

## New records for the Turkish macrofungi from Amasya province

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**Abstract:** Macrofungi specimens were collected from different localities in Amasya province between 2002 and 2005, particularly during the months of spring and autumn. In all, 16 species were identified as new records; 1 species belongs to *Ascomycetes* and the other 15 species belong to *Basidiomycetes*. These new species are *Hypoxylon multifforme*, *Polyporus melanopus*, *Hygrophorus pratensis* var. *pratensis*, *Hygrocybe ovina*, *Clitocybe ornamentalis*, *Hemimycena pseudocrispula*, *Mycena adscendens*, *Baespora myriadophylla*, *Entoloma mutabilipes*, *Parasola hemerobia*, *Conocybe blattaria*, *Psilocybe phyllogena*, *Inocybe squamata*, *Gymnopilus stabilis*, *Cortinarius evernius*, and *Galerina mycenoides*.

**Key words:** Macrofungi, New records, *Ascomycetes*, *Basidiomycetes*, Amasya, Turkey

### Amasya yöresinden Türkiye makrofungusları için yeni kayıtlar

**Özet:** Bu çalışmada, Makrofungus türleri 2002-2005 yılları arasında özellikle ilkbahar ve sonbahar aylarında Amasya yöresinin farklı lokalitelerinden toplandı. Arazi ve laboratuvar çalışmaları sonucunda 16 tür yeni kayıt olarak belirlendi. Bu türlerin birisi *Ascomycetes*, diğer 15 tür ise *Basidiomycetes* sınıfına aittir. Bu türler: *Hypoxylon multifforme*, *Polyporus melanopus*, *Hygrophorus pratensis* var. *pratensis*, *Hygrocybe ovina*, *Clitocybe ornamentalis*, *Hemimycena pseudocrispula*, *Mycena adscendens*, *Baespora myriadophylla*, *Entoloma mutabilipes*, *Parasola hemerobia*, *Conocybe blattaria*, *Psilocybe phyllogena*, *Inocybe squamata*, *Gymnopilus stabilis*, *Cortinarius evernius*, *Galerina mycenoides*.

**Anahtar sözcükler:** Makrofunguslar, Yeni kayıtlar, *Ascomycetes*, *Basidiomycetes*, Amasya, Türkiye

### Introduction

Amasya province was chosen as the research area because no floristic studies of macrofungi have been previously conducted there. Plant distribution and field features are very suitable to the growth of macrofungi. The field studies were carried out chiefly in the spring and autumn.

Amasya province is situated in the middle of the Black Sea region of Turkey. Amasya encompasses 5452 km<sup>2</sup> and is bordered by Samsun to the north, Yozgat to the south, Tokat to the east, and Çorum to the west. The climate of Amasya is between the Black Sea regime and continental type. Annual rainfall in the area is 477.4 mm/m<sup>2</sup>.

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The prevalent trees in the study area are *Pinus sylvestris* L., *P. nigra* J.F.Arnold subsp. *nigra* var. *caramanica* (Loudon) Rehder, *Fagus orientalis* Lipsky, *Juniperus communis* L. subsp. *alpina*, *J. oxycedrus* L. subsp. *oxycedrus*, *Quercus robur* L. subsp. *robur*, *Q. hartwissiana* Steven, *Q. macranthera* Fisch. & Mey. ex Hohen. subsp. *sypirensis* (C.Koch) Menitsky, *Q. pubescens* Willd., *Q. cerris* L. var. *cerris*, *Populus* L., and *Salix* L.

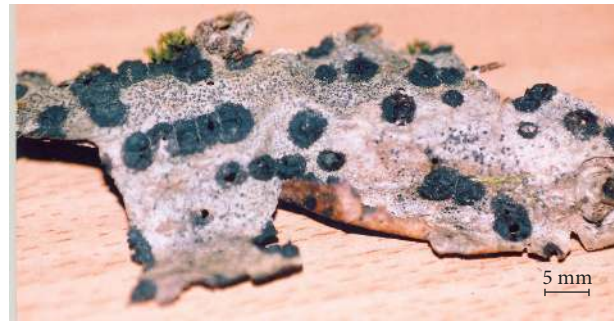


Figure 1. Ascocarp of *H. multiforme*.

