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New Records of Macrofungi from Turkey

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Abstract: This taxonomic study is based on macrofungi collected Babadağ District (Denizli) in the period 2005-2006. As a result of field and laboratory studies, five new records are presented. These species are *Leptopodia elastica*, *Entoloma incarnatofuscescens*, *Geastrum minimum*, *Hygrophorus speciosus* and *Russula sororia*.

Key words: Fungal diversity, macrofungi, Turkey

INTRODUCTION

Many taxonomic studies of the macrofungal flora of Turkey have been carried out and many others are in progress. The studies carried out on macrofungi species between 1932 and 2005 have been reviewed and as a result it was determined that there are approximately 1600 documented macrofungi species in Turkey (Sesli and Denchev, 2005). Macrofungal flora of Turkey is far from to be completed. Each study in this subject will aid to illuminate macrofungal flora of Turkey for this reason, our aim in this study is to contribute to the knowledge of macrofungal flora of Turkey.

In this study, some macrofungi were collected from different localities in Babadağ District (Denizli) in the years 2005-2006 (Fig. 1). As a result of the field and

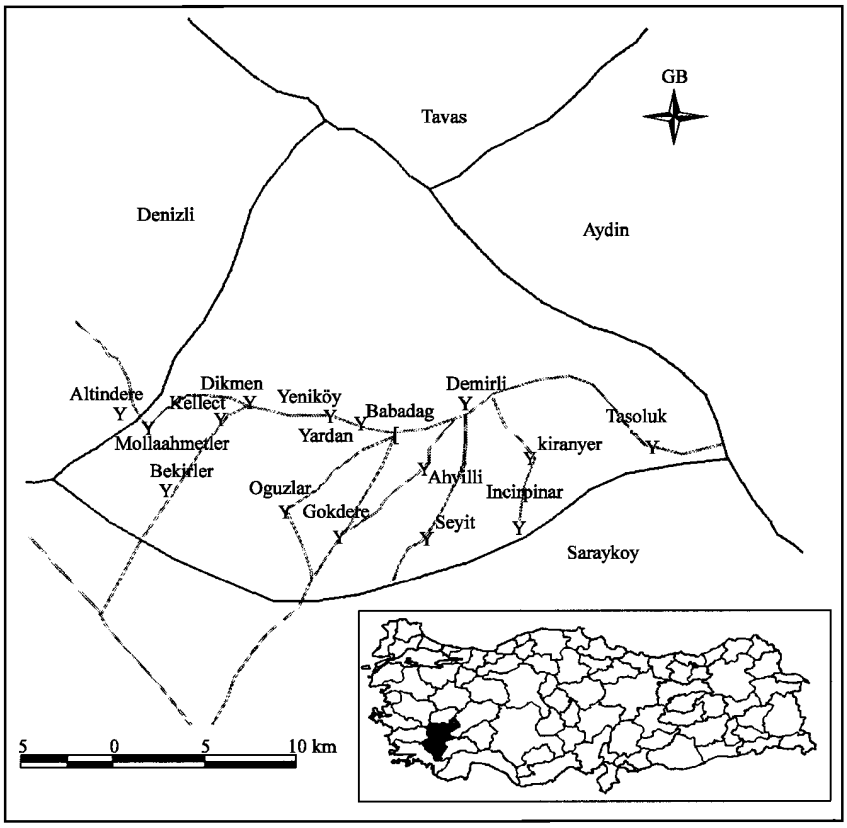

Fig. 1: Collection areas

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laboratory studies, totally 130 taxa have been identified. Our whole macrofungi list was checked by Dr. Mustafa Işıloğlu who is the authority to reveal new records in Turkey. After his checking among the taxa recorded, five are new for Turkey. The new records are presented with their descriptions, localities, collecting dates and herbarium numbers.

