

Macrofungi of Karcı Mountain (Denizli, Turkey)

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Abstract: This study is based on macrofungi collected from Karcı Mountain (Denizli) between 2000 and 2002. As a result of field and laboratory studies, 66 taxa belonging to 2 classes (*Ascomycetes* and *Basidiomycetes*) and 25 families are reported. *Leucopaxillus tricolor* (Peck) Kühner was added to the Turkish mycoflora as a new record.

Key Words: Macrofungi, Taxonomy, Karcı Mountain, Denizli

Karcı Dağı'nın Makrofungusları (Denizli)

Özet: Bu çalışma 2000-2002 yılları arasında Karcı Dağı (Denizli) na ait makrofunguslar üzerinde yapılmıştır. Arazi ve laboratuvar çalışmaları sonucu 2 sınıf (*Ascomycetes* ve *Basidiomycetes*) ve 25 familyaya ait 66 tür rapor edilmiştir. *Leucopaxillus tricolor* (Peck) Kühner Türkiye mycoflorası için yeni kayıt olarak ilave edilmiştir.

Anahtar Sözcükler: Makrofunguslar, taksonomi, Karcı Dağı, Denizli

Introduction

In Turkey, many areas have climates and vegetation appropriate for growing wild mushrooms. The vegetation of these regions is distinct and complicated. The vegetation ranges from coniferous to forests of broad-leaved trees. Denizli province is rich in wild mushrooms. The climate is typically Mediterranean. Many studies of the macrofungi of Turkey have been conducted between 1852 and 2007 (Solak et al., 2007) and about 2400 macrofungi species have thus far been reported from Turkey; however, current research shows that many mushroom species inhabiting different parts of Turkey have yet to be identified. As there were no previous studies on the macromycota of Karcı Mountain (Denizli), this area was chosen for the present research.

Karcı Mountain is bordered by Denizli to the north-east, Babadağ to the northwest, Saraykoy to the north, and Tavas to the south. It has an altitude of 2308 m and

is an extension of Babadağ Mountain (Figure 1). It has a number of dominant trees, such as *Pinus brutia* Ten, *Pinus nigra* J.F. Arnold, *Cedrus libani* A. Rich, *Juniperus oxycedrus* L., and *Quercus coccifera* L., while *Populus alba* L. and *Salix triandra* L. trees grow near İsrail and Ornaz streams.

The aim of present study was to identify macrofungi species in the research area and provide additional data on the macrofungal diversity of Turkey.

Materials and Methods

During field studies conducted between 2000 and 2002, macrofungi samples were collected on Karcı Mountain, in the province of Denizli. All samples were photographed, and the morphological and ecological features were noted in the field. The samples were then taken to the laboratory where spore prints were obtained

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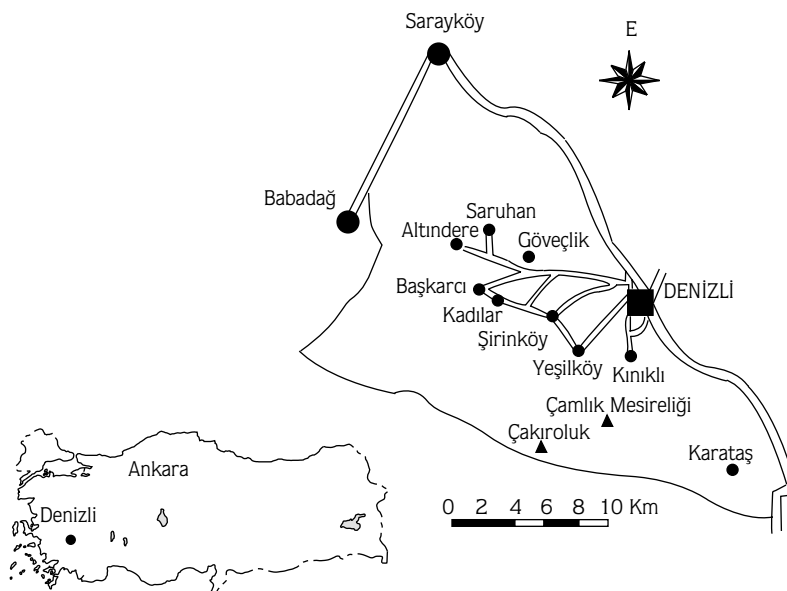


Figure 1. Collection areas.

and spore dimensions were measured using an ocular micrometer. Subsequently, all specimens were identified with the help of the following literature: Phillips (1981), Moser (1983), Breitenbach and Kränzlin (1984-1995), Pacioni (1985), Bresinsky and Besl (1990), and Ellis and Ellis (1990). The taxa were arranged according to Kirk et al. (2004). After the macrofungi samples were identified and dried, they were preserved in polythene bags containing 5 g of thymol crystals in order to protect them from internal and external parasitic attack. All materials are deposited at Pamukkale University, Education Faculty, Laboratory of Science Department, Denizli, Turkey.