## Materials and methods

The materials for this study were collected during field trips to Amasya province between 2002 and 2005. The morphological and ecological characteristics of the macrofungi were recorded and photographed in their natural habitats. Then, the specimens were taken to the laboratory and spore prints were obtained. The identification of taxa was carried out according to Kreisel (1969), Watling (1973), Moser (1983), Michael et al. (1983-1987), Breitenbach & Kränzlin (1983-2000), Dähncke (1993), Bresinsky & Besl (1990), Jordan (1996), Gerhardt (1997), Sesli & Denchev (2005), and Solak et al. (2007).

The specimens are stored at the fungarium of Selçuk University, Department of Biology.



Figure 2. Ascospores of *H. multiforme*.

## Results

### Xylariaceae

#### *Hypoxylon multiforme* (Fr.) Fr.

Syn: *Hypoxylon crustaceum* (Sow.) Nitschke

Fruiting body (Figure 1) consists of a cushion-like, rounded to elongate stroma, dark brown to black. Surface slightly undulating to irregularly mounded and dotted with perithecial ostioles, perithecia 0.5-0.8 mm.

Spores elliptic-bean shaped (Figure 2), flattened on 1 side, smooth, dark brown, sometimes with 1 drop, with a germination cleft  $9-11 \times 4.5-5 \mu\text{m}$ . Asci 8-spored,  $80-90 \times 6-7 \mu\text{m}$ , paraphyses filiform, sparsely forked, barely visible.

Amasya, Yenice town, on dead branches of beech, 12.11.2004, *Aktaş* 861.

### Polyporaceae

#### *Polyporus melanopus* Fr.

Pileus round (Figure 3), convex to plane and slightly infundibuliform, 20-100 mm, upper surface smooth, very finely velutinous, dull to squamose-radially fibrillose, light leather-brown to grey-brown, margin undulating, sharp, thin, lower surface finely pored, white, cream coloured to brownish, pores irregularly rounded, 3-4 mm, tube length 1-2 mm, sometimes decurrent onto 1 side of the stipe, stipe cylindrical,  $15-55 \times 3-15 \text{ mm}$ , smooth to longitudinally wrinkled, velutinous, brown-black.

Spores cylindrical-elliptic (Figure 4), smooth, hyaline, with drops,  $7-8 \times 3-3.5 \mu\text{m}$ .

Amasya, Gümüşhacıköy district, Dumanlı village, on dead branches of beech, 25.10.2003, *Aktaş* 684; Taşova district, Destek town, 28.05.2004, *Aktaş* 274.



Figure 3. Basidiocarp of *P. melanopus*.



Figure 5. Basidiocarp of *H. pratensis* var. *pratensis*.

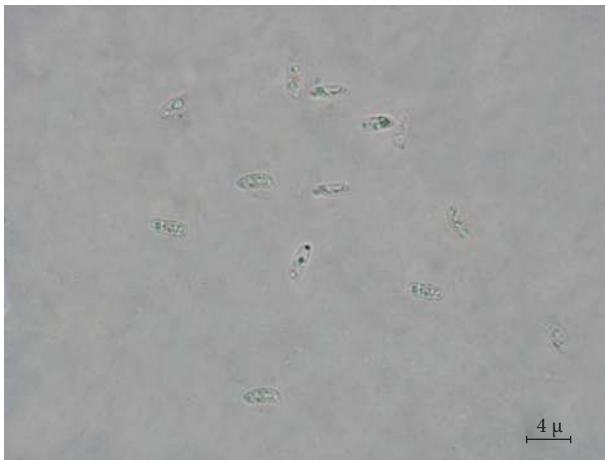


Figure 4. Basidiospores of *P. melanopus*.

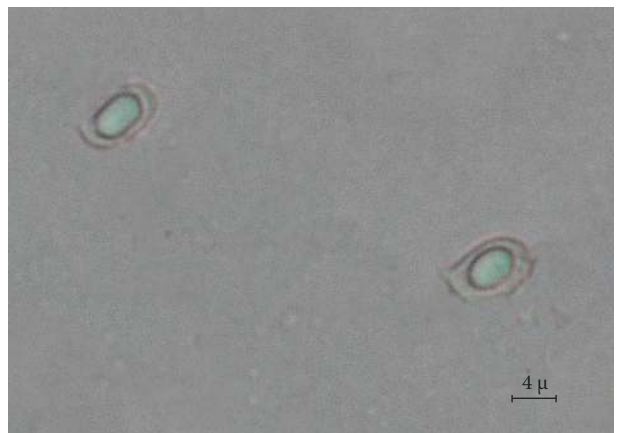


Figure 6. Basidiospores of *H. pratensis* var. *pratensis*.

