

## Contributions to the macrofungal diversity of Antalya Province

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**Abstract:** In this study, an attempt has been made to establish macrofungal specimens collected from Antalya between 2005 and 2009. After field and laboratory studies, 136 taxa belonging to 40 families and 2 divisions were identified. Twenty taxa belong to *Ascomycota* and 116 to *Basidiomycota*. Three of them, *Cortinarius subferrugineus* (Batsch) Fr., *Entoloma vernum* Lundell, and *Inocybe piceae* Stangl & Schwöbel, are new records for Turkey.

**Key words:** Biodiversity, macrofungi, new records, Antalya, Turkey

### 1. Introduction

Antalya is a province located in the southern part of Turkey, bordered by the Mediterranean Sea to the south; Burdur, Isparta, and Konya provinces to the north; Muğla Province to the west; and Karaman and Mersin provinces to the east (Figure 1). Antalya possesses a Mediterranean climate. The annual average temperature is 18.3 °C and the annual rainfall is about 1071 mm. The province's forested land is the richest in Turkey, at 58%. Vegetation cover is especially maquis and Antalya is also a natural habitat for a number of trees such as *Pinus brutia* Ten., *P. nigra* J.F.Arnold, *P. pinea* L., *Cedrus libani* A.Rich., *Abies cilicica* Carr., *Cupressus sempervirens* L., *Juniperus excelsa* M.Bieb., *J. oxycedrus* L., *J. foetidissima* Willd., and *Quercus* L. spp.

The first taxonomical investigations on the macrofungi of Antalya were done by Işıloğlu and Watling (1992). After them, much study was done on macrofungi of Antalya (Gezer, 2000; Gezer et al., 2000; Doğan et al., 2003; Kaşık et al., 2003; Öztürk et al., 2003; Aktaş et al., 2006, 2008; Allı et al., 2011). While 398 taxa were reported previously from Antalya Province, the 468 taxa now reported include 70 newly recorded taxa with this study for Antalya.

### 2. Materials and methods

The specimens were collected from different localities within Antalya Province between 2005 and 2009 (Figure 1). The field studies were conducted mostly in autumn and spring, since during these periods the climatic

conditions are suitable for growth of fungi. In field studies morphological and ecological characteristics of the macrofungi were recorded and photographed. After field studies, specimens were taken to the laboratory for microscopical studies. Spore prints were then obtained and spores were photographed. Specimens were identified with the help of Marchand (1971–1986), Watling (1982), Moser (1983), Breitenbach and Kränzlin (1984–2000), Cappelli (1984), Pacioni (1985), Watling and Gregory (1987, 1989), Brensinisky and Besl (1990), Ellis and Ellis (1990), Phillips (2006), and Knudsen and Vesterholt (2008). The new records for Turkey were checked with the relevant literature (Doğan et al., 2005; Solak et al., 2007; Kaya, 2009; Demirel et al., 2010; Allı, 2011; Akata et al., 2012; Doğan et al., 2012; Kaya et al., 2012; Türkoğlu and Yağız, 2012; Akata et al., 2013; Güngör et al., 2013; Sesli and Denchev, 2013; Türkoğlu and Castellano, 2013).

The identified specimens are kept at the fungarium of Muğla Sıtkı Koçman University.

### 3. Results

In this study 136 taxa belonging to 40 families were identified. These taxa are presented with their localities, habitats, collection dates, and accession numbers. Nomenclature is given according to Index Fungorum (Kirk, 2011). New records for Antalya are marked with a single asterisk, while new records for Turkey are marked with double asterisks. Edible taxa are indicated with 'E', inedible taxa with 'IE', and poisonous with 'P'.

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Figure 1. Map of the study area.

### 3.1. Ascomycota

#### Discinaceae Benedix

\*1. *Discina melaleuca* Bres.

Serik, Belek, in *Pinus brutia* and *P. pinea* forest, 2.12.2006, *Solak* 2878. IE.

#### Helvellaceae Fr.

2. *Helvella crispa* (Scop.) Fr.

Manavgat, Taşağıl, in *Pinus brutia* forest, 27.12.2008, *Solak* 3245; Serik, Akinlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2800. E.

\*3. *Helvella lacunosa* Afzel.

Serik, Akinlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2803. E.

4. *Helvella leucomelaena* (Pers.) Nannf.

Kaş, Sütleğen, in pine forest, 16.4.2006, *Solak* 2089. P.

#### Morchellaceae Rchb.

\*5. *Morchella angusticeps* Peck

Kaş, center of Sütleğen village, in *Cedrus* forest, 16.4.2006, *Solak* 2100. E.

\*6. *Morchella conica* var. *acuminata* J.Kickx f.

Kaş, center of Sütleğen village, in *Cedrus* forest, 16.4.2006, *Solak* 2096. E.

\*7. *Morchella costata* (Vent.) Pers.

Kaş, center of Sütleğen village, in *Cedrus* forest, 16.4.2006, *Solak* 2104; Kaş, Yuvacık village, in pine forest, 19.4.2008, *Solak* 3739. E.

\*8. *Morchella deliciosa* Fr.

Kaş, Yaylapalamut village, in pine forest, 16.4.2006, *Solak* 2087. E.

\*9. *Morchella elata* Fr.

Kaş, Yaylapalamut village, in pine forest, 16.4.2006, *Solak* 2086; Kaş, Sütleğen village, in *Cedrus* forest, 16.4.2006, *Solak* 2101. E.

10. *Morchella esculenta* (L.) Pers.

Kaş, Yuvacık village, in pine forest, 19.4.2008, *Solak* 3747. E.

\*11. *Morchella esculenta* var. *rigida* (Krombh.) I.R.Hall, P.K.Buchanan, Y.Wang & Cole

Kaş, Yuvacık village, in pine forest, 19.4.2008, *Solak* 3736. E.

\*12. *Morchella hortensis* Boud.

Kaş, center of Sütleğen village, in *Cedrus* forest, 16.4.2006, *Solak* 2095. E.

\*13. *Morchella intermedia* Boud.

Kaş, Yuvacık village, in pine forest, 19.4.2008, *Solak* 3740. E.

\*14. *Morchella rielana* Boud.

Kaş, center of Sütleğen village, in *Cedrus* forest, 16.4.2006, *Solak* 2094. E.

#### Pezizaceae Dumort.

15. *Peziza violacea* Pers.

Manavgat, Taşağıl, in burnt region, 27.12.2008, *Solak* 3321. IE.

16. *Sarcosphaera coronaria* (Jacq.) J.Schröt.

Kaş, Yaylapalamut village, in pine forest, 16.4.2006, *Solak* 2085. P.

#### Pyronemataceae Corda

17. *Anthracobia melaloma* (Alb. & Schwein.) Boud.

Manavgat, Taşağıl, in burnt region, 27.12.2008, *Allı* 3223. IE.