Results

Macrofungi taxa consisting of 66 taxa belonging to 25 families were identified. These taxa and their localities, distribution, collection dates, and fungarium numbers are given below.

ASCOMYCETES

Helvellaceae

Helvella acetabulum (L.) Quéf.
Çamlık, under pine, 23.v.2001, *Ekici* 434.

Helvella lacunosa Afzel.

Yeşilköy, in grass, 19.v.2000, *Ekici* 192.

Helvella leucopus Pers.

The bank of Ornaz Stream, in grass, 08.iv.2000, *Ekici* 98. Pınarlık village, under poplar, 17.iii.2001, *Ekici* 304.

Morchellaceae

Morchella angusticeps Peck.

Çamlık district, in grass, 10.iv.2000, *Ekici* 38.

Morchella conica Pers.

İsrafil Stream district, in grass, 08.v.2000, *Ekici* 173.

Morchella distans Fr.

Kınıklı district, in grass, 23.v.2001, *Ekici* 436.

Morchella elata Fr.

Yeşilköy, in pine forest, 28.iv.2001, *Ekici* 318.

Morchella esculenta (L.) Pers.

İsrafil Stream district, in pine forest, 16.iv.2000, *Ekici* 121.

Pezizaceae

Peziza ampelina Pass.

Çakıroluk district, near the road, 24.iv.2001, *Ekici* 101.

Peziza vesiculosa Bull.

Çakıroluk district, near the road, 18.iv.2001, *Ekici* 348.

Sarcosphaera crassa (Santi) Pouzar.
Göveçlik, in pine forest, 15.iv.2000, *Ekici* 52.

BASIDIOMYCETES

Agaricaceae

Agaricus bisporus (J.E. Lange) Pilát.

The bank of İsrail Stream, 30.xi.2000, *Ekici* 202.
Çakıroluk, in grass, 25.v.2001, *Ekici* 321.

Agaricus campestris L.

Kınıklı, in grass, 13.ix.2000, *Ekici* 68.

Coprinus atramentarius (Bull.) Fr.

The bank of İsrail Stream, on stump of wood,
15.ix.2000, *Ekici* 73.

Coprinus comatus (O.F. Müll.) Pers.
Hallaclar, in grass, 11.xi.2001, *Ekici* 417.

Coprinus micaceus (Bull.) Fr.

Yeşilköy, near road, 18.xi.2001, *Ekici* 418.

Macrolepiota procera (Scop.) Singer.

Yeşilköy, near the road, 04.x.2000, *Ekici* 187.

Astraeaceae

Astraeus hygrometricus (Pers.) Morgan.

Yeşilköy, in grass, 14.xii.2000, *Ekici* 126.

Bolbitiaceae

Agrocybe cylindracea (DC.) Gillet.

Hallaclar, on poplar, 24.x.2001, *Ekici* 398.

Agrocybe dura (Bolton) Singer.

Kınıklı, in pine forest, 15.x.2000, *Ekici* 291.

Hebeloma eburneum Malençon.

Hallaclar, in pine forest, 05.iii.200, *Ekici* 19.

Panaeolus papilionaceus (Bull.) Quél.

Yahşiler, in pine forest, 13.xi.2000, *Ekici* 228.

Boletaceae

Boletus edulis Bull.

The bank of the İsrail Stream, in pine forest,
14.xi.2000, *Ekici* 73.

Boletus chrysenteron Bull.

Yeşilköy, in pine forest, 23.iii.2000, *Ekici* 14.

Cortinariaceae

Inocybe rimosa (Bull.) P. Kumm.

Kınıklı, in pine forest, 11.iv.2001, *Ekici* 347.

Entolomataceae

Entoloma turbidum (Fr.) Quél.

Kınıklı, in pine forest, 18.xi.2001, *Ekici* 448.

Ganodermataceae

Ganoderma applanatum (Pers.) Pat.

Kınıklı district, on poplar, 05.xii.2001, *Ekici* 311.

Geastraceae

Geastrum sessile (Sowerby) Pouzar.

Yeşilköy, in grass, 12.v.2000, *Ekici* 99.

Geastrum triplex Jungh.

Hallaclar district, in grass, 01.ii.2000, *Ekici* 16.

Gomphidiaceae

Chroogomphus rutilus (Schaeff.) O. K. Mill.

Çamlık, in pine forest, 11.iii.2000, *Ekici* 39.
Servergazi, in pine forest, 14.iv.2000, *Ekici* 71.