### Tricholomataceae

#### *Hygrophorus pratensis* var. *pratensis* (Pers.) Bon.

Syn: *Camarophyllus pratensis* (Pers.: Fr.) Kumm.

Pileus 20-50 mm (Figure 5), convex when young, later plane, centre umbonate or indented, smooth, dull, dry, brown-orange, margin acute. Flesh cream-orange, thick in the centre, thin toward the margin. Lamellae broad, cream-orange, decurrent, with anastomoses, edges smooth. Stipe 25-50 × 6-12 mm, cylindric, sometimes tapered toward the base, surface whitish-cream when young, later cream with an orange tint, dry, longitudinally white fibrillose, smooth, rigid, brittle, and solid.

Spores broadly elliptic (Figure 6), smooth, hyaline, with drops, 5-7 × 4-5.5 μm.

Amasya, Taşova district, around Lake Borabay, in meadows and pastures, 28.10.2002, Aktaş 402.

#### *Hygrocybe ovina* (Bull.: Fr.) Kühn.

Syn: *Camarophyllus ovinus* (Bull.: Fr.) Kumm.

Pileus 25-60 mm (Figure 7), hemispherical when young, later conic-campanulate to plane and undulating, surface smooth when young, radially fibrillose, dull, later squamose-floccose, olive-brown, dark brown to black-brown, not viscid or lubricous, margin crenate-furrowed-dentate. Flesh grey-beige, turning red and then black, thin. Lamellae grey to black-brown, broad, notched, edges undulating. Stipe 30-80 × 4-12 mm, cylindric, flexuous, tapered or thickened toward the base, surface smooth, dull, silky, longitudinally fibrillose, grey-olive to black-brown,





Figure 7. Basidiocarp of *H. ovina*.

apex slightly whitish-pruinose, stuffed, corticated, reddening and then blackening when cut.

Spores broadly elliptic (Figure 8), smooth, hyaline, with drops,  $6-9 \times 4.5-6 \mu\text{m}$ .

Amasya, Taşova district, around Lake Borabay, among pastures in pine-beech forests, 28.10.2002, Aktaş 398.

***Clitocybe ornamentalis* Vel.**

Syn: *Clitocybe phyllophila* var. *ornamentalis* (Vel.) Raith.

*Clitocybe angustissima* (Lasch) Gill.

Pileus 50-100 mm (Figure 9), convex when young, later plane and irregularly undulating, centre slightly umbonate, surface smooth, hygrophanous, radially innately fibrillose and cream-beige when dry, paler toward the margin, pale ochre-brownish when moist, margin lobed, radially channelled-undulating. Flesh watery pale brownish, thin. Lamellae whitish when young, later ochreish to beige-brown, broad, short decurrent, edges smooth, undulating. Stipe 40-50  $\times$  6-8 mm, cylindric, bent, surface longitudinally fibrillose, yellow-ochre to pale brownish, apex paler, base with mycelium, solid to hollow.

Spores elliptic (Figure 10), smooth, hyaline,  $4-5.5 \times 2.5-3.5 \mu\text{m}$ .

Amasya, Taşova district, around Lake Borabay, among leaf litter in beech forests, 28.05.2004, Aktaş 791.

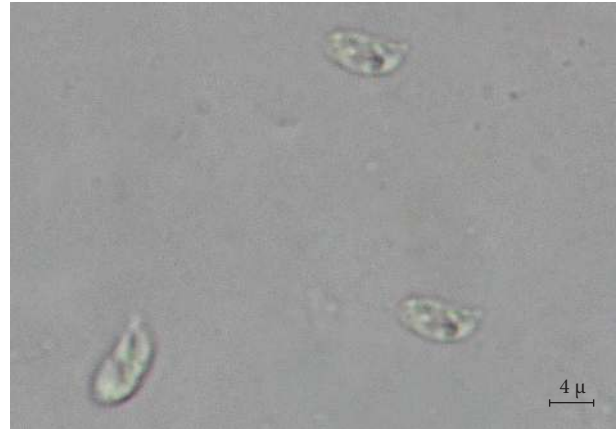


Figure 8. Basidiospores of *H. ovina*.