\*18. *Geopora arenosa* (Fuckel) S.Ahmad

Kepez, Düzlerçami, in *Pinus brutia* forest, 01.2.2009, *Solak* 3312. IE.

#### Sarcosomataceae Kobayasi

19. *Pseudoplectania vogesiaca* Seaver

Manavgat, Taşağıl, in burnt region, 27.12.2008, *Allı* 3222. IE.

#### Xylariaceae Tul. & C. Tul.

20. *Daldinia concentrica* (Bolton) Ces. & De Not.

Kemer, Tekirova, on *Quercus* stump, 4.5.2006, *Allı* 2432; Alanya, Konaklı-Yeniköy, in *Pinus brutia* forest, 31.01.2007, *Allı* 8370; Gündoğmuş, Güneycik village, on

*Quercus* stump, 11.5.2007, *İşiloğlu* 8370; Gazipaşa, Ekmel district, on *Platanus*, 9.11.2008, *Solak* 3980. IE.

### 3.2. Basidiomycota

#### Agaricaceae Chevall.

\*21. *Agaricus arvensis* Schaeff.

Serik, Akınlar village, in *Pinus pinea* forest, 1.12.2006, *Solak* 2839. E.

\*22. *Agaricus moelleri* Wasser

Serik, Belek, in *Pinus brutia* and *P. pinea* forest, 2.12.2006, *Solak* 2858. P.

\*23. *Agaricus xanthodermus* Genev.

Kaş, Ördübek upland, in meadows, 19.4.2008, *Solak* 3732. P.

\*24. *Bovista limosa* Rostr.

Alanya, Öteköy, in *Quercus* forest, 4.10.2008, *Allı* 3087. E.

25. *Coprinus comatus* (O.F.Müll.) Pers.

Kaş, center of Sütleğen village, in *Cupressus* forest, 16.4.2006, *Solak* 2091. E.

26. *Cyathus olla* (Batsch) Pers.

Kemer, Çamyuva district, on twig, 31.1.2009, *Allı* 3300. IE.

\*27. *Cyathus stercoreus* (Schwein.) De Toni

Gazipaşa, Ekmel district, on gravelly soil, 9.11.2008, *Solak* 3971. IE.

28. *Lycoperdon perlatum* Pers.

Elmalı, Avlan (Göltarla), in *Cedrus* forest, 13.11.2005, *Solak* 1630; Alanya, Taşbaşı village, in pine forest, 2.12.2006, *Solak* 2903; Kaş, Sütleğen village, in *Cedrus* forest, 1.11.2008, *Solak* 3928. E.

29. *Macrolepiota excoriata* (Schaeff.) Wasser

Manavgat, Selge, in *Cupressus* forest, 2.12.2006, *Solak* 2880. E.

30. *Macrolepiota procera* (Scop.) Singer

Manavgat, Sağırin-Samadın district, in *Pinus brutia* forest, 24.11.2007, *Allı* 2860; Manavgat, Selge, in *Cupressus* forest, 2.12.2006, *Solak* 2884. E.

31. *Tulostoma brumale* Pers.

Serik, Aşağı Çatma village, in meadows, 27.11.2005, *Allı* 2290. IE.

#### Amanitaceae R.Heim ex Pouzar

\*32. *Amanita argentea* Huijsman

Serik, Çandır-Alacami village, in *Pinus brutia* forest, 24.11.2007, *Allı* 2916. IE.

\*33. *Amanita caesarea* (Scop.) Pers.

Manavgat, Sağırin-Samadın District, in *Pinus brutia* forest, 24.11.2007, *Allı* 2882. E.

\*34. *Amanita muscaria* (L.) Lam.

Manavgat, Taşağıl, in *Pinus brutia* forest, 30.11.2008, *Allı* 3214. P.

35. *Amanita ovoidea* (Bull.) Link

Alanya, Taşbaşı village, in pine forest, 2.12.2006, *Solak* 2895; Kaş, Yaylaçavdır village, in pine forest, 1.11.2008, *Solak* 3916. E.

\*36. *Amanita verna* (Bull.) Lam.

Serik, Belek, in *Pinus brutia* and *P. pinea* forest, 2.12.2006, *Solak* 2850. P.

#### Auriculariaceae Fr.

\*37. *Auricularia mesenterica* (Dicks.) Pers.

Serik, Karıncalı village, on *Populus* stump, 3.10.2008, *Allı* 3066. IE.

#### Bankeraceae Donk

38. *Boletopsis leucomelaena* (Pers.) Fayod

Kaş, Sütleğen village, Ayrıklı Çukur district, in *Cedrus* forest, 13.11.2005, *Solak* 1640; Alanya, Taşbaşı village, in pine forest, 2.12.2006, *Solak* 2891; Kaş, Sütleğen village, in *Cedrus* forest, 1.11.2008, *Solak* 3929. E.

#### Boletaceae Chevall.

39. *Xerocomellus chrysenteron* Bull. Şutara

Alanya, Öteköy, in *Quercus* forest, 4.10.2008, *Allı* 3086. E.

#### Clavulinaceae Donk

40. *Clavulina cinerea* (Bull.) J.Schröt.

Alanya, Taşbaşı village, in pine forest, 2.12.2006, *Solak* 2937. E.

\*41. *Clavulina rugosa* (Bull.) J.Schröt.

Kemer, Göynük, in *Pinus brutia* forest, 31.1.2009, *Allı* 3301. E.

#### Cortinariaceae R.Heim ex Pouzar

\*\*42. *Cortinarius subferrugineus* (Batsch) Fr.

Fruiting body 5–9 cm, when young conical to hemispherical, later convex to plane with a slight umbo. Hymenium ocher-brown to red-brown, weakly to pale ocher when dry, finely radially fibrillose, weakly hygrophanous, margin incurved, acute, combining to stipe with a white, arachnoid cortina when young. Flesh white in the apex of the stipe and sometimes has reddish-brown tint at the base, odor weakly unpleasant, taste moldy. Lamellae when young faintly ocher, later dark rust brown, notched and broadly attached, margin white-denticulate. Stipe 5.5–7 × 1–2 cm, cylindrical, surface white and woolly-fibrillose when young, later not woolly-fibrillose, weakly brown, fibrillose. Spores 8–11 × 5–7 µm, ocher-yellow, oval, weakly verrucose. Basidia 30–40 × 9–10 µm, clavate, and have basal clamps and yellow contents (Figure 2).

Alanya, Taşbaşı village, in pine forest, 2.12.2006, *Solak* 2899. IE.

