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Research note/Araştırma notu

Two lichenized fungi (*Bactrospora corticola, Pycnora sorophora*) from Bursa province new to Turkey

Şaban GÜVENÇ [*1]

[1] Bursa Uludag University, Faculty of Arts and Sciences, Department of Biology, 16059 Görükle, Bursa, Turkey.

Abstract

Two species of lichenized fungi from Bursa province, *Bactrospora corticola* and *Pycnora sorophora*, are new to Turkey. *Cliostomum griffithii* is new for Bursa province. For each species, a short description, ecology, associated species, and distribution are presented.

Key words: Ascomycota, biodiversity, lichens, Bursa, Turkey

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Bursa ilinden Türkiye için yeni iki likenleşmiş mantar (*Bactrospora corticola, Pycnora sorophora*)

Özet

Bu çalışmada Bursa ilinden Türkiye için yeni olan iki likenleşmiş mantar türünün (*Bactrospora corticola* ve *Pycnora sorophora*) kaydı yer almaktadır. *Cliostomum griffithii* ise Bursa ili için yeni kayıttır. Her türün kısa bir açıklaması, ekolojisi, habitatında bir arada bulunduğu türler ve dağılımı sunulmaktadır.

Anahtar kelimeler: Ascomycota, biyoçeşitlilik liken, Bursa, Turkey

1. Introduction

Bursa province is one of the Turkish provinces where the lichen diversity has been well studied. The first 14 lichen records from Bursa province were reported by Steiner (1916), and subsequent studies were reported by Szatala (1927, 1940, 1960). More recent reports of lichenized and lichenicolous fungi from Bursa province have been increased taxa number (Doğru and Güvenç, 2007; Yazıcı, 2007; Yazıcı et al., 2007; Oran and Öztürk, 2010; Arslan et al., 2011). Recently, the studies on species diversity (Oran and Öztürk, 2011) and community structure of epiphytic lichens (Güvenç and Öztürk, 2017) on oaks from Bursa province have been done. Bursa province is one of the best known of the lichen diversity in Turkey and so far, 657 lichen taxa have been reported from Bursa (Doğru and Güvenç, 2016). In this study, the records of three additional species from Bursa province were presented. Two of which are new to Turkey.

2. Materials and methods

The specimens were examined with a Leica EZ4 model stereomicroscope, and an Olympus CH-2 light microscope for external morphology and anatomical observations. Ascospore measurements were carried out in water. Ascospores measured (n = 10) and the results were given as: (min.) mean ± standard deviation (max.), where min. and max. are the extreme values. Identifications were determined according to the literature (Nash III et al., 2007; Smith et al., 2009; Wirth et al., 2013) and papers (Egea and Torrente, 1993; Gowan, 1990). The specimens were stored in Herbarium of Faculty of Sciences and Arts, Uludag University, Bursa, Turkey (BULU).

3. Results

From three lichenized fungi given in this study, *Bactrospora corticola* and *Pycnora sorophora* are new records for Turkey. Another species, *Cliostomum griffithii*, is new to Bursa province (Figure 1).

[*] *Corresponding author* / Haberleşmeden sorumlu yazar: Tel.: +902242941793; Fax.: +902242941899; E-mail: saban@uludag.edu.tr
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Bactrospora corticola (Fr.) Almq.

Thallus crustose, immersed or superficial, grey-white, scurfy, diffuse or weakly rimose, not sorediate. Apothecia 0.2 –0.5 (–0.6) mm diameter, round, brown-black, deep red-brown when wet, at first flat, becoming ± convex, epruinose; true exciple pale within, dark red-brown, particularly towards the outher edge; epithecium dark brown, of congealed granules, K+ blackish olive, not dissolving; hymenium 70–100 µm high, I+ reddish; hypothecium I+ pale blue. Asci 60–90 × 9–11 µm. Ascospores 50–100 × (1.5–) 2 (–2.5) µm, at first indistinctly long and very narrow, faintly spiralled, soon fragmenting into numerous, rounded or cuboid. Pycnidia 0.1–0.2(–0.3) mm diameter. Conidia 3.5–4 × 1–1.5 µm, simple, bacilliform or long ellipsoid, straight or slightly curved. Ascospores in the examined sample (55–) 62.27 ± 5.48 (–75) × (1.5–) 2.23 ± 0.55 (–3.3) µm.

Examined sample — Bursa: Karacabey district; Bayramdere village, near to Picnic place, 40°23′35″N 28°22′31″E, alt. 40 m, north-facing slopes, forested areas, on *Quercus cerris*, 14.08.2014, leg. & det. Ş. Güvenç (BULU 16445).