MATERIALS AND METHODS

Macrofungi carpophores were collected in Babadağ district (Denizli) between 2005 and 2006. The field studies were conducted mostly in autumn and spring, since during these periods the climatic conditions are most suitable for carpophore formation. Relevant morphological and ecological characteristics of the macrofungi were recorded and photographed in their natural habitats. The local consumption of macrofungi and their local names were recorded by interviewing local people. Then they were carried to the laboratory for further investigation. Spore prints were prepared and spores photographed. Some reagents (Melzer's reagent, 5% KOH, H_2SO_4, cotton blue, etc.) were used for identification. The specimens were identified by examining their macroscopic and microscopic features, using current reference books (Marchand, 1971-1986; Watling, 1973; Phillips, 1981; Moser, 1983; Lincoff, 1984; Bresinsky and Besl, 1990; Ellis and Ellis, 1990; Breitenbach and Kränzlin, 1984-2000). Taxa are arranged according to Kirk *et al.* (2004). All collected specimens are now deposited at Pamukkale University, Education Faculty, Laboratory of Science Department, in Denizli.

RESULTS

Helvellaceae

***Leptopodia elastica* (Bull.) Boud.:** Fruiting body 12 cm, head of fruiting body irregularly saddle-shaped when young. Then distorted and formless, two or three-loped (Fig. 2a). Hymenium, smooth and undulating, yellowish, smoke-gray to pale brownish. Underface bare, ligter. Stalk generally hollow and smooth, becoming more slender towards the cap, without distinct ribs, whitish to ochre toward the tip. Spores hyaline, elliptical, smooth, 17-19×10-12 μ (Fig. 2b). Young spores often with rounded warts. Asci eight-spored (Fig. 2c). Paraphyses cylindrical, thickened (Fig. 2d).

It grows in gregarious in pine forests.

Specimen examined: Babadağ, Dikmen village, in Pinus brutia forest, on the ground, 21.05.2006, Türkoğlu 2829; Mollaahmetler village, in Pinus brutia forest, edges of paths, 22.05.2006, Türkoğlu 2843-2859.

This species is characterized by its cap irregularly saddle-shaped and underface bare. It grows gregariously on the ground in broadleaved and coniferous forests (Breitenbach and Kränzlin, 1984).

Entolomataceae

Entoloma incarnatofuscescens (Britzelm.) Noordel: Cap 10-25 cm, plane first, later increasingly depressed in the center, slightly radially fibrillose and translucent-striate to the center, hygrophanous, dark gray- to pink-brown when moist, light brown when dry, lilac tinge in the center, slightly squamose, margin acute (Fig. 3a). Flesh whitish to light brown, odor spicy. Lamellae white to gray-white when young, later reddish-brown, decurrent. Stipe 2-5 cm, cylindrical, rigid, fragile, hollow, gray-blue when young, later fading to beige gray. Spores 5-7 angled, 8.5-10×6-8 μ (Fig. 3b). Spore print brownish-pink. Basidia clavate-ventricose (Fig. 3b). Basidia clavate ventricose, 26-36×8-12 μ (Fig. 3e).

It grows in grass in gardens.

Specimen examined: Babadağ, Ahıllı, in grass, 19.05.2006, Türkoğlu 2785; Yeniköy, in grass, 19.05.2006, Türkoğlu 2786; Dikmen, in garden, 21.05.2006, Türkoğlu 2813-2814; Mollaahmetler village, in grass, 22.05.2006, Türkoğlu 2849-2858.

Entoloma incarnatofuscescens is recognized by distinctly gray-blue stipe, translucent-striate, decurrent lamellae and the complete absence of clamps. It grows solitary on nutrient-rich soil in forest and gardens. According to Breitenbach and Kränzlin (1995), inedible.

Geastraceae

***Geastrum minimum* Schwein:** Fruitbody spherical at first, outer wall splitting in to 6-11 non-hygroscopic lobes, later and then 1-3 cm diam., pale brown (Fig. 4a). Spore-sac round or ovoid, 0.5-1 cm diameter, often covered with small white crystals of calcium oxalate, with pale stalk and smooth apophysis, peristome fimbriate, delimited by a furrow. Spores subspherical, brown, warted, 5-5.5×4-4.5 μ (Fig. 4b).

It grows in sandy soils.

Specimen examined: Babadağ, Kelleci village, in sandy soils in garden, 12.11.2005, Türkoğlu 1217.