Figure 9. Basidiocarp of *C. ornamentalis*.

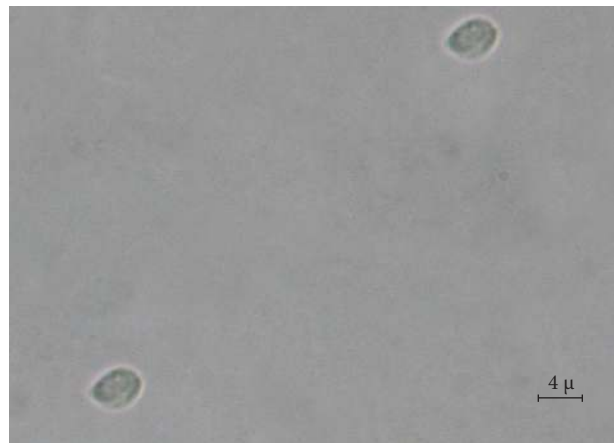


Figure 10. Basidiospores of *C. ornamentalis*.

***Hemimycena pseudocrispula* (Kühn.) Sing.**

Syn: *Mycena pseudocrispula* Kühn.

Pileus 2-6 mm (Figure 11), campanulate when young, then convex with the centre plane to slightly indented, surface white, slightly tomentose to glabrous, margin acute, undulating, crenate and fimbriate. Flesh membranous. Lamellae white, distant, broad, decurrent, some forked, edges smooth. Stipe 20-45 × 0.5-1 mm, cylindric, fragile, white, slightly tomentose.

Spores slenderly elliptic to fusiform (Figure 12), smooth, hyaline, with drops, 7-12 × 3-4 µm.

Amasya, Kuzgeçe village, in pine forests, 23.10.2003, *Aktaş* 573.

**Mycenaceae*****Mycena adscendens* (Lasch) M. Geest.**

Syn: *Mycena tenerrima* (Berk.) Sacc.

Pileus 2-5 mm (Figure 13), hemispherical to campanulate-conic, surface smooth, pruinose, translucent-striate to the centre, translucent white-cream coloured, margin undulating-plicate. Flesh whitish, membranous. Lamellae white, broad, ventricose, free, edges smooth, finely floccose. Stipe 10-20 × 0.2-0.5 mm, translucent white, smooth, with sparse, erect, small, white hairs toward the base, fragile, hollow, base attached to the substrate by an indistinct, small bulblike disc.

Spores oval to broadly elliptic (Figure 14), smooth, hyaline, with drops, 6-9.5 × 4-6 µm. Cheliocystidia cylindric to fusiform, with a vermiform rostrum.

Amasya, Yenice town, on dead branches, 27.10.2002, *Aktaş* 380.

**Marasmiaceae*****Baespora myriadophylla* (Peck) Sing.**

Syn: *Mycena myriadophylla* (Peck) Kühn.

*Collybia lilacea* Quél.

Pileus 10-30 mm (Figure 15), convex when young, later plane and with a depressed centre, surface smooth, dull, hygrophanous, grey-brown to dark brown when moist, light beige when dry, margin acute, incurved when young, sometimes slightly translucent-striate. Flesh watery lilac. Lamellae light lilac when young, later brownish with a lilac tint,



Figure 11. Basidiocarp of *H. pseudocrispula*.

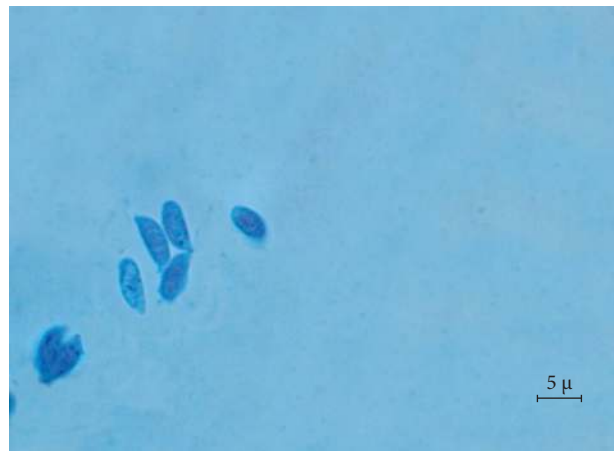


Figure 12. Basidiospore of *H. pseudocrispula*.



