest (18.11.1995, Gezer 373); (29.12.1996, Gezer 542).

Lycoperdaceae**23. Bovista plumbea** Pers.

Kemer, Yayla Ovacık village, in mixed forest (16.11.1995, Gezer 341); Kalkan Palamut village, in pine forest (15.11.1996, Gezer 516).

24. Calvatia utriformis (Bull.: Pers.) Jaap

Antalya, Düzlerçamı area, under *Pinus pinea* forest (27.3.1996, Gezer, 456); Kaş, Patara (Gelemiş village) under *Pinus pinea* forest (14.4.1997, Gezer 682).

25. Lycoperdon molle Pers.

Kemer, Yayla Ovacık village, in pine forest (16.11.1995, Gezer 342); Kumluca, in pine forest (30.12.1996, Gezer 550); Finike–Kaş road, on soil in hard wood (30.12.1996, Gezer 551).

26. Lycoperdon perlatum Pers.

Alanya, Bektaş village, in pine forest 20.11.1995, Gezer 386); Roadside between Kemer, Çınaraltı, in mixed conifer forest (16.11. 1995, Gezer 337); Alanya, Toros mountain, in pine forest (8.12.1995, Gezer 406), Akseki, in mixed forest (16.1.1997, Gezer 627) .

Rhizopogonaceae**27. Rhizopogon luteolus** Fr.

Kemer – Çınaraltı restaurant, in mixed conifer forest (16.11.1995, Gezer 333), Kemer, Yayla Ovacık village, in mixed conifer forest (16.11.1995, Gezer 343); Kumluca, in mixed conifer forest (7.1.1996, Gezer 608); Kaş, Yeşilköy, in pine forest (15.11.1996, Gezer 522); Serik, Akbaşı, in pine forest (17.2.1997, Gezer 637).

28. Rhizopogon roseolus (Corda) T. M. Fries

Kemer – Çınaraltı restaurant in mixed conifer forest (16.11.1995, Gezer 334); Kaş, Palamut village, in pine forest (30.12.1996, Gezer 578).

Boletaceae**29. Boletus chrysenteron** Bull.: St. Amans

Alanya, Bektaş village, with broad – leaved trees (20.11.1995, Gezer 392).

30. Suillus bellinii (Inz.) Watling

Alanya, Toros mountain, in pine forest (8.12.1995, Gezer 404); Kumluca, in pine forest (7.1.1996, Gezer 446); Roadside between Korkuteli-Antalya, in pine forest (29.12.1996, Gezer 546).

31. Suillus collinitus (Fr.) Kuntze

Antalya, Düzlerçamı area, under *Pinus pinea* forest (18.11.1995, Gezer 362); (29.12.1996, Gezer 548); Alanya, Toros mountain, in pine forest (8.12.1995, Gezer 420).

Paxillaceae**32. Paxillus panuoides** (Fr.) Fr.

Antalya, Düzlerçamı area, on conifer debris (18.11.1995, Gezer 361); Alanya, Toros mountain, in pine forest (8.12.1995, Gezer 421); Gazipaşa, Kışlabucağı village (16.1.1997, Gezer 618).

Gomphidiaceae**33. Chroogomphus rutilus** (Fr.) O. K. Miller

Alanya, Toros mountain, in conifer forest (8.12.1995, Gezer 422).

Pleurotaceae**34. Pleurotus ostreatus** (Jacq.: Fr.) Kummer

Kaş, Kınık village, in garden, on stumps of *Populus* sp. (15.11.1996, Gezer 522); Finike, in garden, on stumps (30.12.1996, Gezer 587).

Tricholomataceae**35. Armillaria mellea** (Vahl.: Fr.) Kummer

Roadside between Alanya – Gedeve Yaylası, on stumps of deciduous, in mixed forest (15.11.1995, Gezer 317); Kemer, around Çınaraltı restaurant, in forest, on trunks (16.11.1995, Gezer 335).

36. Armillaria tabescens (Scop.) Emel

Alanya, Toros mountain, in conifers forest (8.12.1995, Gezer 426).

