

Ten New Records of Macrofungi For Turkey

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Abstract: *Spathularia flavida* Pers.: Fr., *Tremella foliacea* (Pers.: S.F. Gray) Pers., *Sebacina incrustans* (Fr.) Tul., *Albatrellus cristatus* (Pers.: Fr.) Kotl. & Pouz., *Hygrocybe sciophana* (Fr.) Karst., *Hygrophorus ligatus* Fr., *Hygrophorus unicolor* Gröger, *Hypholoma epixanthum* (Fr.) Quél, *Inocybe olida* R. Mre. and *Lactarius flavidus* Boud. were collected from the Trabzon region and identified as new records for the macrofungal flora of Turkey.

Key Words: Macrofungi, new record, Turkey.

Türkiye için On Yeni Makromantar Kaydı

Özet: *Spathularia flavida* Pers.: Fr., *Tremella foliacea* (Pers.: S.F. Gray) Pers., *Sebacina incrustans* (Fr.) Tul., *Albatrellus cristatus* (Pers.: Fr.) Kotl. & Pouz., *Hygrocybe sciophana* (Fr.) Karst., *Hygrophorus ligatus* Fr., *Hygrophorus unicolor* Gröger, *Hypholoma epixanthum* (Fr.) Quél, *Inocybe olida* R. Mre., ve *Lactarius flavidus* Boud. araziden toplanarak Türkiye makrofungus florası için ilk kez teşhis edildi.

Anahtar Sözcükler: Makrofunguslar, Yeni kayıtlar, Türkiye.

Introduction

The most important contributions to the macrofungal flora of Turkey are the studies of Pilat (1), Lohwag (2), Selik (3), Öder (4), Öner (5), Sümer (6) and Gücin (7). Turkey has a very rich macrofungal flora (8-10) and many studies have been carried out recently (11, 12). Before a list of studies was compiled by Baytop (13), Turkish mycologists working on the systematics of fungi were unable to refer to a comprehensive list of relevant publications.

Materials and Methods

The material for this study was collected during field trips to the province of Trabzon 1991 and 1993 (Fig 1).

The specimens were identified according to the method of Breitenbach and Kranzlin (14). The color, odor and other apparent properties of the macrofungi and vegetation were noted. Photographs were taken

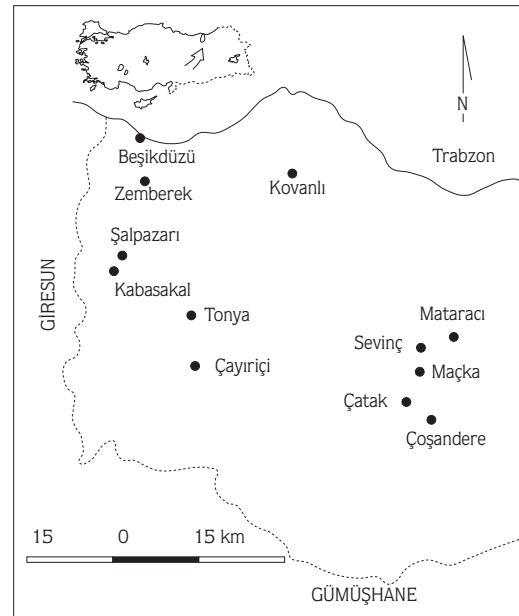


Figure 1. The Collection Sites of the Macrofungi

using Fujicolor negative film and a macroobjective of normal focal length with an extension tube. The macrofungi collected from the study area were kept completely separate and were examined in the Laboratory as soon as possible after collection. A spore print was made to determine the color of the spores and the spores were then used to determine the measurements. All the spore measurements and the length/width ratio were calculated from at least 20 individual measurements. Microscopical examinations were performed using Nikon research microscopes. The optical equipment comprised objectives with magnifications of 4, 10, 40 and 100. All the instruments were equipped with low voltage illumination. Excised pieces of fungus pileus were moistened by the addition of a few drops of Clemençon's solution and were placed in a damp chamber to soften completely. After being given some time to dry, they were sectioned. The sections were made with a previously unused razor blade under a binocular loupe on white paper. The sections were then transferred to a 3 % KOH solution to induce expansion. They were stained with ammoniated congo red under a cover slip. The drawings were made using apparatus which facilitated work according to precisely fixed magnifications. The macrofungi were identified using the reference books of European Flora (14-17).