Hydnangiaceae

Laccaria laccata (Scop.) Fr.

Kınıklı, in pine forest, 08.xi.2001, *Ekici* 376.

Hymenochaetaceae

Coltricia perennis (L.) Murrill.

The bank of Ornaz Stream, in grass, 18.iii.2000, *Ekici* 94.

Phellinus pini (Brot.) Bondartsev & Singer.

İsrail Stream, pine trunks, 18.xi.2000, *Ekici* 207.

Phellinus tuberculatus (Baumg.) Niemelä.

Servergazi district, on poplar trees, 14.iv.2000, *Ekici* 68.
Bereketli district, on poplar trees 26.vi.2000, *Ekici* 144.

Phellinus torulosus (Pers.) Bourdot & Galzin.

İsrail Stream, on *Platanus* sp. 03.ii.2000, *Ekici* 23.

Trametes versicolor (L.) Lloyd.

Kınıklı, on willow trunks, 05.xi.2001, *Ekici* 317.

Lycoperdaceae

Lycoperdon foetidum Bonord.
Göveçlik, in pine forest, 10.xii.2001, *Ekici* 393.

Lycoperdon perlatum Pers.

Yeşilköy district, in grass, 23.iii.2000, *Ekici* 14.
Hallaçlar district, in grass, 18.iv.2000, *Ekici* 88.

Lycoperdon mammaeforme Pers.: Pers.
Başkarıcı district, in grass, 10.x.2000, *Ekici* 214.

Lycoperdon molle Pers.

KaraYahşiler, in grass, 21.v.2001, *Ekici* 173. Kınıklı,
in grass, 10.xii.2001, *Ekici* 407.

Marasmiaceae

Armillaria mellea (Vahl) P. Kumm.

Kınıklı, near the road, on poplar, 01.xi.2001, *Ekici*
309.

Armillaria tabescens (Scop.) Emel.

Yeşilköy, on poplar, 23.x.2001, *Ekici* 301.

Pleurotaceae

Pleurotus eryngii (DC) Gillet.

Ornaz stream, on *Eryngium* sp., 18.iv.2000, *Ekici* 43.
Çakıroluk, on *Eryngium* sp., 29.v.2000, *Ekici* 79.

Pleurotus ostreatus (Jacq.) P. Kumm.

Hallaçlar, on poplar, 04.iii.2000, *Ekici* 11. Çamlık, on
pine, 19.v.2001, *Ekici* 176.

Pluteaceae

Pluteus salicinus (Pers.) P. Kumm.

İsrafil Stream, on willow truck, 30.vi.2000, *Ekici*
199.

Polyporaceae

Fomes fomentarius (L.) JJ. Kickx.

Çakıroluk district, on poplar, 24.iv.2001, *Ekici* 103.

Laetiporus sulphureus (Bull.) Murrill.

The bank of Ornaz Stream, on poplar, 10.iv.2000,
Ekici 49.

Polyporus squamosus (Huds.) Fr.

KaraYahşiler village, on willow, 21.v.2000, *Ekici* 163.

Rhizopogonaceae

Rhizopogon luteolus Fr.

Yeşilköy, in pine forest, 14.v.2000, *Ekici* 68. The
bank of İsrail Stream, 11.x.2000, *Ekici* 86. Çamlık, in
pine forest, 18.iii.2001, *Ekici* 144.

Rhizopogon roseolus (Corda) Th. Fr.

Çamlık, in pine forest, 11.iii.2000, *Ekici* 38. Başkarıcı
district, in pine forest,

11.ii.2000, *Ekici* 11.

Russulaceae

Lactarius deliciosus (L.) Gray.

Çamlık, in pine forest, 18.xi.2001, *Ekici* 421,

Lactarius deterrimus Groger.

Çamlık, in pine forest, 18.xi.2001, *Ekici* 413.
Yesilkoy, in pine forest, 16.ii.2000,

Ekici 36.

Russula azurea Bres.

Hallaçlar, in pine forest, 03.xi.2000, *Ekici* 167.

Russula cyanoxantha (Schaeff.) Fr.

Kınıklı district, under oak trees, 11.x.2001, *Ekici*
383.

Russula delica Fr.

Kınıklı, in pine forest, 22.v.2001, *Ekici* 417,

Schizophyllaceae

Schizophyllum commune Fr.

Başkarıcı, on poplar, 12.xi.2000, *Ekici* 134.
KaraYahşiler, on poplar, 15.iv.2001, *Ekici*
281.

Stereaceae

Stereum hirsutum (Wild.) Pers.

Ornaz Stream, on oak trees, 11.x.2001, *Ekici* 376.

Suillaceae

Suillus bellinii (Inzenga) Watling.