37. *Clitocybe geotropa* (Bull.: Merat) Quél.
Alanya, Toros mountain, in mixed woodland (3.12.1995, Gezer 395) ; (8.12.1996, Gezer 535).
38. *Clitocybe odora* (Bull.: Fr.) Kummer
Alanya, Bektaş village, in mixed forest (16.1.1996, Gezer 450); roadside between Alanya – Gedeve Yaylası, in mixed forest (16.1.1996, Gezer 451); Kumluca, in pine forest (7.1.1996, Gezer 607).
39. *Clitocybe rhizophora* Vel.
Roadside between Kemer – Çınaraltı restaurant, in mixed conifer forest (16.11.1995, Gezer 329).
40. *Collybia butyracea* (Fr.: Fr.) Kummer
Alanya, Toros mountain in mixed woodland (8.12.1995, Gezer 436).
41. *Collybia dryophila* (Bull.: Fr.) Kummer
Between Kemer – Çınaraltı restaurant, in mixed conifer forest (16.11.1995, Gezer 330).
42. *Collybia marasmioides* (Britz.) Bresinsky & Stangl
Alanya, Sapadere village, in mixed forest (6.12.1995, Gezer 397).
43. *Cystoderma amianthinum* (Scop.: Fr.) Fay.
Between Kemer – Çınaraltı restaurant, in mixed conifer forest (16.11.1995, Gezer 338); (30.12.1996, Gezer 540).
44. *Laccaria laccata* (Scop. : Fr.) Bk. & Br.
Alanya, Gedeve Yaylası, in pine forest (15.11.1995, Gezer 317); Alanya, Toros mountain, in pine forest (8.12.1995, Gezer 428).
45. *Lepista nuda* (Bull.: Fr.) Cooke
Kaş, İslamlar village, in garden (4.1.1996, Gezer 443); (30.12.1996, Gezer 580); Akseki, in pine forest (16.1.1997, Gezer 636).
46. *Melanoleuca graminicola* (Vel.) Küh. & Mre.
Kemer, Gedelma village in pine forest, in grass (25.11.1995, Gezer 358); Alanya, Şekerhane, in grass (10.11.1996, Gezer 402).
47. *Mycena epipterygia* (Scop.: Fr.) S. F. Gray
Alanya, Şekerhane, in grass, (19.11.1995, Gezer 380); Alanya, Toros, Çirioğlu mountain, in pine forest (8.12.1995, Gezer 440).
48. *Mycena galericulata* (Scop.: Fr.) S. F. Gray
Alanya, Toros mountain, in pine forest (3.12.1995, Gezer 403).
49. *Mycena strobilicola* Favre & Kühner
6 km on Alanya – Manavgat road, in pine forest (14.11.1995, Gezer 310); Alanya, Bektaş village, in mixed forest (15.11.1995, Gezer 318); Kemer, Çınaraltı restaurant, in mixed conifer forest (25.11.1995, Gezer 393); Antalya, Düzlerçamı area, in pine forest (30.12.1996, Gezer 549); Kale, Davarlar village in pine forest (2.11.1996, Gezer 502); Kaş, Yeşilköy, in pine forest (15.11.1996, Gezer 526); Finike – Kaş road, in mixed forest (30.12.1996, Gezer 590).
50. *Omphalina campanella* Fr.
Alanya, Şekerhane (19.3.1996, Gezer 452).
51. *Omphalotus olearius* (DC.: Fr.) Singer
Kumluca, in pine forest (7.1.1996, Gezer 445); Kaş, Palamut village, in pine forest (15.11. 1996, Gezer 520).
52. *Tricholoma colossus* (Fr.) Quél.
Elmalı, Çığlıkhara, Kabakçılar area, in cedar forest (17.11.1995, Gezer 351); Elmalı, Çığlıkhara Dokuzgöller area, in mixed conifer forest (17.11.1995, Gezer 353).
53. *Tricholoma fracticum* (Britz.) Kreisel
Alanya, Sapadere village, in mixed forest (6.12.1995, Gezer 408); Alanya Toros mountain, Çirioğlu peak, in pine forest (8 . 12.1995, Gezer 417).
54. *Tricholoma terreum* (Schaeff.: Fr.) Kummer
Alanya, Sapadere village, in mixed forest (6.12.1995, Gezer 409); Kaş, Yeşilköy, in pine forest (15.11.1996, Gezer 517).
55. *Tricholoma ustaloides* Romagn.
Alanya, Sapadere village, in mixed forest (6.12.1995, Gezer 410).
- Amanitaceae**
56. *Amanita ovoidea* (Bull.) Link.
Kaş, İslamlar village, in garden (15.11.1996, Gezer 514); Kaş, Yeşilköy, in pine forest (15.11.1996, Gezer 513). Akseki, in pine forest (16.11.1996, Gezer 536).
- Pluteaceae**
57. *Volvariella speciosa* (Fr.) Sing.
Kaş, İslamlar village, in garden (15.11.1996, Gezer 512).

