

New Records for the Macrofungi of Turkey

Aziz TÜRKOĞLU^{1*}, Giyasettin KAŞIK², Celâleddin ÖZTÜRK², H. Hüseyin DOĞAN²

¹Pamukkale University, Science and Arts Faculty, Biology Department, Kınıklı, 20020 Denizli - TURKEY

²Selçuk University, Science and Art Faculty, Biology Department, 42031 Konya - TURKEY

Received: 05.04.2006

Accepted: 03.07.2007

Abstract: Several macrofungi specimens were collected during field studies in Kayseri province. After field and laboratory studies, 6 species belonging to 6 families were identified as new records for Turkey. These species are *Clitocybe catinus* (Fr.) Quél., *Conocybe appendiculata* J.E.Lange & Kühner, *Coprinus macrocephalus* (Berk.) Berk., *Guepinia helvelloides* (DC.) Fr., *Psathyrella leucotephra* (Berk. & Broome) P.D.Orton, and *Russula olivaceoviolascens* Gillet.

Key Words: Macrofungi, new records, macrofungal distribution, Turkey

Türkiye Makrofungusları için Yeni Kayıtlar

Özet: Kayseri yöresinde yapılan arazi çalışmaları esnasında bazı makrofungus örnekleri toplandı. Arazi ve laboratuvar çalışmaları sonucunda, 6 familyaya ait 6 tür Türkiye için yeni kayıt olarak belirlendi. Bu türler; *Clitocybe catinus* (Fr.) Quél., *Conocybe appendiculata* J.E.Lange & Kühner, *Coprinus macrocephalus* (Berk.) Berk., *Guepinia helvelloides* (DC.) Fr., *Psathyrella leucotephra* (Berk. & Broome) P.D.Orton ve *Russula olivaceoviolascens* Gillet tir.

Anahtar Sözcükler: Makrofunguslar, yeni kayıtlar, makrofungus dağılımı, Türkiye

Introduction

Many taxonomic studies on the macrofungal flora of Turkey were carried out on macrofungi species between 1932 and 2004. Approximately 1600 macrofungi species have been documented in Turkey (Sesli & Denchev, 2005).

Kayseri province is located in the middle of Anatolia, surrounded by Adana in the south, Sivas and Yozgat in the north, Nevşehir and Niğde in the west, and Kahramanmaraş in the east (Figure 1). The study area has a typically continental or steppe climate (Akman, 1990). The dominant vegetation of the region reflects the climatic characteristics. Consequently, *Astragalus* sp., a typical plant, is widespread in this steppe area. The stream banks are covered with poplar and willow trees, such as *Styrax officinalis* L., *Salvia* L. sp., and *Tamarix* sp. In addition, *Pinus brutia* Ten., *Pinus nigra* J.F.Arnold,

Cedrus libani A.Richard, *Abies cilicica* (Ant. & Kotschy), *Juniperus oxycedrus* L., *Juniperus excelsa* Bieb., and *Quercus cerris* L. populations are very common in the southern districts of Yahyalı and Develi. The favourable climate and the type of common vegetation make it an appropriate environment for macrofungal growth.

The aim of our study was to determine the macrofungi species in the research area, and thus provide more data on the macrofungal flora of Turkey.

Materials and Methods

Macrofungi specimens were collected from the area with great care to avoid any damage to various parts of the fungi from nature in Kayseri in 2000-2001. The specimens were placed in separate wicker containers to avoid confusion. Macroscopic characteristics, locality,

* E-mail: azizturkoglu@yahoo.com

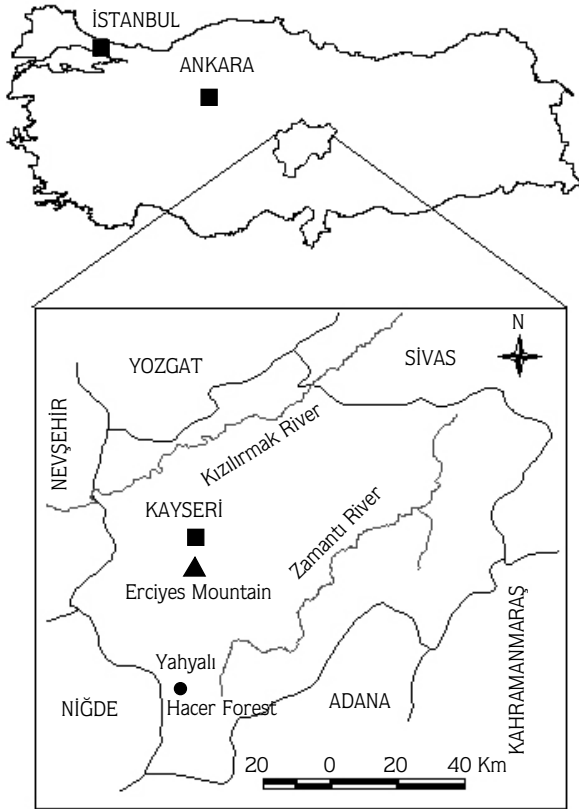


Figure 1. Collection areas.

characteristics of habitat etc. were noted and photographs were taken during the collection, followed by transfer to the laboratory. The spores were photographed with a camera mounted on a research microscope. Spore dimensions were measured using an ocular micrometer. All taxa were identified using references by Breitenbach & Kranzlin (1984, 1986, 1991, 1995, 2000), Bresinsky & Besl (1990), Capelli (1984), Ellis & Ellis (1990) Marchand, (1971, 1973, 1975, 1977, 1980, 1982, 1983, 1986), Moser (1983),

Pacioni (1985), Phillips (1981), Watling (1982), and Watling & Gregory (1987, 1989). Taxa are arranged according to Kirk et al. (2001). Referring to the present records, these taxa were identified as new records for Turkish macrofungi.