The specimens were deposited at Fatih Education Faculty Herbarium at Karadeniz Technical University in Trabzon.

Results

By means of field and laboratory studies and reference to relevant literature, ten new records for the macrofungal flora of Turkey were established. The systematic order is set out according to, that of Bold, Alexopoulos and Delevoryas (18).

- Kingdom : Myceteae
- Division : Amastigomycota
- Subdivision : Ascomycotina
- Class : Ascomycetes
- Subclass : Hymenoascomycetidae
- Order : Helotiales
- Family : Geoglossaceae
- 1st Species : *Spathularia flavida* Pers.: Fr.

Macroscopic features: Fruiting body 1.5-8 cm long, pileus and stipe are distinct (Fig 2). Pileus yellow-

Figure 2-5. *Spathularia flavida*: 2. Ascocarp.

ochre to deep yellow, undulate or radiately rugose, dry and smooth, sometimes contorted, clavate or almost capitate, spatula-to-fan shaped. The fertile head encloses the upper part of the stalk. Stem white or tinged yellow, slightly bowish at the base, smooth or finely furfuraceous, hollow, round or somewhat compressed and flattened, tapering toward the base, sometimes swollen or bulbous below, springing from a pallid or yellowish mycelium, flesh whitish, usually becoming yellowish brown when dry.

Microscopic features: Asci eight-spored, spores nearly parallel to each other, 100-106x11-13.5 µm (Fig. 3), paraphyses slender, forked, tips bent (Fig.4),

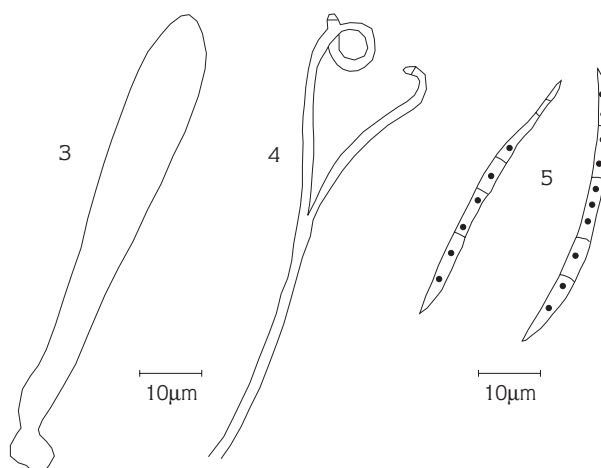


Figure 2-5. *Spathularia flavida*: 3. Ascus, 4. Paraphyses, 5. Spores

Family : Tremellaceae
 2nd. Species : *Tremella foliacea* (Pers.: S.F. Gray) Pers.

Macroscopic features: Fruiting body has the appearance of a spherical cluster (Fig. 6). It consists of leaf-like lobes growing together compactly and arising from a common base, 2.5-20 cm wide, 5-10 cm high, reddish brown to dark brown violet. Flesh gelatinous and soft, thin to thick. The individual lobes have a smooth, dull-to-shiny upper surface.

Microscopic features: Hyphae 1.7-6 μm across (Fig. 7), hypobasidia globose-oval, longitudinally septate (Fig. 8), spores hyaline oval or ovoid-globose, (Fig. 9), 7.5-12x6-9 μm .

Habitat: On dead *Picea orientalis* L. wood. Season: throughout the year, but conspicuous only during wet periods.

Distribution: Maçka-Sevinç Village, 10 October 1992, Ses 233.

3rd Species: *Sebacina incrustans* (Fr.) Tul.

Syn. *Thelephora sebacea* (Pers.) Fr.

Macroscopic features: Fruiting body fully resupinate, attached tightly to the substrate (Fig. 10), incrusting the base of living plants and other organic debris, forming patches 2.5-11 cm across, dull, dingy whitish to creamy also with grayish or pink tint.