Lepiotaceae**58. *Lepiota felina* (Pers.) Karst.**

Kemer, near Çınaraltı restaurant, in mixed forest (25.11.1995, Gezer 322); Antalya, Düzlerçamı area, in pine forest (18.11.1995, Gezer 361); Alanya Toros mountain, Çirioğlu in pine forest (8.12.1995, Gezer 384)

59. *Macrolepiota procera* (Scop.) Sing.

Anamur–Antalya roadside (27.12.1995, Gezer 443); Antalya–Aksu roadside (25.12.1996, Gezer 530).

Agaricaceae**60. *Agaricus bisporus* (L.) Imbach**

25 km on Alanya – Manavgat roadside in pasture (27.12.1996, Gezer 442).

61. *Agaricus campestris* (L.) Fr.

Alanya, Yayla road, Tepe area in mixed forest (15.11.1995, Gezer 314); Antalya, Düzlerçamı area, in pine forest in grass (18.11.1995, Gezer 367); Kaş, Kınık village, in garden on manure (15.11.1996, Gezer 519).

Coprinaceae**62. *Coprinus atramentarius* (Bull.: Fr.) Fr.**

Manavgat, Okcular village (Alakarahan) near garden (14.11.1995, Gezer 308); Alanya, Toros Çirioğlu mountain, in pine forest (8.12.1995, Gezer 439); Kemer near garden (7.1.1997, Gezer 605).

63. *Coprinus comatus* (Müll.: Fr.) S. F. Gray

Manavgat – Alanya, roadside, (6 km on road to Alanya) in *Pinus brutia* forest (14.11.1995, Gezer 305); Antalya, Düzlemçamı area (29.12.1996, Gezer 557).

64. *Coprinus micaceus* (Bull.: Fr.) Fr.

6 km. on Manavgat – Alanya roadside in *Pinus brutia* forest (14.11.1995, Gezer 309); Kemer, Yayla Ovacık village, in garden (16.11.1995, Gezer 348).

65. *Lacrymaria glareosa* (Favre) Watling

Kemer, Çınaraltı restaurant, in mixed forest (25.11.1995, Gezer 391).

66. *Psathyrella candolleana* (Fr.) K.Mre.

Kaş, Kınık village in garden (20.3.1996, Gezer 454).

67. *Panaeolus rickenii* Hora

Kemer, Gedelma village, in damp pastureland (16.11.1995, Gezer 321).

Bolbitiaceae**68. *Bolbitius vitellinus* (Pers.) Fr.**

Kemer, Çınaraltı restaurant road, in grass (25.11.1995, Gezer 394).

Strophoriaceae**69. *Pholiota carbonaria* (Fr.) Sing.**

Kumluca, mountain in pine forest (7.1.1996, Gezer 447).

70. *Pholiota highlandensis* (Peck) A.H. Smith & Hesl.

Kemer, Çınaraltı restaurant, in mixed forest (25.11.1995, Gezer 396).

71. *Pholiota tuberculosa* (Schaeff.: Fr.) Kummer

Alanya, Sapadere village, in mixed forest (6.12.1995, Gezer 402).

72. *Strophoria coronilla* (Bull.: Fr.) Quél.

Kemer, near Çınaraltı restaurant, in mixed forest (16.11.1995, Gezer 339).