Çamlık, in pine forest, 18.xi.2001, *Ekici* 349.

Suillus collinitus (Fr.) Kuntze

Kınıklı district, in pine forest, 08.iv.2001, *Ekici* 217.

Suillus granulatus (L.) Roussel.

Çakıroluk district, in pine forest, 24.iv.2001, *Ekici*
101.

Tricholomataceae

Lepista nuda (Bull.) Cooke.

Başkarıcı, in grass, 03.ix.2000, *Ekici* 117.

Mycena strobilicola J. Favre & Kühner.

The bank of İsrail Stream, in grass, 14.x.2000, *Ekici* 204,

Tricholoma terreum (Schaeff.) Quél.

Kınıklı, in pine forest, 23.xi.2000, *Ekici* 103.

Leucopaxillus tricolor (Peck) Kühner.

Pileus, 7-1.5 cm, hemispherical when young, then turns convex with an enrolled margin. Margin incurved for a long time and slightly ribbed, surface smooth, tomentose-suede-like, yellow-ochre when young. Later, yellow-brown and usually red-brown, splitting and somewhat floccose in places. **Lamellae**, green-yellow when young, then ochre-yellow. **Stipe**, 5-8 × 2-6 cm, bulbous-tuberous, white to whitish, tomentose, spotted ochre-like in places, solid. **Spores**, broadly elliptical, verrucose, hyaline, with drops, 5.5-8 × 4-5.5µm.

Hallaçlar, pine forest, 22.iv.2002, *Ekici & Türkoğlu* 450.

Melanoleuca cognata subsp. *cognata* (Fr.) Konrad & Maubl.

Hallaçlar, in pine forest, 24.x.2001, *Ekici* 404.

Melanoleuca excissa (Fr.) Singer.

The bank of Ornaz Stream, in grass, 18.viii.2000, *Ekici* 61.

Discussion and Conclusion

In this study, 66 macrofungi taxa belonging to 25 families collected on Karıcı Mountain were identified. Among them, 11 (17%) belong to *Ascomycota* and 55 (83%) to *Basidiomycota*. These figures are similar to those reported in earlier studies conducted in other areas. For instance, in the Mediterranean region of Turkey, macrofungi species consist of 7.5% *Ascomycota* and

92.5% *Basidiomycota* (Işiloğlu & Öder, 1995), 13% *Ascomycota* and 87% *Basidiomycota* in Izmir province (Solak et al., 1999), 9% *Ascomycota* and 91% *Basidiomycota* in the Antalya region (Gezer, 2000), and 13% *Ascomycota* and 87% *Basidiomycota* in the Bekeilli district (Köse et al., 2006). The distribution of the 66 species in to families is as follows: *Agaricaceae* 6, *Tricholomataceae* 6, *Hymenochaetaceae* 5, *Morchellaceae* 5, *Russulaceae* 5, *Bolbitiaceae* 4, *Lycoperdaceae* 4, *Suillaceae* 3, *Polyporaceae* 3, *Helvellaceae* 3, *Pezizaceae* 3, *Pleurotaceae* 2, *Marasmiaceae* 2, *Rhizopogonaceae* 2, *Gaeastraceae* 2, *Boletaceae* 2, *Gomphidiaceae* 1, *Schizophyllaceae* 1, *Cortinariaceae* 1, *Stereaceae* 1, *Ganodermataceae* 1, *Pluteaceae* 1, *Entolomataceae* 1, *Hydnangiaceae* 1 and *Asteraceae* 1.

In all, 18% of the macrofungi taxa we found belong to *Tricholomataceae* and *Agaricaceae*. Pine, cedar, and mixed forests and meadows are very suitable habitats for members of *Tricholomataceae* and *Agaricaceae*. The percentages of *Tricholomataceae*, *Agaricaceae*, *Morchellaceae*, *Polyporaceae*, and *Pleurotaceae* identified in the present study are similar to those of earlier studies carried out near the research area (Işiloğlu & Öder, 1995; Solak et al., 1999; Gezer, 2000; Köse et al., 2006). This may be due to similarities in vegetation, climate, and plant flora. In the research area 16 species of edible macrofungi are known and *Morchella angusticeps*, *M. conica*, *M. distans*, *M. elata*, *M. esculenta*, *Polyporus squamosus*, *Lycoperdon molle*, *L. perlatum*, *Rhizopogon luteous*, *R. roseolus*, *Lactarius deliciosus*, *L. deterrimus*, *Pleurotus ostreatus*, *P. eryngii*, *Agaricus campestris*, and *A. bisporus* are eaten by the local population.

The study area also includes one poisonous taxon, *Inocybe rimosa*. There have been no reports of death from mushroom poisoning in this area because local people collect only well-known mushrooms.

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