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Six New Myxomycete Records from Turkey

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Abstract

In this study, six taxa of *Cribrariaceae*, *Physaraceae* and *Stemonitidaceae* are described and illustrated from the Central Anatolia region of Turkey. These new records are *Cribraria oregana* H. C. Gilbert, *Badhamia iowensis* Macbr., *Physarum nudum* T. Macbr., *Amaurochaete comata* G. Lister & Brândza, *Comatricha alta* Preuss, *Symphytocarpus confluens* (Cooke & Ellis) Ing & Nann.-Bremek..

Keywords: *Cribrariaceae, Mycetozoa, Physaraceae, Stemonitidaceae,* Taxonomy.

INTRODUCTION

Looking for at the history of studying of myxomycete in Turkey; the first record for this group of organisms was *Lycogala epidendrum* (L.) Fr., described by Lohwag [1, 2] from Bolu and İstanbul-Belgrad forests. In subsequent years, many studies have been conducted, and between 1957 and 2008 a total of 231 taxa have been reported from Turkey. Important studies close to area are Ergül et al. (2005) [3] and Yağız and Afyon (2007) [4]. The checklist compiled by Sesli and Denchev (2008) [5] comprises 16 taxa of the family *Cribrariaceae*, 43 taxa of the family *Physaraceae* and 44 taxa of the family *Stemonitidaceae*. Most diverse are the families *Physaraceae* and *Stemonitidaceae*. In this study, we report six new records species as an addition to the myxobiota of Turkey.

The three of these taxa, *Amaurochaete comata* G. Lister & Brândza, *Comatricha alta* Preuss, *Symphytocarpus confluens* (Cooke & Ellis) Ing & Nann.-Bremek., were presented as a poster at the XVIth Congress of European Mycologist [6].

MATERIALS AND METHODS

The new records taxa were obtained from material collected at the Hadim-Taşkent in Konya province of Turkey (Figure 1). The study area is situated in the transition zone between the continental climate of Central Anatolia and the Mediterranean climate. According to Emberger, this climate can be classified as Mediterranean type [7]. The majority of woody plant species in the area originates from the Mediterranean regions. However, a significant proportion of herbaceous plants, composing the understorey vegetation, originate from the Irano-Turanian floristic province, indicating that the region can be seen as a forest steppe. The study area is located within the square of C4 according to the framing (grid) system made for Turkey by Davis (1965) [8].

In the years 2007-2009, we were organized trips to the research area, especially in autumn and spring months. We collected plant debris, tree bark, branches, wood, logs and parts of living trees for the moist chamber cultures. During the culture process the materials were moistened to prevent the myxomycete from drying out, and their development was followed with a dissecting microscope. Photos of sporocarps and the microscopic features of the specimens were taken. All myxomycete specimens are kept at the Mycological Application and Research Centre Fungarium at Selçuk University, Turkey. Specimens were determined using the monographs of Martin and Alexopoulos (1969) [9], Nannenga-Bremekamp (1991) [10] and Neubert et al. (1995) [11]. Nomenclature of myxomycete names follows Lado (2001) [12].

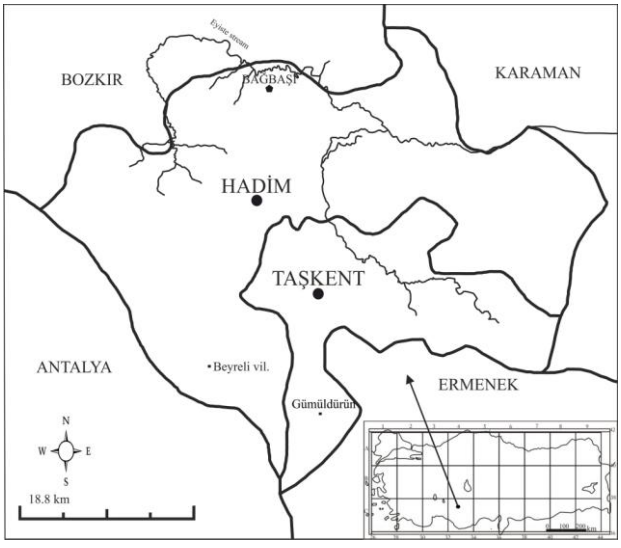

Figure 1. Map of the study area

Taxonomic Description

Cribraria oregana H. C. Gilbert, in Peck & Gilbert, Amer. J. Bot. 19(2): 142, 1932 Figs 2a-2b.