According to Ellis and Ellis (1990), it grows in dry places and sandy soils. *Geastrum minimum* is distinguished by spore-sac round or ovoid, covered with small white crystals of calcium oxalate, peristome fimbriate.

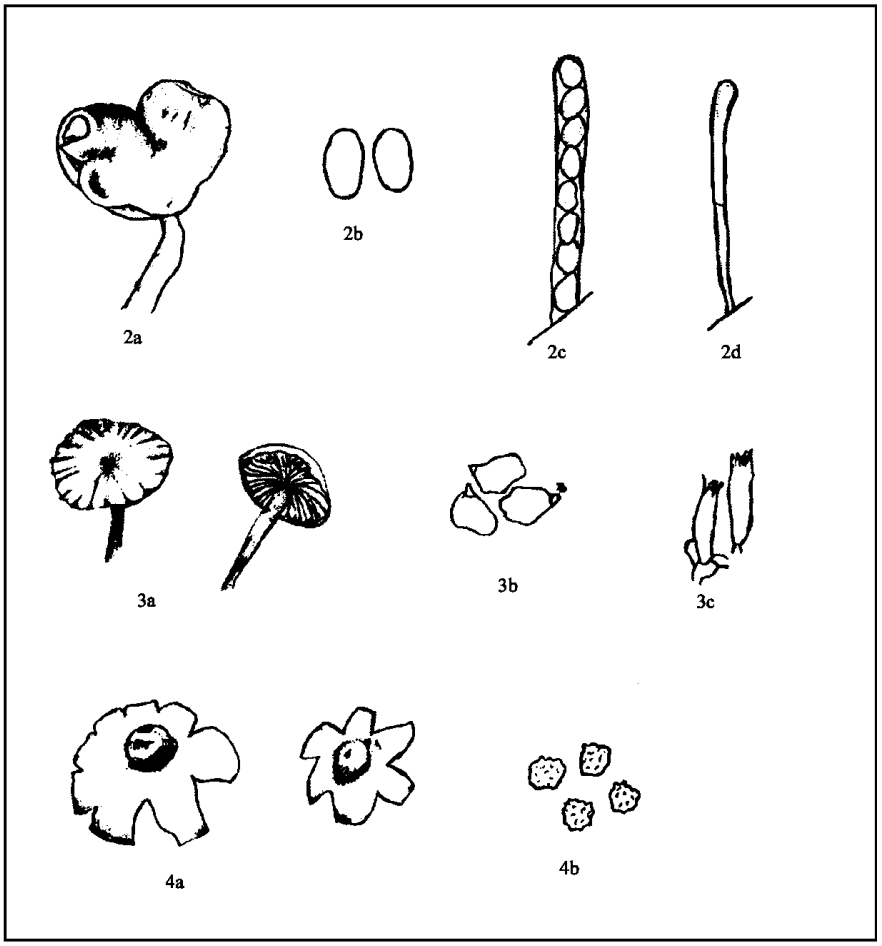

Fig. 2-4:2: *Leptopodia elastica*, 3: *Entoloma incarnatofuscescens* and 4: *Geastrum minimum*. a-Carpophores, b-Spores, c-Asci, d-Paraphyses, e-Basidia

Hygrophoraceae

***Hygrophorus speciosus* Peck:** Cap 2-6 cm, hemispheric to campanulate when young, later expanded with an acute umbo or depressed center, surface radially fibrillose, viscid, gold yellow, orange-reddish center, margin acute, inrolled when young (Fig. 5a). Flesh white, thin, yellow to orange. Lamellae whitish to cream-coloured, later yellowish, broad. Stipe 5-10 cm, cylindric, solid and fracile, yellow floccose-fibrillose below, mottled. Spores cylindric-elliptic, smooth, hyaline, 6-11×5-5.5 µ (Fig. 5b). Spore print white. Basidia clavate 50-70×8-9 µ (Fig. 5e).

It grows in pine forest.

Specimen examined: Babadağ, Incirlipınar park, picnic area, in pine forest, 09.11.2005, Türkoğlu 1183.