Cortinariaceae**73. *Inocybe fastigiata* (Schaeff.: Fr.) Quél.**

Kaş, Kalkan, Patara in pine forest (25.12.1995, Gezer 444).

74. *Inocybe patouillardii* Bres.

Alanya, Toros, Çirioğlu peak Toros mountain, in pine forest (8.12.1995, Gezer 442).

Russulaceae**75. *Russula delica* Fr.**

Alanya, Yayla road, Tepe area, in mixed forest (28.11.1995, Gezer 319); Kumluca, Kumluca mountains, in mixed forest (7.1.1996, Gezer 447).

76. *Russula turci* Bres.

Alanya, Toros mountain, Çirioğlu peak pine forest (3.12.1995, Gezer 396).

77. *Lactarius chrysorrheus* (Fr.) Fr.

Alanya, Sapadere village, in mixed forest (6.12.1996, Gezer, 417); Alanya, Toros, Çirioğlu in pine forest (8.12.1995, Gezer 329).

78. *Lactarius deliciosus* (Fr.) S. F. Gray

Kale, Davazlar village, in mixed forest (20.12.1995, Gezer 430); Antalya – Kemer, roadside, in pine forest

(30.12.1996, Gezer 547); Akseki, in pine forest (16.1.1997, Gezer 613); Serik, Akbaş, in pine forest (11.1.1997, Gezer 610).

79. *Lactarius deterrimus* Gröger

Kale, Davazlar village, in pine forest (20.12.1995, Gezer 448); Akseki, in pine forest (16.1.1997, Gezer 614); Serik, Gebiz, in pine forest (2.1.1997, Gezer 603).

80. *Lactarius mairei* Malç.

Kale, Davazlar village, in mixed forest (20.12.1995, Gezer 432).

81. *Lactarius sanguifluus* (Paul) Fr.

Alanya, Toros mountain, Çirioğlu peak in pine forest (3.12.1995, Gezer 402).

Discussion

In this study, 81 macrofungi taxa belonging to 29 families, collected in Antalya, were identified. In the previous work, 9 taxa were found in the area (2, 8). Eight taxa were collected during our study and the other 72 taxa prove to be new records for the research area. The area of interest is very rich in macrofungi flora, where macrofungi grow in various habitats, e.g., pine forests, cedar forests, mixed forests, meadows and orchards. 8.7% of the macrofungi we found belong to the class Ascomycetes while 91.3% belong to the class Basidiomycetes. These rates are similar to those of previous studies done in other areas. For example, in the Mediterranean region, Ascomycetes make up 7.5% of the macrofungi, and Basidiomycetes 92.5% (2,8), while in Manisa, Ascomycetes make up 17.1% and Basidiomycetes 82.9% (9).

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The number of species of edible macrofungi is 48 (53%), but local people know only 13 (27%) of them. Some of these, *Morchella conica*, *M. esculanta* (Göbek - Kuzugöbeği), *Tricholoma colossus* (Sedir mantarı), *Agaricus bisporus*, *A. campestris* (Çayır mantarı), *Russula delicata* (Akmantar), *Lactarius deliciosus*, *L. deterrimus* (Çıntar, Çam melkisi), *Pleurotus ostreatus* (Ağaç mantarı), *Clitocybe geotropa* (Et melkisi) and *Tricholoma terreum* (Çam mantarı), are sold in the local markets.

Four species of poisonous mushrooms (*Gyromitra esculenta*, *Sacrospora crassa*, *Inocybe factigiata*, and *Inocybe patouillardii*) are deadly, but because local people collect only well-known edible species, there are no deaths due to mushroom poisoning reported in the area.

Lignicolous macrofungi consist of 19 (21 %) species in the area. *Schizophyllum commune* in particular is a very common species. These species and others have suffered extensive damage in the study area and in other localities in Turkey. *Fomes*, especially in beech forests in the Black Sea region and *Pollyporus* on chestnut trees in Bolu Province and Belgrad Forest of İstanbul, has suffered great damage (10).

This study is intended as a contribution to the Turkish macrofungal flora, and to prevent local people from eating poisonous macrofungi, to help them profit from edible species, and to prevent damage to lignicolous species.

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