Sporocarps stalked, scattered, dull orange–brown, total height rarely exceeding 1.5 mm. Stalk subulate, wrinkled 0.5–1 mm tall, dark brown to black at the base. Hypothallus inconspicuous. Peridium remaining as a cup, up to half the sporangial height, with the margin irregularly toothed. Spores in mass orange-brown, brownish-yellow by transmitted light, more or less globose but slightly angular, marked with minute warts, 8–10 µm in diameter.

Specimens collected: Turkey-Konya: Hadim, Beyreli, cirlasun valley: in stream, on wood *Pinus nigra* Arnold., 1880 m, 23 July 2009, GE 1018a.

Badhamia iowensis Macbr., N. Amer. Slime-moulds, ed. 2:36, 1922 Figs 3a-3b.

Sporacarps stalked, scattered, globose and somewhat depressed, ash white, with a brown cupulate base, 0.5–1 mm in total height. Stalk short, cylindrical, rarely exceeding half the total height, very dark brown. Hypothallus inconspicuous. Peridium gray, bearing large flakes of white lime. Capillitium dull yellowish to white, meshes irregular and somewhat physaroid but with very few limeless tubules. Columella none. Spores black in mass, violaceous by transmitted light, minutely verrucose, the warts clustered in patches, making darker areas, 10–12 µm in diameter.

Specimens collected: Turkey-Konya: Taşkent, Gümüldürün valley: on fallen wood *Cerasus* sp., 1615 m, 15 May 2009, GE 89.

Physarum nudum T.Macbr., in Peck & Gilbert, Amer. J. Bot. 19: 134, 1932 Figs 4a-4b.

Sporocarps crowded, sessile, up to 0.5 mm tall, hemispherical on a narrow base 0.3–0.7 mm in diameter, dark gray, poor in lime. Peridium colorless, usually with little or no lime and showing greenish-bronze iridescent colors, dehiscing irregularly, the basal part persisting as a small irregular cup. Capillitium tubes delicate, flaccid, seeming badhamoid, with many small, white, narrow branched lime nodes, connected to the peridium. Columella none Spores in mass dark brown, lilac brown in transmitted light, covered with fine warts, 10–12 µm in diameter.

Specimens collected: Turkey-Konya: Hadim, Bağbaşı: on wood of cut stump *Juniperus* sp., 1300 m, 27 October 2007, GE 53b, 54.

Amaurochaete comata G. Lister & Brândza, J. bot. 64: 225, 1926 Figs 5a-5b.

Aethalia scattered, pulvinate, black, up to 10 cm tall, seated on a shining membranous hypothallus. Hypothallus permanent, dark black. Peridium thin, transparent, disappear after a short period of time. Capillitium of flexuous, branching, anastamosing, black threads, bearing spiny free ends, arising from base and attached to the peridium. Spores in mass black, dark purplish in transmitted light, closely warted, somewhat paler and less strongly warted on one side, 12–15 µm in diameter.

Specimens collected: Turkey-Konya: Hadim, Bağbaşı: on cut stump *Quercus* sp., 1254 m, 27 October 2007, GE 56a.

Comatricha alta Preuss, Linnaea 24: 141, 1851 Figs 6a-6b.

Sporocarps in groups, 3–6 mm tall, ovoid or shortly cylindrical, dark brown. Stalk usually several times longer than the sporangium, black and usually opaque. Hypothallus discoid or continuous under a groups, red brown. Capillitium abundant, brown, connected to the columella predominantly at the base, threads branched and forming wavy loops, hardly anastamosing, often free ending, when the sporangium is mature the upper part of the capillitium falls away from the columella and extends into a long plume. Columella completely reaching to the apex of the sporangium, blunt and sometimes a little widened at the end. Spores in mass black, lilac-brown in transmitted light, covered with very small pale warts, 7.5–9 µm in diameter.