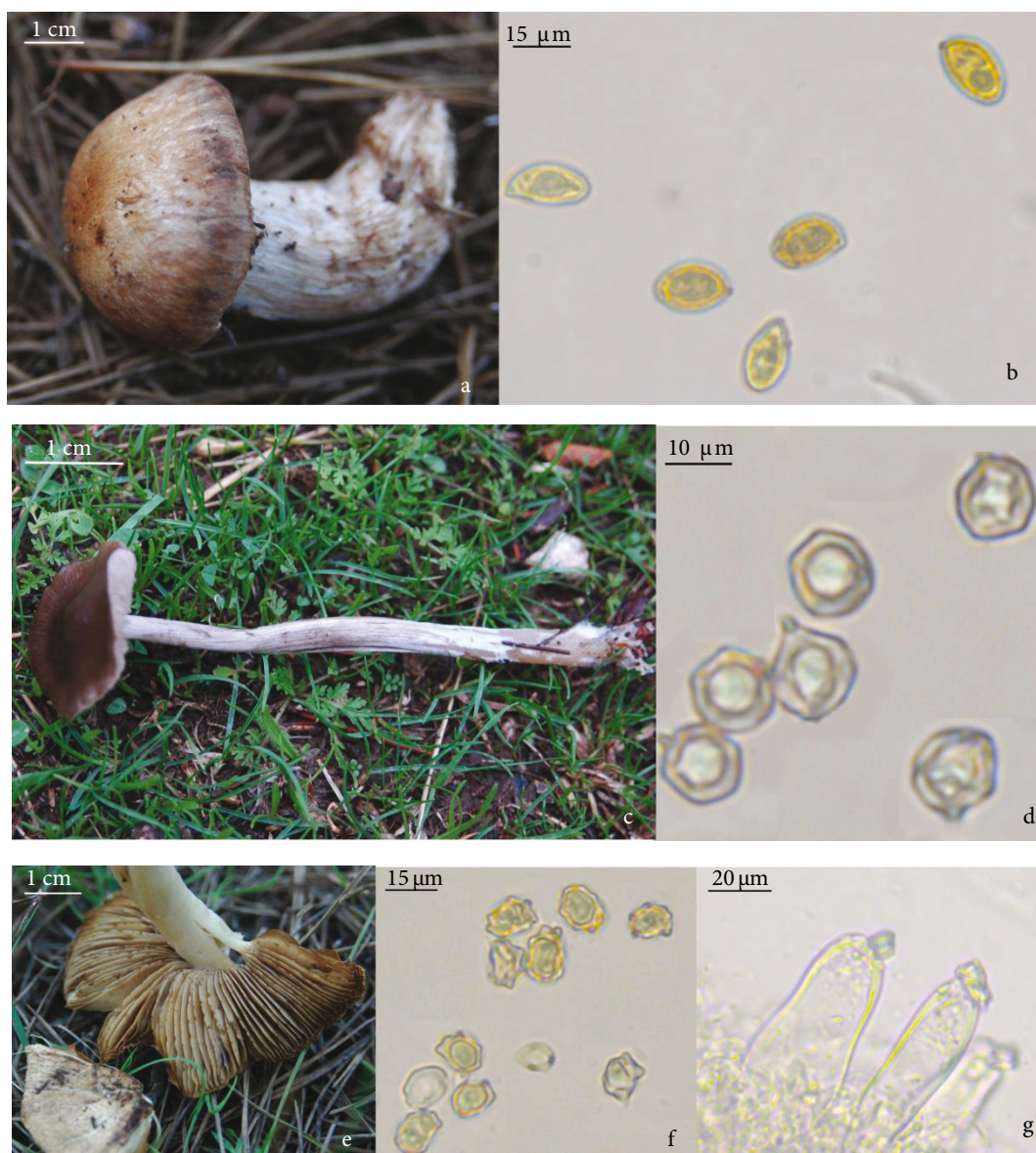
#### Entolomataceae Kotl. & Pouzar

\*43. *Entoloma scabrosum* (Fr.) Noordel.

Alanya, Taşbaşı village, in pine forest, 2.12.2006, *Solak* 2932. IE.

44. *Entoloma undatum* (Gillet) M.M.Moser

Serik, Akınlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2817; Serik, Belek, in *Pinus brutia* and *P. pinea* forest, 2.12.2006, *Solak* 2875. IE.



**Figure 2.** Fruit body (a) and basidiospores (b) of *Cortinarius subferrugineus*; fruit body (c) and basidiospores (d) of *Entoloma vernum*; fruit body (e), basidiospores (f) and cheilocystidia (g) of *Inocybe piceae*.

**\*\*45. *Entoloma vernum* S.Lundell**

Fruiting body 4–6.5 × 2–4 cm, when young conical, then campanulate to plane, always consists of a distinct umbo, smooth, dull, surface hygrophanous, black-brown when moist, later beige-brown, margin crenate, acute. Odor faintly spermatic to fungoid, taste mild. Lamellae gray-white, when old light brown to reddish-brown, adnexed, edges smooth. Stipe 3.5–7 × 0.3–0.5 cm cylindrical, slightly enlarged toward the base, dark-brown to ocher-brown, only the apex or whole stipe longitudinally white-fibrillose or white-powdered, base covered with white mycelium. Spores brown-red, tuberculate, with 5–7 angles, 8–11 ×

7–8.5 µm. Basidia 30–35 × 7–11 µm, clavate-ventricose, and with basal clamp (Figure 2).

Kaş, Ağullu village, in pine forest, 10.11.2007, Solak 3318. P.

**Fomitopsidaceae Jülich**

**46. *Postia stiptica* (Pers.) Jülich**

Alanya, Taşbaşı village, on *Pinus brutia*, 2.12.2006, Solak 2929. IE.

**Ganodermataceae Donk**

**47. *Ganoderma applanatum* (Pers.) Pat.**

Gazipaşa, Ekmel district, on *Platanus*, 9.11.2008, Solak 3979; Aksu, on cut pine, 9.11.2008, Solak 3990. IE.