The specimens are kept in Selçuk University, Mushroom Application and Research Centre.

Results

Bolbitiaceae

1. *Conocybe appendiculata* J.E.Lange & Kühner

Cap: 1-2.5 cm, hemispherical initially, convex-plane formation in later growing stages. Colour changes from rust-brownish to ochre to pale brownish (Figure 2). Gills: dark brown, adnate and decurrent. Stem: 1.5-3.5 x 0.1-0.5 cm. It is cylindrical and solid. The upper part of stem is pale ochreish and floccose. The base of the stem is brownish and white fibrillose. Flesh is ochre-brownish and thin. The odour and taste are not distinctive. Spores: 7-9 x 4-5 μ m, elliptic (Figure 2) and yellow-brown, Spore print: rust-brown.

Kayseri: Yahyalı, Hacer Forest, Bozarmut district, in pine forest, 1750 m, 04.11.2000, Türkoğlu 289.

Agaricaceae

2. *Coprinus macrocephalus* (Berk.) Berk

Cap: 1-3 cm, cylindrical initially, bell-shaped in later growing stages (Figure 3), brown-gray and woolly at first, later blackish-grey and glabrous. Gills: white at first, later grey to black. Stem: 4-12 x 0.3-1.5 cm, cylindrical. The upper part of the stem is tapered. The base of the stem is rooting. Flesh: thin and whitish-cream. Spores: 11-15 x 7-5.9 μ m, elliptical (Figure 3) and dark red brown. Spore print: black.

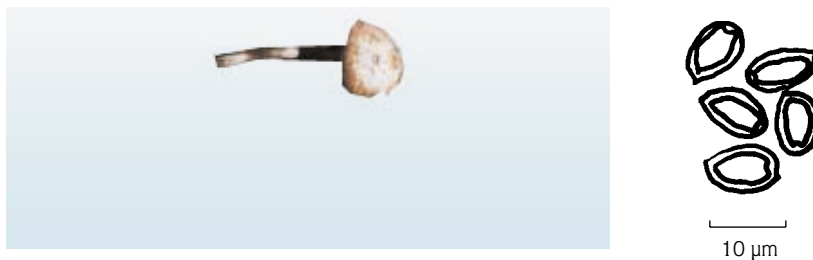


Figure 2. *Conocybe appendiculata*, basidiocarp and basidiospores.



10 µm

Figure 3. *Coprinus macrocephalus*, basidiocarp and basidiospores.

Kayseri: Yeşilhisar, Başköy, İvriz Valley, on horse manure, 1400 m, 20.05.2001, Türkoğlu 769.

Psathyrellaceae

3. *Psathyrella leucotephra* (Berk. & Broome) P.D.Orton

Cap: 3-8 cm, convex and with a distinct umbo in centre. Colour varies from ochre-brown to beige-cream (Figure 4). Gills: whitish initially, grey-black in later growing stages and adnexed. Stem: 7-11 x 0.5-1.5 cm, cylindrical, hollow, fragile and white. Flesh: thin, whitish and odourless. The taste: mild. Spores: 7.5-11 x 4.5-6 µm, elliptic (Figure 4) and thick-walled. Spore print: dark brown.

Kayseri: Yeşilhisar, Soğanlı, Çayırık Valley, around poplar stumps, 1400 m, 01.05.2000, Türkoğlu 10,13; Yeşilhisar, Kovalı Village, around stumps, 1400 m, 01.05.2000, Türkoğlu 44.



10 µm

Figure 4. *Psathyrella leucotephra*, basidiocarp and basidiospores.

Russulaceae

4. *Russula olivaceoviolascens* Gillet

Cap: 7-9 cm, convex initially, flattened formation in later growing stages. The centre is slightly depressed (Figure 5). The margin is slightly undulating. Colour changes from wine-red to brown with lilac tint. Gills: white-cream, soft and decurrent. Stem: 6-8 x 1-1.5 cm and cylindrical. The base of the stem is clavate, white-cream. It is fragile and longitudinally yellowish-fibrillose. Flesh: white and soft. Taste: aromatic. It has a striking odour. Spores: 6-8 x 5-6.5 µm, spherical (Figure 5). Spore print: cream.