Specimens collected: Turkey-Konya: Hadim, Bağbaşı: on cut stump *Quercus* sp., 1254 m, 27 October 2007, GE 56b.

Symphytocarpus confluens (Cooke & Ellis) Ing & Nann.-Bremek., in Nannenga-Bremekamp, Nederlandse Myxomycetes (Zutphen) 174, 1975 Figs 7a-7b-7c.

Pseudoaethalium 2–3 mm tall and 0.5–3 cm in diameter, deep black, sporangia about 0.5 mm in diameter, merged with each other in the middle. Hypothallus silvery. Peridium fugacious except for a number of more or less rounded plates which are red-brown in transmitted light, connected to the capillitium. Capillitium a wide meshed reticulum of thick, dark purple threads with small axillary membranes, looped at the periphery. Columella is absent. Spores in mass dark, dark purple-brown in transmitted light, distinctly warted, 10–12 µm in diameter.

Specimens collected: Turkey-Konya: Hadim, Merkez: in the groveyard, on bark of living *Abies* sp., 1515 m, 19 July 2008, GE 364.

RESULTS AND DISCUSSION

Cribraria oregana was developed on wood of *Pinus nigra*. This species develops small sporocarps up to 1 mm tall. *C. oregana* can be distinguished from *C. vulgaris* Schrad. by generally larger spore size and darker color, but as well by broad, thickened peridial nodes and larger dictydine granules.

Physarum nudum is difficult to describe because of its paucity in lime. Therefore, this species can beconfused with *Badhamia panicea* (Fr.) Rostaf., *B. versicolor* Lister and *Physarum leucophaeum* Fr. & Palmquist. It differs from *B. panicea* and *P. leucophaeum* by its smaller size and usually in the finer capillitial net and from *B. versicolor* in the spores being rather evenly warted. *B. versicolor* has larger spores. The delicate capillitium of *B. foliicola* Lister also shows some similarity to *P.nudum* but the warts on the spores of the *Badhamia* are more widely spaced [10].

Amaurochaete comata is close to *A. atra* (Alb. & Schwein.) Rostaf. But its pseudoaethalia are smaller than these of *A. atra*. Also, the spores of *A. comata* are closely warted, somewhat paler and less strongly warted on one side.

Comatricha alta is characterized by an elastically expanding capillitium, which falls away from the upper part of the columella. Similar features can be found in *C. filamentosa* Meyl., but the spores of this species are larger than *C. alta*. *C. fragilis* Meyl. Possesses as well a capillitium which falls away from the columella but it does not expand. In this species the capillitium remains attached to the apex of the columella and the sporocarps only about 2 mm tall and have smaller darker spores [10].

Symphytocarpus confluens can be recognized by its low masses of very deep black sporangia and its thick, dark capillitium threads, which are connected with the almost round peridial plates. The sporophores of *S. confluens* are 2-3