48. *Ganoderma lucidum* (Curtis) P.Karst.  
Manavgat, Taşagül, on *Acacia*, 4.10.2008, *Allı* 3076. IE.
- Geastraceae** Corda
- \*49. *Geastrum fimbriatum* Fr.  
Kaş, Çeşme village-Elmalı way 4 km, in pine forest, 10.11.2007, *Solak* 3338; Serik, Akınlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2846. IE.
- Gomphaceae** Donk
- \*50. *Gomphus clavatus* (Pers.) Gray  
Kaş, Sütleğen village, in *Cedrus* forest, 1.11.2008, *Solak* 3921. E.
- \*51. *Ramaria flava* (Schaeff.) Quél.  
Elmalı, Avlan (Göltarla), in *Cedrus* forest, 13.11.2005, *Solak* 1625. E.
- Gomphidiaceae** Maire ex Jülich
52. *Chroogomphus rutilus* (Schaeff.) O.K.Mill.  
Serik, Kadriye, in *Pinus pinea* forest, 9.2.2006, *Allı* 2352; Alanya, Taşagül village, in *Pinus brutia* forest, 6.5.2006, *Allı* 2453; Kaş, Yeşilköy, in pine forest, 20.4.2008, *Solak* 3753; Serik, Akınlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2805; Serik, Belek, in *Pinus pinea* forest, 1.12.2006, *Solak* 2805; Manavgat, Selge, in *Cupressus* forest, 2.12.2006, *Solak* 2882; Kaş, Sütleğen village, in pine forest, 1.12.2007, *Solak* 3571; Kaş, Yaylaçavdır village, in pine forest, 1.11.2008, *Solak* 3912. E.
- Hygrophoraceae** Lotsy
- \*53. *Hygrophorus camarophyllus* (Alb. & Schwein.) Dumée, Grandjean & Maire  
Serik, Çandır-Gökçemuar village, in *Pinus brutia* forest, 24.11.2007, *Allı* 2906. E.
54. *Hygrocybe virginea* var. *virginea* (Wulfen) P.D.Orton & Watling  
Manavgat, Taşagül, in *Pinus brutia* forest, 27.12.2008, *Allı* 3230. IE.
- Hymenochaetaceae** Donk
55. *Fuscoporia torulosa* (Pers.) T.Wagner & M.Fisch.  
Alanya, Beşkonak-Olukköprü, in *Pinus brutia* forest, on *Ceratonia sliqua*, 6.5.2006, *Allı* 2459; Manavgat, Taşagül, on *Quercus* stump, 4.10.2008, *Allı* 3075; Manavgat, Selge, on *Cupressus*, 2.12.2006, *Solak* 2890. IE.
- \*56. *Phellinus hartigii* (Allesch. & Schnabl) Pat.  
Kepez, Düzlerçami, in *Pinus brutia* forest, 28.12.2008, *Allı* 3250. IE.
- \*57. *Phellinus pomaceus* (Pers.) Maire  
Gündoğmuş, Güneycik village, 11.5.2007, *İşiloğlu* 8369. IE.
58. *Phylloporia ribis* (Schumach.) Ryvarde  
Serik, Belek, in *Pinus brutia* and *P. pinea* forest, 2.12.2006, *Solak* 2866. IE.
- Inocybaceae** Jülich
- \*59. *Inocybe amethystina* Kuyper  
Serik, Akınlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2807. P.
- \*60. *Inocybe catalaunica* Singer  
Serik, Belek, in *Pinus brutia* and *P. pinea* forest, 2.12.2006, *Solak* 2876. P.
- \*61. *Inocybe dulcamara* (Pers.) P.Kumm.  
Serik, Belek, in *Pinus brutia* and *P. pinea* forest, 2.12.2006, *Solak* 2855. P.
- \*62. *Inocybe flocculosa* Sacc.  
Serik, Belek, in *Pinus brutia* and *P. pinea* forest, 2.12.2006, *Solak* 2856; Manavgat, Taşagül, in *Pinus brutia* forest, 27.12.2008, *Allı* 3219; Manavgat, Pelitdibi village, in pine forest, 2.12.2006, *Solak* 2915. P.
63. *Inocybe fuscidula* Velen.  
Serik, Akınlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2810. P.
64. *Inocybe lacera* var. *lacera* (Fr.) P.Kumm.  
Serik, Belek, in *Pinus brutia* and *P. pinea* forest, 2.12.2006, *Solak* 2874. P.
- \*65. *Inocybe nitidiuscula* (Britzelm.) Lapl.  
Manavgat, Taşagül, in *Pinus brutia* forest, 27.12.2008, *Allı* 3237. P.
- \*66. *Inocybe phaeoleuca* Kühner  
Serik, Akınlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2813. P.
- \*\*67. *Inocybe piceae* Stangl & Schwöbel  
Pileus 4–7 cm, conical, convex to plane, with a distinct umbo, surface fibrillose, velvety, margin fibrillose-scaly when old, red to light brown, margin split when old. Flesh whitish, somewhat red under the cuticle, odor spermatic, has a weak taste and not distinctive. Lamellae whitish to yellowish when young, later gray to reddish-brown, decurrent, edges smooth. Stipe 5–7 × 0.5–1 cm, slightly bulbous, cylindrical, fragile, prolonged in the soil, surface fibrillose, pruinose, ocher. Spores obtusely tuberculate, with 12–13 tubercles, brown, 9–12 × 7–8.5 µm. Basidia clavate, 32–35 × 10–11 µm with a basal clamp. Cheilocystidia fusiform, thick-walled, encrusted apically, 50–70 × 15–25 µm (Figure 2).  
Serik, Akınlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2830. P.
- \*68. *Inocybe queletii* Konrad  
Serik, Akınlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2844; Serik, Belek, in *Pinus brutia* and *P. pinea* forest, 2.12.2006, *Solak* 2871; Manavgat, Pelitdibi village, in pine forest, 2.12.2006, *Solak* 2925. P.
- \*69. *Inocybe rimosa* var. *rimosa* (Bull.) P.Kumm.  
Serik, Belek, in *Pinus brutia* and *P. pinea* forest, 2.12.2006, *Solak* 2870; Manavgat, Pelitdibi village, in pine forest, 2.12.2006, *Solak* 2912. P.
- \*70. *Inocybe sindonia* (Fr.) P.Karst.  
Serik, Akınlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2812; Manavgat, Pelitdibi village, in pine forest, 2.12.2006, *Solak* 2926. P.
- \*71. *Inocybe splendens* var. *splendens* R.Heim

Serik, Belek, in *Pinus brutia* and *P. pinea* forest, 2.12.2006, *Solak* 2857. P.

**Marasmiaceae** Roze ex Kühner

72. *Baeospora myosura* (Fr.) Singer

Kaş, Kaş-Elmalı way, Kasaba village, on pine cones, 10.11.2007, *Solak* 3332. IE.

73. *Gymnopus brassicolens* var. *brassicolens* (Romagn.) Antonín & Noordel.

Kaş, Ağullu village, in pine forest, 10.11.2007, *Solak* 3319. IE.

74. *Gymnopus dryophilus* (Bull.) Murrill

Kaş, Kalkan, in pine forest, 10.11.2007, *Solak* 3314; Kaş, Ağullu village, in pine forest, 10.11.2007, *Solak* 3320; Kaş, Kaş-Elmalı way, Kasaba village, in pine forest, 10.11.2007, *Solak* 3329; Kaş, Kemer village, in pine forest, 10.11.2007, *Solak* 3333. E.

\*75. *Gymnopus exsculptus* (Fr.) Murrill

Kaş, Kemer village, in pine forest, 10.11.2007, *Solak* 3334. IE.

\*76. *Marasmius anomalus* Peck

Gazipaşa, Ekmel district, on plant branch, 9.11.2008, *Solak* 3969. IE.