Microscopic features: Hyphae hyaline, thin-walled (Fig. 11), 1.8-1.36 μm , hypobasidia longitudinally septate (Fig. 12), spores oblong to ovoid (Fig. 13), 14-20x9-15 μm

Figure 6-9 *Tremella foliacea*: 6. Basidiocarp

spores slender and clavate, smooth, hyaline with scattered droplets, septate when mature, 39-50x2-2.6 μm (Fig. 5).

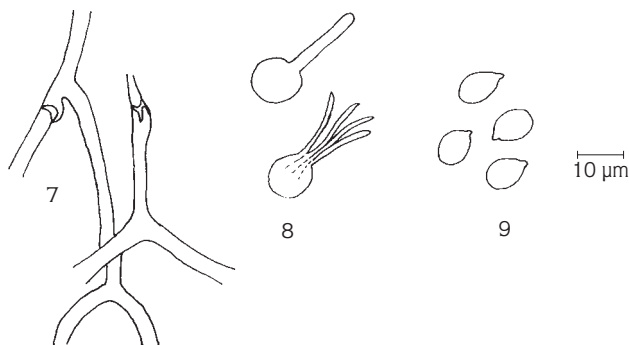


Figure 6-9. *Tremella foliacea*: 7. Hyphae, 8. Hypobasidium, 9. Spores

Habitat: Under *Picea orientalis* L. Season: August-September.

Distribution: Maçka-Mataracı Village and Tonya-Çayırıcı Village, 24 July 1992, Ses 219.

Subdivision : Basidiomycotina
 Class : Basidiomycetes
 Subclass : Phragmobasidiomycetidae
 Order : Tremellales

Figure 10-13. *Sebacina incrustans*: 10. Basidiocarp,

Figure 10-13. *Sebacina incrustans*: 11. Hyphae, 12. Hypobasidium, 13. Spores

Habitat: Incrusting grass, twigs and dead leaves of *Carpinus orientalis*. Season: early spring to late autumn.

Distribution: Maçka-Sevinç Village, 10 June 1992, Ses 092.

Subclass : Holobasidiomycetidae

Order : Aphylophorales

Family : Polyporaceae

4th Species: *Albatrellus cristatus* (Pers.: Fr.) Kotl. & Pouz

Macroscopic features: Pileus 3-20 cm wide, up to 1 cm thick, solitary or in the form of several fused together in a circle or irregularly. Convex when young, becoming flat when mature (Fig. 14). Pale yellowish olive green to brownish olive, dry, velvety, becoming cracked when mature. Hymenial layer 1-6 mm thick, pores rounded to angular, 0.8-3 per mm. Stipe 2-6

cm long, 1-2.7 cm thick, central or off-center, whitish, yellowish, smooth, solid, fine tomentose. Flesh soft and fragile.

Microscopic features: Hyphae 1-5 μm across (Fig. 15), basidia clavate, with 4 sterigmata (Fig. 16), spores 5-7 x 4-5 μm (Fig. 17).

Habitat: Under *Picea orientalis*, *Rhododendron ponticum*. September-October.

Distribution: Maçka-Mataracı Village, 1 September 1991, Ses 180.

Order : Agaricales

Family : Hygrophoraceae

5th Species : *Hygrocybe sciophana* (Fr.) Karst.

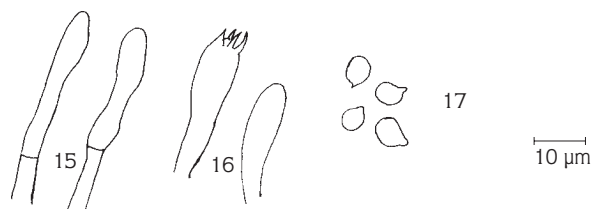


Figure 14-17. *Albatrellus cristatus*: 15. Inflated hyphal ends in the hymenium, 16. Basidia, 17. Spores

Macroscopic features: Pileus 1.5-2.5 cm, orange-brick brown, margin striate, discoloured (Fig. 18). Lamellae brick-red brown, pink-red. Stipe same colour, apex sometimes greyish to greenish (14).