It was found usually together with *Amandinea punctata* (Hoffm.) Coppins & Scheid., *Lecanora chlarotera* Nyl., *Lecidella elaeochroma* (Ach.) M. Choisy, *Lepraria lobificans* Nyl., *Opegrapha herbarum* Mont., and *Scoliciosporum umbrinum* (Ach.) Arnold on old oak trees in coastal areas (Güvenç and Öztürk, 2017).

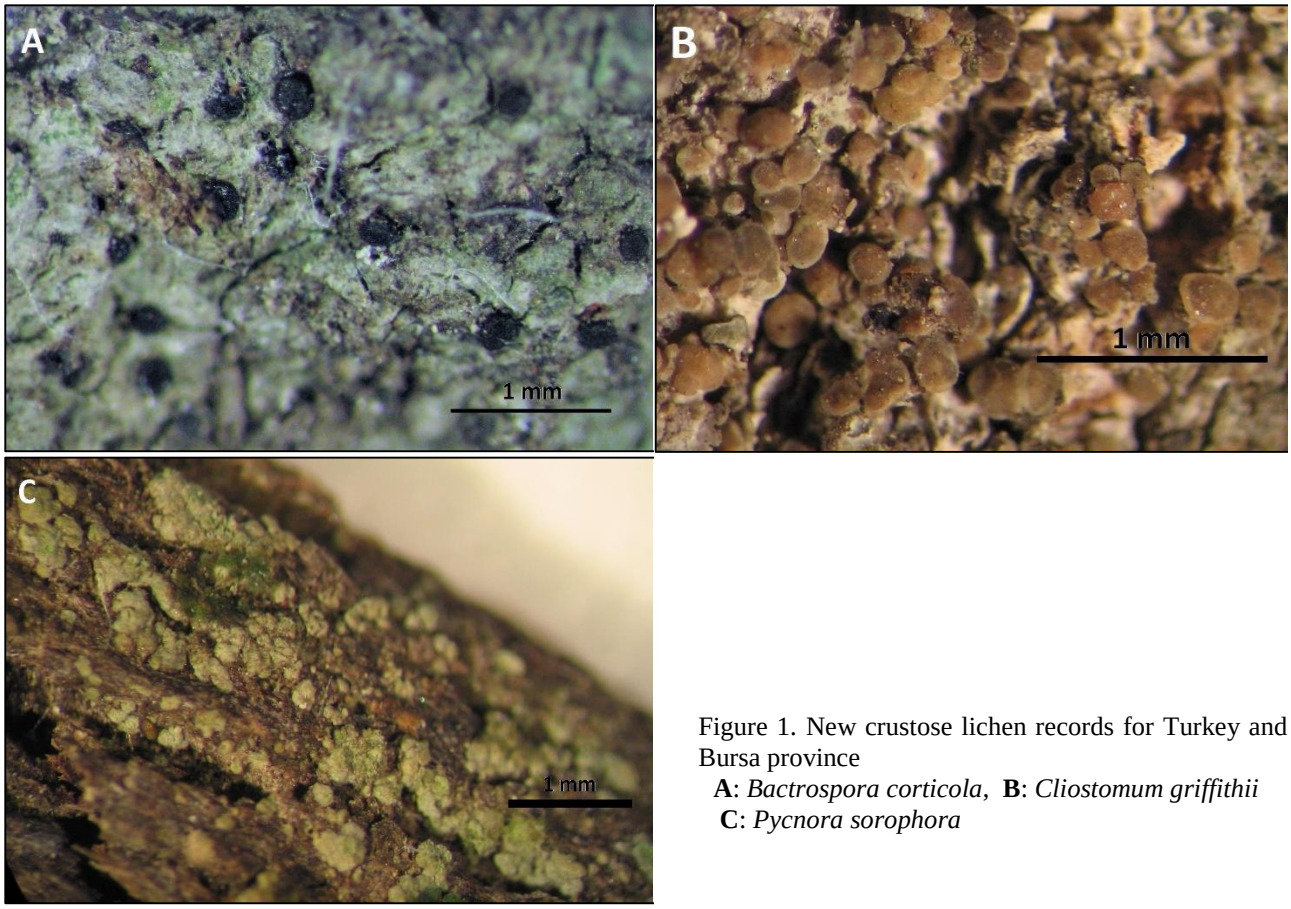

Figure 1. New crustose lichen records for Turkey and Bursa province
A: *Bactrospora corticola*, **B**: *Cliostomum griffithii*
C: *Pycnora sorophora*