77. *Omphalotus olearius* (DC.) Singer

Manavgat, Oymapınarı-Göl region, in *Pinus brutia* forest, on *Quercus* stump, 26.11.2005, *Allı* 2200; Manavgat, Oymapınarı-Göl region, in *Pinus brutia* forest, on *Astragalus*, 26.11.2005, *Allı* 2192; Serik, Taşağıl village, in *Pinus brutia* forest, on *Quercus* stump, 24.11.2007, *Allı* 2849; Serik, Taşağıl village, on *Olea* sp., 24.11.2007, *Allı* 2850. P.

**Mycenaceae** Roze

\*78. *Mycena cinerella* (P.Karst.) P.Karst.

Serik, Akınlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2832. IE.

79. *Mycena pura* (Pers.) P.Kumm.

Serik, Akınlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2838. P.

80. *Mycena seynii* Quéf.

Serik, Akınlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2816; Kaş, Ağullu village, in pine forest, 10.11.2007, *Solak* 3321; Kaş, Çeşme village-Elmalı way 4 km, on pine cones, 10.11.2007, *Solak* 3336; Korkuteli, Elmalı Beli district, in *Pinus brutia* forest, on cones, 25.11.2005, *Allı* 2186; Serik, Kadriye, in *Pinus pinea* forest, 27.11.2005, *Allı* 2226; Alanya, Dim Valley, Gümüşkavak district, in *Pinus brutia* forest, 4.10.2008, *Allı* 3091; Korkuteli, Acıbademli entrance, in *Pinus brutia* forest, 30.11.2008, *Allı* 3166; Manavgat, Taşağıl, in *Pinus brutia* forest, 27.12.2008, *Allı* 3216. IE.

**Phallaceae** Corda

\*81. *Clathrus ruber* P.Micheli ex Pers.

Alanya, Taşbaşı village, in *Pinus brutia* forest, 5.5.2006, *Allı* 2440; Serik, Akınlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2809. IE.

**Physalacriaceae** Corner

\*82. *Strobilurus tenacellus* (Pers.) Singer

Kaş, Yaylalpalamut village, in pine forest, 16.4.2006, *Solak* 2088. IE.

**Pleurotaceae** Kühner

83. *Pleurotus eryngii* (DC.) Quéf.

Gündoğmuş, Alibeyler upland, 12.5.2007, *Işıloğlu* 8374. E.

84. *Pleurotus ostreatus* (Jacq.) P.Kumm.

Korkuteli, on *Populus* stump, 25.11.2005, *Allı* 2177; Serik, Aşağı Çatma village, on *Populus* stump, 27.11.2005, *Allı* 2290; Kaş, Sütleğen village, on *Malus*, 1.12.2007, *Solak* 3587; Kaş, Yaylaçavdır village, on *Populus* stump, 1.11.2008, *Solak* 3939. E.

**Pluteaceae** Kotl. & Pouzar

85. *Volvopluteus gloiocephalus* (DC.) Justo

Gazipaşa, Ekmel district, in grassland, 9.11.2008, *Solak* 3954. IE.

**Polyporaceae** Fr. ex Corda

86. *Fomes fomentarius* (L.) Fr.

Serik, Karıncalı village, in cemetery, in *Quercus* forest, 3.10.2008, *Allı* 3067; Gündoğmuş, Gözle upland, 11.5.2007, *Işıloğlu* 8373. IE.

87. *Lentinus tigrinus* (Bull.) Fr.

Serik, Belek, in *Pinus brutia* forest, 27.11.2005, *Allı* 2279; Serik, Aşağı Çatma village, in garden, 3.10.2008, *Allı* 3070. IE.

88. *Polyporus arcularius* (Batsch) Fr.

Kaş, Kaş-Elmalı way, Kasaba village, on branch, 10.11.2007, *Solak* 3328. IE.

\*89. *Polyporus squamosus* (Huds.) Fr.

Gündoğmuş, Gözle upland, 11.5.2007, *Işıloğlu* 8371. E.

\*90. *Skeletocutis amorphia* (Fr.) Kotl. & Pouzar

Kemer-Tekirova, Çeltikyeri district, in *Pinus brutia* forest, 10.11.2008, *Allı* 3189. IE.

91. *Trametes hirsuta* (Wulfen) Lloyd

Gündoğmuş, Gözle upland, 11.5.2007, *Işıloğlu* 8372. IE.

92. *Trametes trogii* Berk.

Serik, Karıncalı village, in cemetery, on *Populus* stump, 3.10.2008, *Allı* 3062. IE.

93. *Trametes versicolor* (L.) Lloyd

Kaş, Kaş-Elmalı way, Uğrar village, on *Quercus* stump, 10.11.2007, *Solak* 3328. IE.

\*94. *Trichaptum biforme* (Fr.) Ryvarden

Elmalı, Avlan (Gölarla), on *Cedrus* stump, 13.11.2005, *Solak* 1617. IE.

**Psathyrellaceae** Vilgalys, Moncalvo & Redhead

\*95. *Coprinellus disseminatus* (Pers.) J.E.Lange

Kaş, center of Sütleğen village, near *Acacia*, 16.4.2006, *Solak* 2092. IE.

\*96. *Coprinopsis episcopalis* (P.D.Orton) Redhead, Vilgalys & Moncalvo

Manavgat, Pelitdibi village, in pine forest, 2.12.2006, *Solak* 2923. IE.

\*97. *Coprinopsis radiata* (Bolton) Redhead, Vilgalys & Moncalvo

Kaş, Kaş-Elmalı way, Uğrar village, in pine forest, 10.11.2007, *Solak* 3323. IE.

\*98. *Parasola hemerobia* (Fr.) Redhead, Vilgalys & Hopple

Serik, Karataş, 3.10.2008, *Allı* 3069. IE.

99. *Parasola kuehneri* (Ulje & Bas) Redhead, Vilgalys & Hopple

Serik, Karıncalı, in cemetery, 3.10.2008, *Allı* 3064. IE.

100. *Psathyrella candolleana* (Fr.) Maire

Serik, Belek, in *Pinus brutia* and *P. pinea* forest, 2.12.2006, *Solak* 2863; Kaş, Ağullu village, in pine forest, 19.4.2008, *Solak* 3726; Manavgat, Titreyen Göl, in *P. brutia* forest, 8.11.2008, *Solak* 3947. IE.

101. *Psathyrella sacchariolenis* Enderle

Serik, Belek, in *Pinus brutia* and *P. pinea* forest, 2.12.2006, *Solak* 2864. IE.

**Rhizopogonaceae** Gäum. & C.W.Dodge

102. *Rhizopogon luteolus* Fr.