Microscopic features: Hyphae relatively short-celled, somewhat constricted at the septa (Fig. 19), basidia slender clavate, with 4 sterigmata (Fig. 20), spores not amyloid, elliptic, hyaline, with drops (Fig. 21), 7-9/4-6.5 μm .

Figure 14-17. *Albatrellus cristatus*: 14 Basidiocarp.

Figure 18-21. *Hygrocybe sciophana*: 18. Basidiocarp.

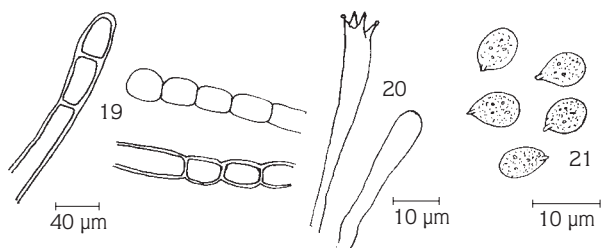


Figure 18-21. *Hygrocybe sciophana*: 19. Pileipellis, 20. Basidia, 21. Spores.

Habitat: Grassy woods grassland. Season: autumn.

Distribution: Akçaabat-Yıldızlı Village and Şalpazarı-Kabasakal Village, 29 October 1992, Ses 249.

6th Species: *Hygrophorus ligatus* Fr.

Syn. *H. gliocyclus* Fr.

H. flavodiscus Frost

Macroscopic features: Pileus 3-10 cm across, campanulate when young, maturing as plane with an obtuse umbo (Fig. 22), surface smooth, very slimy when moist, viscid when dry, whitish to cream, turning creamy-yellowish to ochree-yellow, especially when

older. Center darker ochre-yellow, margin incurved. Flesh white, odor faint and pleasant, taste mild. Lamellae ivory-coloured, yellowish, whitish, broad adnate to decurrent. Stipe 3-12x8-20 mm, whitish to creamy, slimy.

Microscopic features: Hyphae 2-4.5 µm across, septa with clamps (Fig. 23), basidia slender cylindrical, with 4 sterigmata and basal clamp (Fig. 24), spores elliptic (Fig. 25), hyaline, 6.5-10x4.2-6 µm.

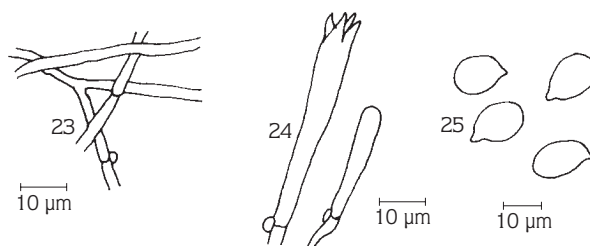


Figure 22-25. *Hygrophorus ligatus*: 23. Pileipellis, 24. Basidia, 25. Spores.

Habitat: Under *Picea orientalis*, *Carpinus orientalis*.

Season: autumn.

Distribution: Maçka-Sevinç Village 10 October 1991, Ses 187.

7th Species: *Hygrophorus unicolor* Gröger

Syn. *Limacium leucophaeum* (Scop.) Fr.

Macroscopic features: Pileus 0.6-5 cm across, conical-campanulate with an umbo when young, later convex to plane and undulating, slimy, fine radially fibrillose, brownish beige when young, later whitish toward the margin with a reddish brown center, margin incurved. Flesh whitish, yellowish under the cuticle, thick in the center, thin toward the margin, taste mild. Lamellae white, later pale salmon-colored. Stipe 4-7x0.7-1 cm, cylindrical white, fibrillose-floccose (Fig. 26).

Microscopic features: Hyphae 2-5 µm across, some erect, embedded in a slimy material (Fig 27), basidia slender clavate, with 4 sterigmata and basal clamp (Fig. 28), spores elliptic (Fig. 29), hyaline, some with drops, 6-9x3-5 µm.

Habitat: Under *Fagus orientalis*.

Distribution: Maçka-Çatak Village, 22 October 1991, Ses 280.