Cliostomum griffithii (Sm.) Coppins

Thallus crustose, whitish to pale grey or blue-grey, matt or slightly glossy, continuous, smooth to warted-areolat. Apothecia 0.2–0.6(–0.8) mm diameter; disc concave-flat or slightly convex, often thinly white-pruinose, pink-brown to dark brown-grey or blackish, sometimes ± piebald; true exciple thin, pale or concolorous, in section colourless or brown (K+ purplish tinge) at the upper outer edge, ± densely granular internally; hymenium 55–60 µm high. Ascospores 8–16 × 2.5–3.5 µm, (0–) 1 (–3) septate; conidia 3.5–4.5 × 1.5–2 µm, oval to ellipsoid. Ascospores in the examined sample (8–) 9.58 ± 0.99 (–11) × (3–) 3.06 ± 0.16 (–3.5) µm, (0–) 1 septate. Thallus K+ yellow.

Examined sample — Bursa: Büyükorhan district; north-facing slopes in the west of Büyükorhan dam, 39°47′27″N 28°54′45″E, alt. 717 m, roadside, on *Quercus cerris*, 20.04.2015, leg. & det. Ş. Güvenç (BULU 16444).

Cliostomum griffithii is easily recognized by its whitish, slightly granulose or warted thallus bearing a multitude of black pycnidia, brownish flat to concave, slightly grey-pruinose apothecia with a grey pinkish or blackish tinge and a distinct margin and 1-septate spores. It occurs most frequently on dry sides of the bark of mature trees including conifers and wood, often in rather dry, well-lit situations, more rarely on sheltered, ± vertical rock faces or walls (Holien and

Hilmo, 1991). So far, this species has been recorded only from the oak and spruce mixed forest at 1200-1500 meters in Artvin and Rize provinces (John and Türk, 2017). Its previous world distribution was Europe, North America, and Australasia (Gowan, 1990).

Our specimen of *Cliostomum griffithii* was found associated with *Buellia disciformis* (Fr.) Mudd, *Evernia prunastri* (L.) Ach., *Hypogymnia physodes* (L.) Nyl., *H. tubulosa* (Schaer.) Hav., *Lecanora chlarotera* Nyl., *L. subcarpinea* Szatala, *Parmelia sulcata* Taylor, *Platismatia glauca* (L.) W.L. Culb. & C.F. Culb., *Pleurosticta acetabulum* (Neck.) Elix & Lumbsch, *Pseudevernia furfuracea* (L.) Zopf, and *Ramalina farinacea* (L.) Ach. on the old oaks around the dam lake (Güvenç and Öztürk, 2017).

Pycnora sorophora (Vain.) Hafellner

Thallus crustose, areoles up to 0.5(–1) mm diameter, weakly convex; upper surface dull, light grey or yellowish brown; soralia bursting from apices or more rarely, from margins of the areoles, yellowish brown; soredia farinose, 20–30(–50) µm diameter. Apothecia up to 0.6(–0.8) mm diameter, marginal or laminal, plane; disc black, epruinose; exciple of closely conglutinated hyphae, brown in inner part, brownish black in the rim, not containing crystals, K+ violet, N–; epithecium dark brown, not containing crystals, K+ violet, N–; hypothecium dark brown. Asci with a well-developed tholus containing an amyloid flank. Ascospores 6–9 × 2.5–4.5 µm, broadly to narrowly ellipsoid, simple. Pycnidia sessile, black, attached to the areole or apparently directly to the substratum. Conidia 3.5–5 × 1.5–2.5 µm, ellipsoid to bacilliform. Apothecia were not found in the examined sample. Soralia C+ red, K+ yellow, KC+ red, P+ yellow, UV+ yellow.

Examined sample — Bursa: Karacabey district; Örencik village, within valleys 4 km north of Örencik village, 40°19'12″N 28°17'29″E, alt. 257 m, mixed forest of oak, sycamore, linden, and chestnut trees, on *Erica* sp., 08.05.2012, leg. M. Gül, det. Ş. Güvenç (BULU 15934).

Pycnora sorophora is lignicolous, very rarely corticolous. It occurs mainly on old, erect, decorticated, dry trunks in open situations. It also occurs on wooden fences and buildings in agricultural areas, especially on the north-facing side of old log-houses in fields (Timdal, 1984). *Pycnora sorophora* is a sterile crustose lichen, and widely distributed in boreal and temperate Europe (Tsurykau et al., 2012).