Manavgat, Oymapınarı-Göl district, in *Pinus brutia* forest, 26.11.2005, *Solak* 2191; Serik, Akınlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2819; Manavgat, Selge, in *Cupressus* forest, 2.12.2006, *Solak* 2883; Manavgat, Pelitdibi village, in pine forest, 2.12.2006, *Solak* 2918; Kaş, Kaş-Elmalı way, Uğrar village, in pine forest, 10.11.2007, *Solak* 3327; Kaş, Kaş-Elmalı way, Kasaba village, in pine forest, 10.11.2007, *Solak* 3330; Kaş, Kemer village, in pine forest, 10.11.2007, *Solak* 3335; Manavgat, Titreyen Göl, in *Pinus brutia* forest, 8.11.2008, *Solak* 3950. E.

103. *Rhizopogon roseolus* (Corda) Th. Fr.

Serik, Kadriye, in *Pinus pinea* forest, 27.11.2005, *Solak* 2246; Alanya, Dim Valley, Gümüşkavak district, in *Pinus brutia* forest, 4.10.2008, *Allı* 3077; Kemer, Çamyuva district, in *Pinus brutia* forest, 31.1.2009, *Allı* 3290; Kaş, Yaylapalamut village, in stony place, 16.4.2006, *Solak* 2084; Serik, Akınlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2802; Kaş, Kalkan, in pine forest, 10.11.2007, *Solak* 3315; Kaş, Yaylaçavdır village, in grassland, 1.11.2008, *Solak* 3910. E.

**Russulaceae** Lotsy

104. *Lactarius deliciosus* (L.) Gray

Alanya, Konaklı-Güzelbağlar way, Zeytinbükü bridge district, in *Pinus brutia* forest, 26.11.2005, *Allı* 2217; Serik, Kadriye, in *Pinus pinea* forest, 27.11.2006, *Allı* 2250; Manavgat, Taşağıl, in *Pinus brutia* forest, 27.12.2008, *Allı* 3228; Serik, Akınlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2829; Serik, Belek, in *Pinus brutia* and *P. pinea* forest, 2.12.2006, *Solak* 2849; Manavgat, Pelitdibi village, in pine forest, 2.12.2006, *Solak* 2908; Kaş, Sütleğen village, in *Cedrus* forest, 1.11.2008, *Solak* 3933. E.

105. *Lactarius deterrimus* Gröger

Alanya, Taşbaşı village, in pine forest, 2.12.2006, *Solak* 2896; Kaş, Sütleğen village, in *Cedrus* forest, 1.11.2008, *Solak* 3934. E.

\*106. *Russula cyanoxantha* (Schaeff.) Fr.

Serik, Kadriye, in *Pinus pinea* forest, 27.11.2006, *Allı* 2244. E.

107. *Russula delica* Fr.

Serik, Kadriye, in *Pinus pinea* forest, 27.11.2006, *Allı* 2230; Alanya, Taşbaşı village, in pine forest, 2.12.2006, *Solak* 2902; Manavgat, Sağırın-Samadın district, in *Pinus brutia* forest, 24.11.2007, *Allı* 2871. E.

\*108. *Russula foetens* Pers.

Manavgat, Sağırın-Samadın district, in *Pinus brutia* forest, 24.11.2007, *Allı* 2883. IE.

\*109. *Russula torulosa* Bres.

Serik, Akınlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2834. IE.

\*110. *Russula vinosa* Lindblad

Serik, Akınlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2848; Alanya, Taşbaşı village, in pine forest, 2.12.2006, *Solak* 2898. IE.

**Schizophyllaceae** Qué. l.

111. *Schizophyllum commune* Fr.

Serik, Karıncalı village, in cemetery, on *Populus* stump, 3.10.2008, *Allı* 3065; Serik, Belek, on *Pinus brutia*, on *Quercus* stump, 27.11.2005, *Allı* 2283; Serik, Kadriye, on *Pinus pinea*, 09.02.2006, *Allı* 2335; Alanya, Taşbaşı village, on *Pinus brutia*, 5.5.2006, *Allı* 2452; Alanya, Sağırın-Karabük turnout, on *Pinus brutia*, 6.5.2006, *Allı* 2458; Alanya, Beşkonak-Olukköprü, in *Pinus brutia* forest, on *Ceratonia sliqua*, 6.5.2006, *Allı* 2461; Kemer, Küçükçatak district, on *Pinus brutia* root, 30.1.2009, *Allı* 3279; Manavgat, Sağırın, on *Pinus brutia* stump, 31.1.2009, *Allı* 3304; Manavgat, Pelitdibi village, on pine stump, 2.12.2006, *Solak* 2907; Kaş, Ağullu village, on *Pinus*, 19.4.2008, *Solak* 3725. IE.

**Sclerodermataceae** Corda

112. *Pisolithus arhizus* (Scop.) Rauschert

Serik, Kadriye, in *Pinus pinea* forest, 27.11.2005, *Allı* 2260; Manavgat, Taşağıl, in *Pinus brutia* forest, 4.10.2008, *Allı* 3074; Serik, Karıncalı village, in cemetery, 3.10.2008, *Allı* 3063. IE.

**Stereaceae** Pilát

113. *Stereum hirsutum* (Willd.) Pers.

Kaş, Ağullu village, on pine stump, 19.4.2008, *Solak* 3317; Kaş, Kaş-Elmalı way, Uğrar village, on *Quercus* stump 10.11.2007, *Solak* 3328. IE.

**Strophariaceae** Singer & A.H.Sm.

\*114. *Agrocybe cylindracea* (DC.) Maire

Serik, Aşağı Çatma village, on *Populus* stump, 27.11.2005, *Allı* 2219; Serik, Karataş, on fig, 3.10.2008, *Allı* 3068. E.