Figure 22-25. *Hygrophorus ligatus*: 22. Basidiocarp.

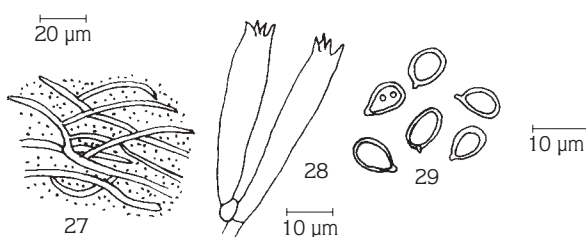


Figure 26-29. *Hygrophorus unicolor*: 26. Basidiocarp, 27. Pileipellis, 28. Basidia, 29. Spores.

Family : Strophariaceae

8th Species : *Hypholoma epixanthum* (Fr.) Quél.

Macroscopic features: Pileus 4-6 cm, yellowish, crown somewhat foxy in color margin silky with veil when young (Fig. 30). Lamellae whitish, clay-pallid or pale yellowish when young, then greyish purple or grey-brown. Stipe pallid, underneath rust-coloured. Smell distinctive and unpleasant.

Microscopic features: Spores elliptical (Fig. 31) 6-8/3.5-4.5 µm.

Habitat: Under *Picea orientalis* (L.) Link.

Distribution:Çarşıbaşı-Kovanlı Village, 5 October 1992, Ses 236.

Family : Cortinariaceae

9th Species : *Inocybe olida* R. Mre.

Figure 30-31. *Hypholoma epixanthum*: 30. Basidiocarp, 31. Spores.

Macroscopic features: Pileus 2.5-5 cm, campanulate-conical, umbonate (Fig. 32), somewhat greasy, pale hazel brown, then ochre to ochre-hazel. Stipe 5-7/6-8 cm, bulbous, white, then ochre-yellowish, pruinose. Flesh white. Smell strong spermatic.

Microscopic features:Spores 7.5-10/5-6 µm with 7.9 nodules (Fig. 33). Cystidia 50-60/12-15 µm, some 65-75/20-24 µm.

Habitat: Under *Corylus avellana* L.

Distribution:Beşikdüzü-Zemberek Village, 20 June 1993, Ses 388.

Figure 32-33. *Inocybe olida*: 32. Basidiocarp, 33. Spores.

Family : Russulaceae

10th Species : **Lactarius flavidus** Boud.

Syn. *L. aspideus* var. *flavidus* (Boud.) Neuhoff.

Macroscopic features: Pileus 3-5 cm, flattened convex when young with shallow depression in centre when mature, pale straw to pale ochre-yellow, becoming livid purple within five to thirty minutes after

bruising, surface smooth, sticky when moist, margin incurved (Fig. 34). Stipe 2.5-6x0.6-2 cm, concolorous with pileus or paler and livid purple on bruising, solid. Lamellae adnexed to slightly decurrent, concolorous with cap, livid purple on bruising, dense. Milk abundant, white, taste mild at first, then hot. Spore print pale cream.

Microscopic features: Spores elliptic and ornamented (Fig. 35), 8.5-10x7.5-9 μm .

Figure 34-35. *Lactarius flavidus*: 34. Basidiocarp, 35. Spores.

Habitat: Under *Quercus pontica* C. Koch. Season summer-autumn

Distribution: Maçka-Sevinç and Çoşandere Village; 30 May 1993, Ses 329.

Discussion

From this study 10 new species are now recorded for the macrofungal flora of Turkey. One of them belongs to the class *Ascomycetes* and the others to *Ba-*

sidiomycetes. The species are spread among seven families and nine genera. The species *Spathularia flavida* and *Albatrellus cristatus* are the first recorded members of their respective genera in Turkey.

Since macrofungal studies began in Turkey, 15 species of the family *Hygrophoraceae* and 10 *Tremellaceae* have been recorded for the flora of Turkey.

Hygrocybe sciophana, *Hygrophorus ligatus*, *H. unicolor*, *Tremella foliacea* and *Sebacina incrustans* are new contributions to these families.

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