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Lecanora, Phaeophyscia and *Rinodina* species new to Turkey

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Abstract — Four lichenized fungi (*Lecanora jamesii, L. juniperina, Phaeophyscia hirsuta,* and *Rinodina orculata*) are reported for the first time from Turkey. Comments on their habitat, substrate, and morphological and anatomical features are provided.

Key words — *Ascomycota*, Bursa, Çanakkale, lichens

Introduction

Lichenological studies in Turkey have rapidly increased in recent years. Prior to 2004, 361 papers referring to lichens were published (John 2004). Since then, many floristic studies have added several new records to the lichen biodiversity of Turkey (e.g. Yazıcı & Aslan 2005, Güvenç et al. 2006, John & Türk 2006, Halıcı et al. 2007, Yavuz & Çobanoğlu 2007, Candan & Türk 2008, Halıcı & Aksoy 2009, Kocakaya et al. 2009, Kınalıoğlu 2009, 2010). In spite of the increase in the number of studies, additional research is needed in some provinces where lichen biodiversity is still not sufficiently understood. This paper contributes further knowledge of the lichenized fungi in Turkey.

Materials & methods

Vouchers are stored in BULU (Herbarium of Uludag University, Sciences and Arts Faculty, Bursa, Turkey) and their accession numbers are given in parenthesis with the locality information. The specimens were examined with stereomicroscope (Prior), and light microscope (Krüss). Anatomical sections were examined in water, 10% KOH, and Lugol's iodine solution. Ascospore measurements were carried out in water and the extreme values outside the main range are given in parenthesis.

Species recorded

Lecanora jamesii J.R. Laundon 1963 Fig. 1

Specimen examined—**TURKEY. Çanakkale:** Bayramiç; Kazdağı Mountain, Dalaksuyu place, beech forest, 39°46N, 26°58E, alt. 1300 m, on *Fagus orientalis* Lipsky (*Fagaceae*), 18 Aug. 2005, leg. S. Oran, det. S. Oran (BULU 13785).

Thallus to 2–3 cm in diam., forming continuous, smooth or granular patches, grey; prothallus when present black; soredia arising in ± circular soralia, to 1 mm diam, farinose, pale yellow (to whitish on storage). Apothecia absent. Thallus P–, K–, C–, soralia sometimes weakly K+ yellowish.

On smooth bark of deciduous trees, most frequently *Salix* in damp situations, rarely on wood or siliceous rock; locally abundant (Purvis et al. 1992). In our study area, *L. jamesii* was found in a forest on smooth bark of *Fagus orientalis*.

Lecanora jamesii has been reported from western Europe and Chile (Purvis et al. 1992), and Iran (Valadbeigi & Sipman 2010). Clauzade & Roux (1985) and Purvis et al. (1992) describe the species in detail.

Lecanora juniperina Śliwa 2004 Fig. 2

Specimen examined—**TURKEY. Bursa:** İnegöl; road of Hilmiye–Oylat, 1 km from Hilmiye, rocky area, 39°56N, 29°35E, alt. 685 m, on *Juniperus* sp. (*Cupressaceae*), 19 Sept. 2004, leg. B. Arslan, det. Ş. Öztürk (BULU 9959).

Thallus granulose to areolate-rimose, grayish. Apothecia 0.3–1.2 mm in diam.; disc pale, sometimes yellow, usually pruinose, smooth; margin usually prominent, crenulate to dentate, paler than the disc; epihymenium granular, granules not soluble in K and N. Ascospores 9.0–13.5 × 4.5–6.0(–7.5) µm, ellipsoid.

Lecanora juniperina grows on tree bark (*Juniperus* and *Quercus*) and wood at intermediate elevations (Nash et al. 2004). Similar to the literature, our specimen was found on bark of *Juniperus* sp. in rocky area and was noted for its small thallus with very crowded and heavy pruinose apothecia.

Nash et al. (2004) and Śliwa (2007), who also describe the species in detail, recorded *L. juniperina* from North America. Valadbeigi & Sipman (2010) also report the species from Iran.