- \*115. *Gymnopilus picreus* (Pers.) P.Karst.  
Alanya, Taşbaşı village, on pine stump, 2.12.2006, *Solak* 2900; Alanya, Taşbaşı village, on a tree piece, 2.12.2006, *Solak* 2893. IE.
116. *Hebeloma sarcophyllum* (Peck) Sacc.  
Serik, Akınlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2798. IE.
117. *Stropharia coronilla* (Bull. ex DC.) Quéf.  
Kemer-Tekirova, Ulupınar region, in *Pinus brutia* forest, 30.11.2008, *Allı* 3197; Kepez, Düzlerçamı, in *Pinus brutia* forest, 1.2.2009, *Allı* 3257; Gazipaşa, Ekmel district, in grassland, 9.11.2008, *Solak* 3963. IE.
- Suillaceae** Besl & Bresinsky
118. *Suillus bellini* (Inzenga) Watling  
Kaş, Sütleğen village, in *Cedrus* forest, 1.11.2008, *Solak* 3937; Kaş, Sütleğen village Ayıklı Çukur district, in *Cedrus* forest, 13.11.2005, *Solak* 1637; Alanya, Taşbaşı village, in pine forest, 2.12.2006, *Solak* 2897. E.
- \*119. *Suillus bovinus* (Pers.) Roussel  
Serik, Akınlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2840; Kaş, Çeşme village-Elmalı way 4 km, in pine forest, 10.11.2007, *Solak* 3339. E.
120. *Suillus collinitus* (Fr.) Kuntze  
Serik, Çandır, in *Pinus brutia* forest, 24.11.2007, *Allı* 2899; Manavgat, Titreyen Göl, in *Pinus brutia* forest, 8.11.2008, *Solak* 3948. E.
121. *Suillus granulatus* (L.) Roussel  
Korkuteli, Tahtalı Beli district, in *Pinus brutia* forest, 25.11.2005, *Allı* 2582; Kaş, Kaş-Elmalı way, Kasaba village, in pine forest, 10.11.2007, *Solak* 3331. E.
- Tapinellaceae** C.Hahn
- \*122. *Tapinella panuoides* (Batsch) E.J.Gilbert  
Kemer, Küçükçatak district, on *Pinus brutia* root, 30.1.2009, *Allı* 3272; Serik, Akınlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2825; Alanya, Taşbaşı village, on *Pinus brutia* stump, 2.12.2006, *Solak* 2935. IE.
- Tricholomataceae** R.Heim
123. *Clitocybe metachroa* (Fr.) P.Kumm.  
Manavgat, Pelitdibi village, in pine forest, 2.12.2006, *Solak* 2916; Alanya, Taşbaşı village, in pine forest, 2.12.2006, *Solak* 2933. IE.
124. *Clitocybe odora* (Bull.) P.Kumm.  
Serik, Akınlar, in *Pinus pinea* forest, 1.12.2006, *Solak* 2824; Serik, Belek, in *Pinus brutia* and *P. pinea* forest, 2.12.2006, *Solak* 2877. E.
- \*125. *Clitocybe sinopica* (Fr.) P.Kumm.  
Alanya, Taşbaşı village, in pine forest, 2.12.2006, *Solak* 2934. E.
126. *Infundibulicybe geotropia* (Bull.) Harmaja  
Manavgat, Pelitdibi village, in pine forest, 2.12.2006, *Solak* 2905. E.
127. *Lepista nuda* (Bull.) Cooke  
Alanya, Taşbaşı village, in pine forest, 2.12.2006, *Solak* 2938; Serik, Kadriye, in *Pinus pinea* forest, 27.11.2005, *Allı* 2256; Serik, Kadriye, in *Pinus pinea* forest, 9.2.2006, *Allı* 2336; Kaş, Kaş-Antalya way 20 km, in *Pinus brutia* forest, 30.11.2008, *Allı* 3211; Kemer, Beldibi district, in *Pinus brutia* forest, 30.1.2009, *Allı* 3281; Kaş, Sütleğen village, in *Cedrus* forest, 1.11.2008, *Solak* 3938. E.
- \*128. *Lepista personata* (Fr.) Cooke  
Kemer, Çamyuva district, in cemetery, 31.1.2009, *Allı* 3296. E.
- \*129. *Melanoleuca arcuata* (Bull.) Singer  
Manavgat, Pelitdibi village, in pine forest, in grassland, 2.12.2006, *Solak* 2920. E.
- \*130. *Melanoleuca excissa* (Fr.) Singer  
Serik, Akınlar, in *Pinus pinea* forest, in grassland, 1.12.2006, *Solak* 2806; Kaş, Sütleğen village, in grassland, 1.11.2008, *Solak* 3919; Gazipaşa, Ekmel district, in grassland, 9.11.2008, *Solak* 3955. E.
131. *Melanoleuca graminicola* (Velen.) Kühner & Maire  
Serik, Akınlar, in *Pinus pinea* forest, in grassland, 1.12.2006, *Solak* 2797. E.
- \*132. *Melanoleuca paedida* (Fr.) Kühner & Maire  
Serik, Akınlar, in *Pinus pinea* forest, in grassland, 1.12.2006, *Solak* 2804; Manavgat, Pelitdibi village, in pine forest, 2.12.2006, *Solak* 2924. E.
- \*133. *Tricholoma anatolicum* H.H.Doğan & Intini  
Kaş, Sütleğen village, Ayıklı Çukur district, in *Cedrus* forest, 13.11.2005, *Solak* 1635; *ibid.*, 1.11.2008, *Solak* 3586. E.
- \*134. *Tricholoma batschii* Gulden  
Korkuteli, Elmalı Beli district, in *Pinus brutia* forest, 25.11.2005, *Allı* 2184. Serik, Çandır-Gökçemuar village, in *Pinus brutia* forest, 24.11.2007, *Allı* 2901; Manavgat, Selge, in *Cupressus* forest, 2.12.2006, *Solak* 2889; Alanya, Taşbaşı village, in pine forest, 2.12.2006, *Solak* 2894; Manavgat, Pelitdibi village, in pine forest, 2.12.2006, *Solak* 2914; Kaş, Sütleğen village, in *Cedrus* forest, 1.11.2008, *Solak* 3936. IE.
135. *Tricholoma caligatum* (Viv.) Rick.  
Manavgat, Sağırin-Samadın district, in *Pinus brutia* forest, 24.11.2007, *Allı* 2875; Alanya, Taşbaşı village, in pine forest, 2.12.2006, *Solak* 2892. IE.
136. *Tricholoma terreum* (Schaeff.) P.Kumm.  
Elmalı, Avlan (Gölarla), in *Cedrus* forest, 13.11.2005, *Solak* 1634; Alanya, Taşbaşı village, in pine forest, 2.12.2006, *Solak* 2931; Kaş, Sütleğen village, in pine forest, 1.12.2007, *Solak* 3567; Serik, Belek, in *Pinus brutia* and *P. pinea* forest, 2.12.2006, *Solak* 2859; Kaş, Yaylaçavdır village, in pine forest, 1.11.2008, *Solak* 3911. E.

#### 4. Discussion

In the first study on macrofungi of Antalya, 3 species were given by Işıloğlu and Watling (1992). After them, many studies were carried out in this research area; they are given in the Table. In these studies, Işıloğlu et al. (1997) determined 19 taxa, 1 of them belonging to *Ascomycota*