Our specimen of *Pycnora sorophora* was found associated with *Parmelia sulcata* on dead bark of *Erica* sp.; in the same locality, other species collected on *Erica* sp. were *Hypogymnia physodes*, *Melanelixia glabratula* (Lamy) Sandler & Arup, *Parmelia sulcata*, and *Parmelina carporrhizans* (Taylor) Hale. (Gül and Güvenç, 2016).

References

Arslan, B., Öztürk, Ş., Oran, S. (2011). *Lecanora*, *Phaeophyscia* and *Rinodina* species new to Turkey. Mycotaxon, 116, 49-52.

Doğru, Z., Güvenç, Ş. (2007). Lichenized and lichenicolous fungi from Bursa province new to Turkey. Mycotaxon, 102, 389-394.

Dogru, Z., Güvenç, Ş. (2016). Lichenized and lichenicolous fungi of Katırlı mountain in Bursa province. Biological Diversity and Conservation, 9(3), 40-51.

Egea, J.M., Torrente, P. (1993). The lichen genus *Bactrospora*. Lichenologist, 25(3), 211-255.

Gowan, S.P. (1990). *Cliostomum* (lichen-forming *Ascomycotina*) in North America and Europe. Mycologia, 82(6), 766-771.

Gül, M., Güvenç, Ş. (2016). Lichenized fungi of Karadağ Mountain (Karacabey-Bursa). J. Biol. Environ. Sci., 10(29), 89-99.

Güvenç, Ş., Öztürk, Ş. (2017). Difference in Epiphytic Lichen Communities On *Quercus cerris* From Urban and Rural Areas in Bursa (Turkey). Pakistan Journal Of Botany 49, 631-637.

Holien, H., Hilmo, O. (1991). Contributions to the lichen flora of Norway, primarily from the central and northern counties. Gunneria, 65, 1-38.

John, V., Türk, A. (2017). Türkiye likenleri listesi (A Checklist of the Lichens of Turkey). İstanbul: Nezahat Gökyiğit Botanik Bahcesi Yayını.

Nash III, T.H., Gries, C., Bungartz, F (eds). (2007). Lichen flora of the Greater Sonoran Desert Region. Vol. 3. Tempe: Arizona State University Lichen Herbarium.

Oran, S., Öztürk, Ş. (2010). Three lichenized fungi new to Turkey. Mycotaxon, 112, 389-392.

Oran, S., Öztürk, Ş. (2011). The diversity of lichen and lichenicolous fungi on *Quercus* taxa found in the Marmara region (Turkey), Biological Diversity and Conservation, 4(2), 204-223.

Smith, C.W., Aptroot, A., Coppins, B.J., Fletcher, A., Gilbert, O.L., James, P.W., Wolseley, P.A. (eds). (2009). The lichens of Great Britain and Ireland. London: The British Lichen Society.

Steiner, J. (1916). Aufzälung der von J. Bornmülller in Oriente gesammelten Flechten. Ann. Naturhist. Mus. Wien, 30, 24-39.

Szatala, Ö. (1927). Lichenes Turciae asiaticae a Patre Prof. Stefano Selinka in insula Burgaz Adassi (Antigoni) lecti. Magy. Bot. Lapok., 26, 18-22.

Szatala, Ö. (1940). Contribitions à la connaisance de la flore lichenologique de la Peninsule des Balkans et de l'Asie mineure. Borbasia, 2, 33-50.
Szatala, Ö. (1960). Lichenes Turcicae asiaticae ab Victor Pietscmann collecti. Sydowia, 14, 312-325.
Timdal, E. (1984). The genus *Hypocenomyce* (*Lecanorales*, *Lecideaceae*) with special emphasis on the Norwegian and Swedish species. Nord. J. Bot., 4, 83-108.
Tsurykau, A., Khramchankova, V., Motiejünaite, J. (2012). *Pycnora sorophora* (Lecanoraceae) – Lichen species new to Belarus. Botanica Lithuanica, 18(1), 80-82.
Wirth, V., Hauck, M., Schultz, M. (2013). Die Flechten Deutschlands. Teil 1–2. Stuttgart: Ulmer.
Yazıcı, K. (2007). Five lichens new to Turkey. Mycotaxon, 100, 21-26.
Yazıcı, K., Aptroot, A., Aslan, A. (2007). Six lichenized and non–lichenized fungi new to Turkey. Mycotaxon, 102, 307-313.

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