Kayseri: Yahyalı, Hacer Forest, Katran Korusu district, in coniferous forest, 1700 m, 18.05.2000, Türkoğlu 100; Yahyalı, Mansurlu, Aşağı Burhaniye district, in coniferous forest, 1650 m, 27.05.2000, Türkoğlu 127; Develi, Bakırdağ, Yazıçam forest, in coniferous forest,



Figure 5. *Russula olivaceoviolascens*, basidiocarp and basidiospores.

500 m, 09.06.2000, Türkoğlu 167,170; Yahyalı, Mansurlu, Aşağı Burhaniye district, in coniferous forest 1650 m, 29.10.2000, Türkoğlu 213, 216, 218; Develi, Bakırdağ, Yazıçam forest, in coniferous forest, 1500 m, 19.04.2001, Türkoğlu 717.

Exidiaceae

5. *Guepinia helvelloides* (DC.) Fr.

Basidiocarp: 3-10 x 2-5 cm, ear-shaped. It is tapering into a stalk, whitish (Figure 6). The margin is flaring, orange-pink. The inner surface of fruit body is smooth and dull. The outer surface of fruit body is smooth and wrinkled. Hymenium is on the upper part of the outer surface. Flesh: elastic. Odour and taste: not distinctive. Spores: 9.5-11 x 5.5-6 µm, irregularly elliptical with a distinct apiculus (Figure 6), smooth and hyaline.

Kayseri: Yahyalı, Mansurlu, Yukarı Burhaniye district, in pine forest, 1500 m, 29.10.2000, Türkoğlu 210.

Tricholomataceae

6. *Clitocybe catinus* (Fr.) Quél.

Cap: 3-8(10) cm, convex initially, plane and depressed in the centre formation in later growing stages (Figure 7), whitish or beige. Gills: white, later yellowish and decurrent. Flesh: white, thin and soft. Taste: mild. Stem: 3-6 x 0.5-1.5 cm and cylindrical, white or light beige. The base of stem becomes clavate. Spores: 6.5-8.5 x 4.5-5 µm, elliptic (Figure 7), smooth and hyaline, with drops. Spore print: cream.

Kayseri: Yeşilhisar, Başköy, in grass 1400 m, 09.06.2000, Türkoğlu 157,158; Hacer Forest, Yelbeleni



Figure 6. *Guepinia helvelloides*, basidiocarp and basidiospores.



Figure 7. *Clitocybe catinus*, basidiocarp and basidiospores.

district, in grass 1700 m, 04.11.2000, Türkoğlu 260, 285, 288; Develi, Bakırdağ, Yazıçam forest, in grass, 13.11.2000, Türkoğlu 307; Yahyalı, Aladağ, in grass, 1750 m, 29.04.2001, Türkoğlu 614; Yeşilhisar, İvriz

Valley, in grass, 1400 m, 30.04.2001, Türkoğlu 684; Develi, Büyük Künye Village, in grass 1400 m, 19.05.2001, Türkoğlu 699, 715.

References

- Akman Y (1990). *İklim ve Biyoiklim*. Ankara: Palme Yayıncılık.
- Breitenbach J & Kränzlin F (1984-2000). *Fungi of Switzerland*. (Vol 1-5). Luzern: Verlag Mykologia.
- Bresinsky A & Besl HA (1990). *Colour Atlas of Poisonous Fungi*. London: Wolfe Publishing.
- Capelli A (1984). *Fungi Europaei, Agaricus* L.: Fr. Karsten: Libreria editrice Biella Giovanna. Italy.
- Ellis B & Ellis JP (1990). *Fungi without Gills (Hymenomyces and Gasteromyces)*. London: Chapman and Hill.
- Kirk PM, Cannon PF, David JC & Stalfers JA (2001). *Ainsworth & Bisby's Dictionary of the Fungi*, London: CABI Publishing. Electronic version: [http://www. speciesfungorum.org/ AuthorsoffungalNames.htm](http://www.speciesfungorum.org/AuthorsoffungalNames.htm)
- Marchand A (1971-1986). *Champignons du nord et du midi*, 1-9. Perpignan: Société Mycologique des Pyrénées Méditerranéennes.
- Moser M (1983). *Keys to Agarics and Boleti*. Stuttgart: Gustav Fischer Verlag.
- Pacioni G (1993). *Mushrooms and Toadstools*. London: MacDonald.
- Phillips R (1981). *Mushrooms and Other Fungi of Great Britain and Europe*. London: Pan Books Ltd.
- Sesli E & Denchev CM (2005). Checklist of the myxomycetes and macromycteces of Turkey. *Mycol Balc* 2: 119-16.
- Watling R (1982). *British Fungus Flora. Bolbitaceae 3: Agrocybe, Bolbitius, Conocybe*, 1-139. Edinburgh: Royal Botanic Garden.
- Watling R & Gregory NM (1987). *British Fungus Flora 5: Strophoriaceae & Coprinacea*. Edinburgh: Royal Botanic Garden.
- Watling R & Gregory NM (1989). *British Fungus Flora. Agarics and Boleti 6: Crepidotaceae, Pleurotaceae and other pleurotoid agarics*. Edinburgh: Royal Botanic Garden.