**Table.** The distribution of the taxa to families in earlier studies carried out in Antalya.

Family	Study								This study
	Işiloğlu et al. (1997)	Gezer (2000)	Gezer et al. (2000)	Doğan et al. (2003)	Kaşık et al. (2003)	Öztürk et al. (2003)	Aktaş et al. (2006)	Allı et al. (2011)	
Caloscyphaceae						1			
Dermataceae						1			
Discinaceae		1							1
Helotiaceae						1			
Helvellaceae		1				2	2		3
Humariaceae									
Morchellaceae		2				2	2		10
Pezizaceae		2				3	3		2
Pyronemataceae								1	2
Sarcoscyphaceae	1	1							
Sarcosmataceae								1	1
Xylariaceae						1			1
Agaricaceae		9				5	13		11
Amanitaceae		1				1	2		5
Atheliaceae				1					
Auriculariaceae	1			1		1	1		1
Auriscalpiaceae			1						
Bankeraceae		1				4	2		1
Bolbitiaceae		1		1		1			
Boletaceae		1				2			1
Cantharellaceae						1	1		
Clavariaceae							1		
Clavariadelphaceae						1			
Clavulinaceae							2		2
Coprinaceae		2		1			1		
Corticiaceae						1			
Cortinariaceae					1	3			1
Dacrymycetaceae							2		
Diplocystidiaceae							1		
Entolomataceae				1		1	2		3
Fomitopsidaceae				1		1	1		1
Ganodermataceae	1	1				3	1		2
Gloeophyllaceae						2	2		

**Table.** (Continued).

Geastraceae		1				3	4		1
Gomphaceae				2			1		2
Gomphidiaceae		1				3	1		1
Hydnaceae		2				2			
Hydnangiaceae		1				2	1		
Hygrophoraceae			1	3		7	4		2
Hymenochaetaceae	3	4				5	3		4
Inocybaceae		2	1	1	1	13	10		13
Lachnocladiaceae				1					
Lycoperdaceae						5			
Lyophyllaceae					2		2		
Marasmiaceae	1	7				7	6		6
Meruliaceae						1			
Mycenaceae	1				6	12	8		3
Paxillaceae						1			
Peniophoraceae							1		
Phallaceae						1			1
Phanerochaetaceae				1		2	3		
Physalacriaceae	2	2				2	1		1
Pleurotaceae		1					1		2
Pluteaceae	1	1				4	2		1
Polyporaceae	3	3				14	4		9
Psathyrellaceae	1	4				3	8		7
Rhizopogonaceae		2				2	2		2
Russulaceae		7	1			9	5		7
Schizophyllaceae	1	1				1	1		1
Schizoporaceae						1	1		
Sclerodermataceae		1					1		1
Stereaceae	1	1				4	3		1
Strophariaceae	1	4	1		4	13	12		4
Suillaceae		2				4	2		4
Tapinellaceae	1	1							1
Tremellaceae						1	1		
Tricholomataceae		10	1		2	28	19		14
Total	19	81	6	14	16	188	146	2	136

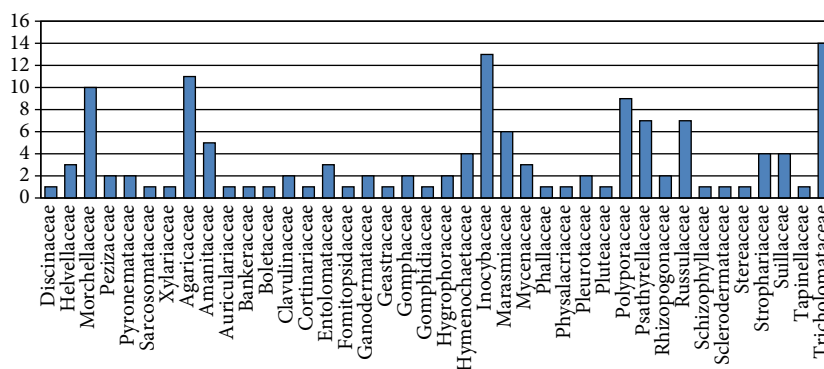


Figure 3. The distribution of the taxa and their families.

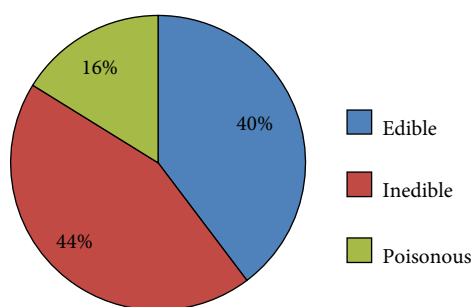


Figure 4. The percentages of edible, inedible, and poisonous fungi.

and the rest of them in *Basidiomycota*, and 16 of them being new for Antalya. Gezer (2000) recorded 81 macrofungi from the Antalya region. Taxa were distributed among 32 families, 7 of them belonging to Ascomycota and 74 to Basidiomycota. Six taxa were recorded for the first time for the Turkish Mycota from Antalya by Gezer et al. (2000). Doğan et al. (2003), identified 14 species belonging to 11 families, which were recorded for the first time in Turkey. Kaşık et al. (2003), identified 16 species as new records for the Turkish Mycota. Öztürk et al. (2003) identified 188 taxa, of which 11 belonged to Ascomycota and 177 to Basidiomycota, from the Alanya district of Antalya. Aktaş et al. (2006) recorded 146 macrofungi species belonging to 43 families from different parts of Antalya and 12 of them were new records for the Turkish Mycota. Allı et al. (2011) identified 2 new species for the Turkish Mycota from Antalya Province.

In this study, 136 taxa belonging to 40 families and 2 divisions were identified. Twenty taxa belonged to

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Ascomycota and 116 to Basidiomycota. The distribution of the taxa and their families is as follows: Discinaceae 1, Helvellaceae 3, Morchellaceae 10, Pezizaceae 2, Pyronemataceae 2, Sarcosomataceae 1, Xylariaceae 1, Agaricaceae 11, Amanitaceae 5, Auriculariaceae 1, Bankeraceae 1, Boletaceae 1, Clavulinaceae 2, Cortinariaceae 1, Entolomataceae 3, Fomitopsidaceae 1, Ganodermataceae 2, Geastraceae 1, Gomphaceae 2, Gomphidiaceae 1, Hygrophoraceae 2, Hymenochaetaceae 4, Inocybaceae 13, Marasmiaceae 6, Mycenaceae 3, Phallaceae 1, Physalacriaceae 1, Pleurotaceae 2, Pluteaceae 1, Polyporaceae 9, Psathyrellaceae 7, Rhizopogonaceae 2, Russulaceae 7, Schizophyllaceae 1, Sclerodermataceae 1, Stereaceae 1, Strophariaceae 4, Suillaceae 4, Tapinellaceae 1, and Tricholomataceae 14 (Figure 3). Most of the determined species belong to the families Tricholomataceae (10.2%), Inocybaceae (9.5%), Agaricaceae (8.0%), Morchellaceae (7.3%), and Polyporaceae (6.6%), with the families Psathyrellaceae and Russulaceae following.

Fifty-four (40%) of the 136 taxa are edible, 60 (44%) are inedible, and 22 (16%) are poisonous (Figure 4).

As a result, the number of species reported from earlier researchers is 398. We have added 70 species. Thus, the number of total species has reached 468 for Antalya. *Cortinarius subferrugineus*, *Entoloma vernum*, and *Inocybe piceae* are new records for Turkey. This study significantly contributes to the knowledge of the Turkish Mycota.

## Acknowledgments

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