Figure 13. Basidiocarp of *M. adscendens*.

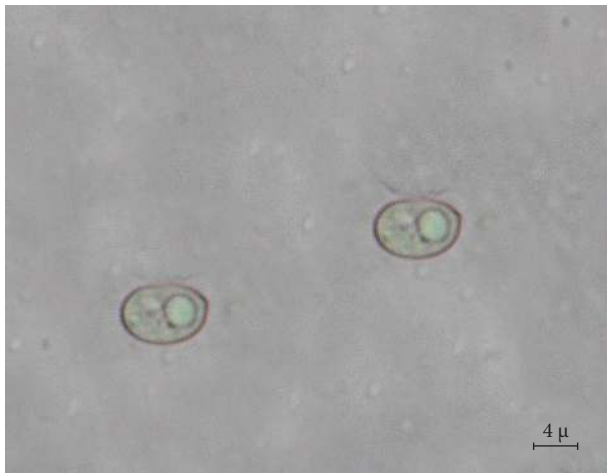


Figure 14. Basidiospores of *M. adscendens*.

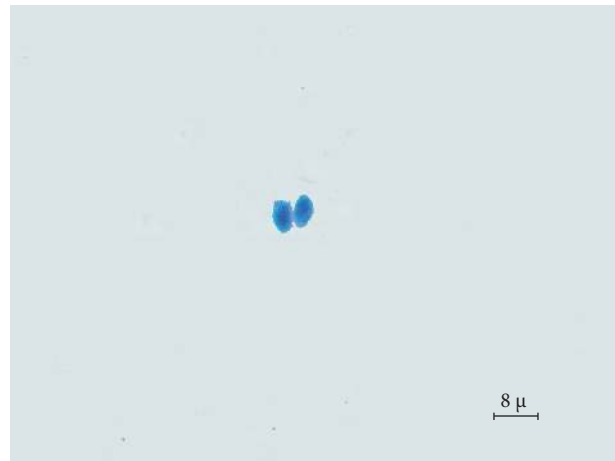


Figure 16. Basidiospores of *B. myriadophylla*.



Figure 15. Basidiocarp of *B. myriadophylla*.



Figure 17. Basidiocarp of *E. mutabilipes*.

broad, very crowded, sometimes forked toward the margin, uncinata to almost free, edges smooth. Stipe 15-40 × 2-3 mm, cylindrical, light grey-brown when young, later darker brown with lilac tint, dull, finely farinose, tough, solid, later hollow, sometimes bent and eccentric.

Spores elliptic (Figure 16), smooth, hyaline, some with drops, 3-5 × 2-3 μm. Cheliocystidia cylindrical to ventricose or capitate, some with oil drops.

Amasya, Yenice town, in hardwood and coniferous forests, on beech, 27.10.2002, *Aktaş* 383.

#### Entolomataceae

#### *Entoloma mutabilipes* Noordel. & Liiv

Pileus 10-25 mm (Figure 17), slightly convex, with an indented to umbilicate centre, irregularly

undulating with a somewhat uplifted margin when old, surface hygrophane, translucent-striate to the centre, beige-brown when moist, fading to grey-beige when dry, centre always dark brown and appressed-squamose, margin incurved for a long time and acute. Flesh grey-whitish. Lamellae white when young, later brownish-pink, broad, adnexed to almost free and with a small decurrent tooth, edges smooth, with a tendency to turn brown. Stipe 30-50 × 1-1.5 mm, cylindrical, base enlarged and white-tomentose, stiff, fragile, solid, surface smooth, satiny, bright blue when young, later blue-grey to dingy grey.



Spores 5-8 angled (Figure 18),  $10-12.5 \times 7-9 \mu\text{m}$ . Cheliocystidia cylindrical to clavate.

Amasya, Yağcıabdal village, under poplar trees, in grassy places, 03.05.2002, *Aktaş* 306.

### Psathyrellaceae

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

Syn: *Coprinus hemerobius* Fr.

Pileus 10-25 mm (Figure 19), ovoid to cylindrical when young, later plane to uplifted, surface dull, plicate to the centre, ochre to red-brown when young, later grey-brown to grey with a brownish centre, not deliquescent, margin crenate to split. Flesh membranous. Lamellae grey-black to black, broad, edges smooth. Stipe 30-50  $\times$  1-2 mm, cylindrical, fragile, hollow, surface dull, grey-white, white powdered.