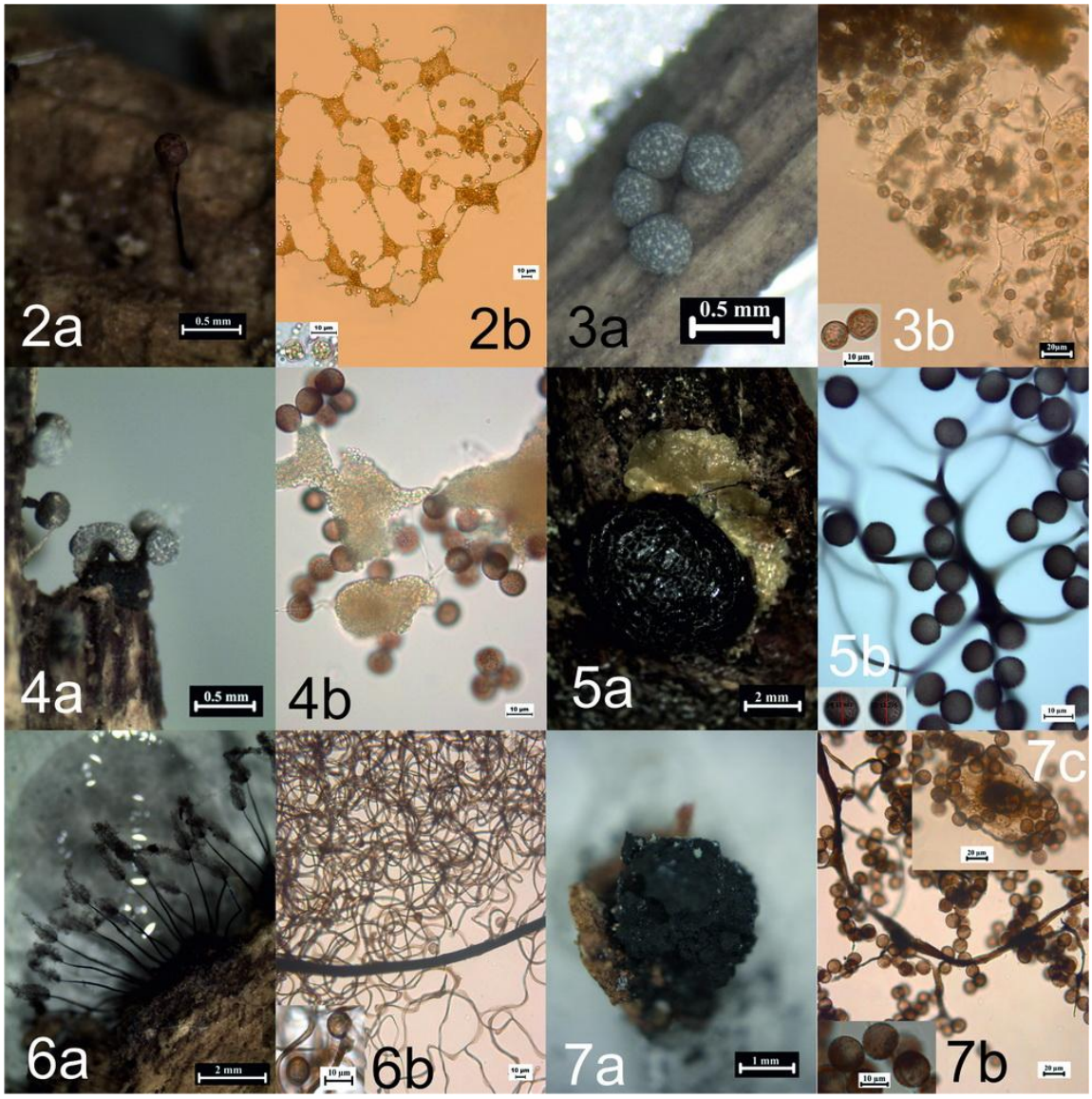

Figure 2. *Cribraria oregana* – a. sporocarps, b. peridial plates and spores. **Figure 3.** *Badhamia iowensis* – a. Sporocarp, b. Capillitium and spores. **Figure 4.** *Physarum nudum* – a. sporocarp, b. capillitium and spores**. Figure 5.** *Amaurochaete comata* – a. sporocarp, b. capillitium and spores. **Figure 6.** *Comatricha alta* – a. sporocarp, b. capillitium and spores. **Figure 7.** *Symphytocarpus confluens* – a. sporocarp, b. Capillitium and spores, c. axillary membrane

mm tall and merge together. The sporophores of *S. impexus* Ing & Nann.-Bremek. are 4-5 mm tall and merge from the bottom to the half.

The six new records stated in this article are added to Turkish myxobiota. All myxomycete samples are kept at the Mycological Application and Research Centre Fungarium at Selçuk University.

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