Hygrophorus speciosus can not be mistaken in nature because of its gold-yellowish with a darker cap and mottled stipe. According to Breitenbach and Kränzlin (1990), grows in forest and edible.

Russulaceae

***Russula sororia* Fr:** Cap 5-7 cm, hemispherical when young, later boardly convex to plane with a shallow depression, surface even, dull, lubricous-slimy when moist, olive- to gray-brown, gray-black in the center, fading with age, margin often paler in age and furrowed-striate, cuticle peelable up to half-way to the center (Fig. 6a). Flesh white, odor spermatic, taste acrid. Lamellae often free from stem, white when young, pale cream-coloured or spotting brownish to reddish brown in age. Stipe 3-6×1-1.5 cm, white, cylindrical to somewhat ventricose, sometimes tapered towards the base, solid when young, later chambered-hollow, surface slightly longitudinally venose, whitish when young, later light gray-brown. Spores elliptical, 6.5-8×4.5-6 µ (Fig. 6b). Spore print white.

It grows in pine forest.

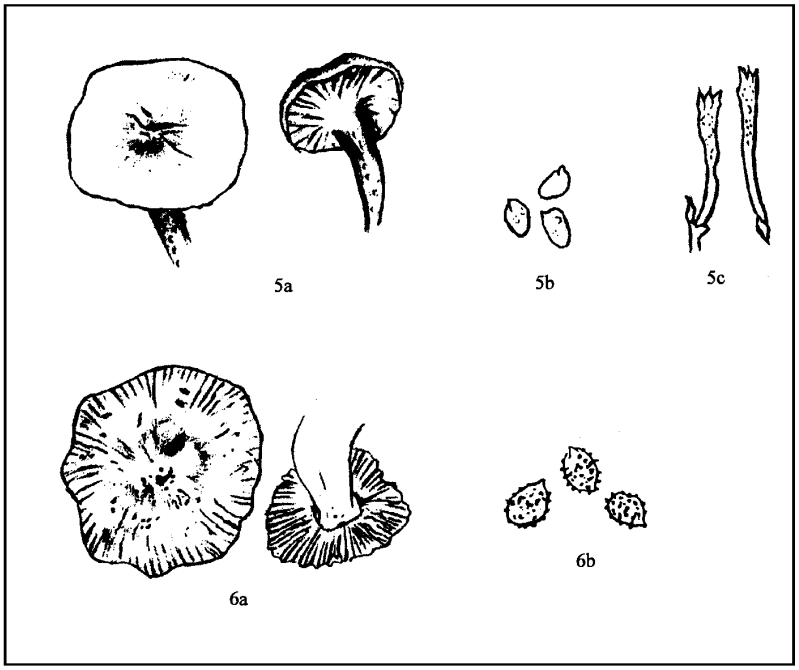

Fig. 5-6: 5: *Hygrophorus speciosus* and 6: *Russula sororia.* a: Carpophores, b: Spores and c: Basidia

Specimen examined: Babadağ, Yeniköy, in *Pinus brutia* forest, 19.05.2006, Türkoğlu 2787. *Russula sororia* is recognised by its more grayish brown and its spermatic smell (Marchand, 1983).

DISCUSSION

According to literature, the distribution of species in Turkey in to five genus is as follows: *Russula* 51, *Hygrophorus* 25, *Entoloma* 22, *Geastrum* 12, *Leptopodia* 1 (Pekşen and Karaca-Hatat, 2000; Türkekul and Sesli, 2003; Sesli and Denchev, 2005).

In this study, *Leptopodia elastica*, *Entoloma incarnatofuscescens*, *Geastrum minimum*, *Hygrophorus speciosus* and *Russula sororia* are recorded for the first time for Turkey.

Leptopodia atra was recorded first species for Turkey belongs to *Leptopodia* genus by Peşken and Karaca-Hatat (2000). In this study, *Leptopodia elastica* is the second species that belongs to *Leptopodia* genus.

The distribution of species as habitats are pine trees with 3, grasses and sandy soil with 1. These taxa are not recognised by local people.

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