Spores elliptical (Figure 20), smooth, black-brown with reddish tint, with a central germ pore,  $9-13 \times 5.5-7 \mu\text{m}$ . Cheliocystidia clavate to ventricose.

Amasya, Taşova district, around Lake Borabay, under poplar trees, in grassy places, 28.05.2004, *Aktaş* 794.

### Bolbitiaceae

*Conocybe blattaria* (Fr.) Kühn.

Syn: *Pholiotina teneroides* (Lge.) Kits van Wav.

*Conocybe percincta* P. D. Ort.

Pileus 8-25 mm (Figure 21), conic-campanulate, surface smooth, dull, radially wrinkled, hygrophanous, dark orange to yellow-brown when moist, pale orange to ochre-brown when dry, margin acute, smooth. Flesh yellow-ochre, thin. Lamellae cream-yellow when young, later yellow-brown to yellow-olive, broad, adnexed, edges whitish floccose, dentate. Stipe 25-60  $\times$  1.5-2.5 mm, cylindrical, flexuous, hollow, rigid, fragile, surface above the annulus smooth, longitudinally fibrillose, pale yellow, surface below dingy yellow to brown, base dark brown, annulus dingy yellow to brown, campanulate, upper surface striate to smooth.

Spores elliptical (Figure 22), smooth, red-brown, thick walled, with a germ pore,  $11-14 \times 5-7 \mu\text{m}$ . Cheliocystidia clavate to ventricose.



Figure 18. Basidiospores of *E. mutabilipes*.



Figure 19. Basidiocarp of *P. hemerobia*.



Figure 20. Basidiospores of *P. hemerobia*.



Figure 21. Basidiocarp of *C. blattaria*.

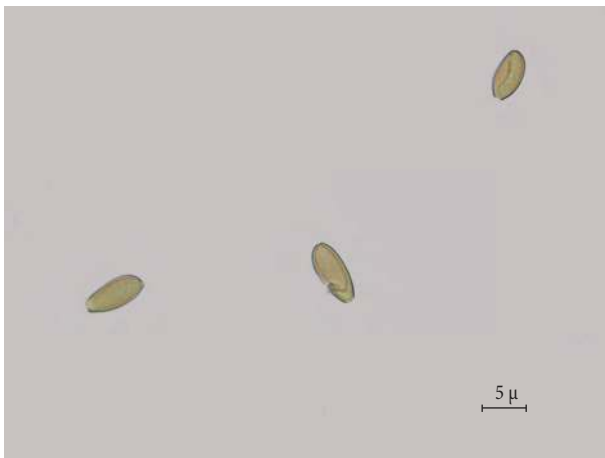


Figure 22. Basidiospores of *C. blattaria*.

Amasya, Yenice town, beech-pine-oak forests, 23.10.2003, *Aktaş* 591.

### Strophariaceae

*Psilocybe phyllogena* (Peck) Peck

Syn: *Psilocybe modestus* (Peck.) Sm.

*Psilocybe rhombispora* (Britz.) Sacc.

Pileus 6-16 mm (Figure 23), hemispherical when young, later hemispheric-convex, surface hygrophorous, dark ochre-brown and lubricous-shiny when moist, cream-beige and dull when dry, translucent-striate to the centre when moist, margin acute and hung with white veil remnants when young. Flesh cream to grey-brown, thin. Lamellae cream when young, later light cinnamon-brown to purple-brown, broad, broadly adnate, edges white flocculose. Stipe 20-40 × 1-2.5 mm, cylindrical, base slightly



Figure 23. Basidiocarp of *P. phyllogena*.

bulbous, solid, rigid but snappable, surface whitish fibrillose-scaly.

Spores rhomboidal-mitriform in frontal view (Figure 24), elliptic-almond in lateral view, smooth, yellow-brown, thick walled, with a germ pore, 5-7.5 × 3.5-4.5 × 4.5-6 μm. Cheliocystidia fusiform-lageniform, vesicular secretion apically.

Amasya, Taşova district, Destek town, on leaves of beech, 28.05.2004, *Aktaş* 775; around Lake Borabay, *Aktaş* 795.



Figure 24. Basidiospores of *P. phyllogena*.

### Inocybaceae

*Inocybe squamata* Lge.

Pileus 30-70 mm (Figure 25), campanulate, brown, with dark, adpressed, short scales, margin sharp. Flesh





Figure 25. Basidiocarp of *I. squamata*.

white, thin. Lamellae grey-brown when young, later reddish-brown, broad, attached, edges white. Stipe 30-70 × 1-2 mm, cylindrical, brown, radially fibrillose.

Spores elliptic-almond shaped (Figure 26), smooth, yellow-brown, thick walled, 9.5-10 × 5.5-6 µm.

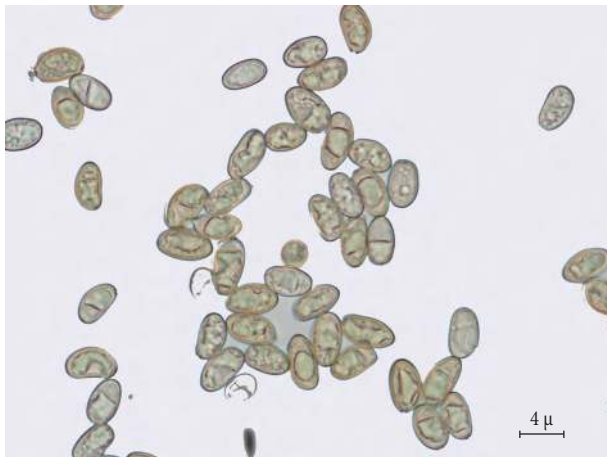


Figure 26. Basidiospores of *I. squamata*.

Amasya, Taşova district, around Lake Borabay, in pine-beech forests, 28.05.2004, *Aktaş* 786.

#### Cortinariaceae

#### *Gymnopilus stabilis* (Weinm.) Kühn. & Romagn.

Pileus 30-90 mm (Figure 27), conic-campanulate when young, later convex, reddish to yellow-orange, pale orange-ochre. Flesh yellowish, thin. Lamellae whitish when young, later yellow-brown, broad,



Figure 27. Basidiocarp of *G. stabilis*.

broadly attached. Stipe 30-80 × 6-20 mm, cylindrical, whitish, radially yellow-brown fibrillose.

Spores elliptic-almond shaped (Figure 28), verrucose, grey-yellow, 6-8 × 4.5-5 µm. Cheilocystidia capitate.

Amasya, Taşova district, around Lake Borabay, on wood of pine, 02.05.2002, *Aktaş* 287.



Figure 28. Basidiospores of *G. Stabilis*.

#### *Cortinarius evernius* (Fr.: Fr.) Fr.

Pileus 30-80 mm (Figure 29), conic when young, later campanulate to plane and umbonate, surface smooth, dull to satiny, hygrophanous, chestnut to umber brown sometimes with a lilac tint when moist, ochre when dry, margin incurved and edged by the



Figure 29. Basidiocarp of *C. evernius*.

whitish veil. Flesh cream to dark brown, thin. Lamellae red-brown with a lilac tint when young, later dark rust-brown, broad, broadly attached, edges whitish, crenate. Stipe 50-100 mm, cylindrical, tapered toward the base, fragile, surface white fibrillose from the veil on a violet background when young, later white fugacious bands.

Spores elliptical (Figure 30), verrucose, light ochre,  $8-11 \times 5-6 \mu\text{m}$ .

Amasya, Kocacık Hill, among *Sphagnum* and needle litter in pine forest, 27.05.2004, Aktaş 699.



Figure 30. Basidiospores of *C. evernius*.

***Galerina mycenoides* (Fr.) Kühn.**

Syn: *Galerina jaapi* Smith & Sing.

Pileus 3-18 mm (Figure 31), hemispherical to broadly conical, sometimes umbonate, ochre-brown,



Figure 31. Basidiocarp of *G. mycenoides*.

transparently striate. Flesh yellow-brown, thin. Lamellae ochre-brown, broad, broadly attached. Stipe  $2-10 \times 1-2.5 \text{ mm}$ , cylindrical, thin, white membranous ascendant ring, bald, honey-yellowish, then base darker.

Spores elliptic-almond shaped (Figure 32), finely warty, yellow-brown,  $9-13 \times 5-7 \mu\text{m}$ . Cheliocystidia lageniform to capitate.

Amasya, Gümüşhacıköy district, Güvenözü village, on mosses and plant remains in pine forest, 27.10.2002, Aktaş 336.



Figure 32. Basidiospores of *G. mycenoides*.

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