Phaeophyscia hirsuta (Mereschk.) Essl. 1978 Fig. 3

Specimen examined—**TURKEY. Bursa:** İnegöl; road of Çayyaka–Lütfiye, 1 km from Çayyaka, oak woodland, 39°59N, 29°28E, alt. 489 m, on *Juglans* sp. (*Juglandaceae*), 06 Jun. 2004, leg. B. Arslan, det. Ş. Öztürk (BULU 9601).

Thallus foliose, up to 3(–4) cm in diam., often orbicular; lobes 0.5–1(–1.5) mm broad, upper surface gray to gray-brown or brown, with cortical hairs near the lobe ends, sorediate; soralia labriform; lower surface black; rhizines simple, black. Apothecia numerous, up to 2 mm in diam, sessile, margin usually with cortical hairs.

Phaeophyscia hirsuta grows mostly on bark but also commonly on rock (Nash et al. 2004). Our specimen was collected from a trunk of *Juglans* sp. in a protected forest area.

Clauzade & Roux (1985), Nash et al. (2004), and Liška et al. (2008) have reported *P. hirsuta* from North America, Europe, and Africa. The first two papers describe the species in detail.

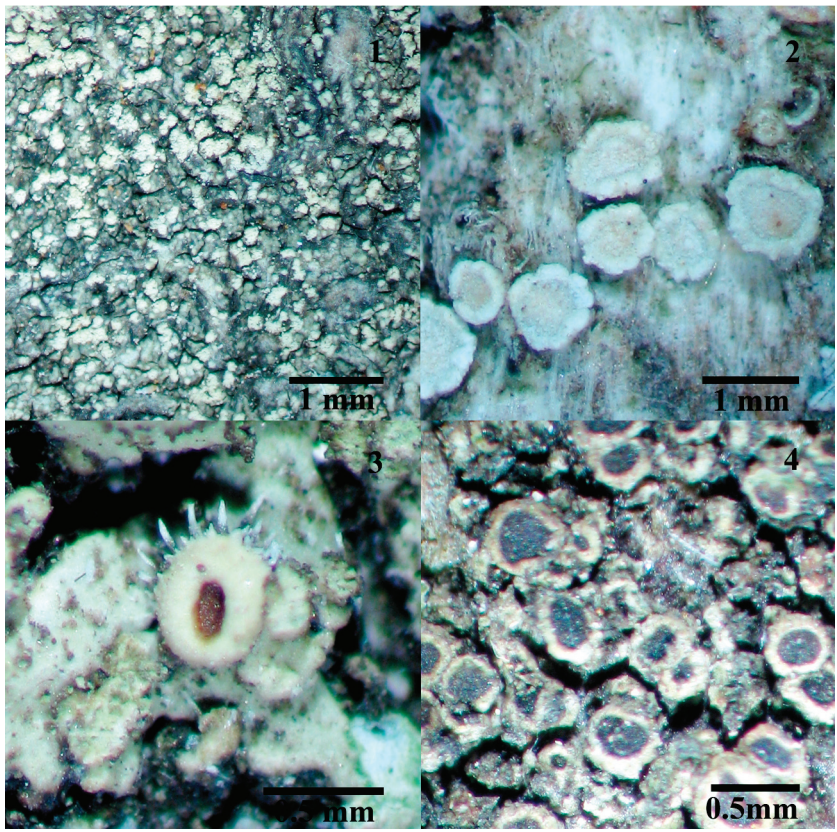

Fig. 1. *Lecanora jamesii* (BULU 13785). Fig. 2. *Lecanora juniperina* (BULU 9959). Fig. 3. *Phaeophyscia hirsuta* (BULU 9601). Fig. 4. *Rinodina orculata* (BULU 9818).

Rinodina orculata Poelt & M. Steiner 1970 Fig. 4

Specimen examined—**TURKEY. Bursa:** İnegöl; road of Kurşunlu–Güzelyurt, 3 km from Kurşunlu, oak woodland, 40°02N, 29°42E, alt. 575 m, on *Quercus* sp., 20 Jun. 2004, leg. B. Arslan, det. B. Arslan (BULU 9818).

Thallus crustose, usually effuse and discontinuous, composed of small verrucae, whitish, yellowish-brown to reddish-brown. Apothecia lecanorine, adnate to sessile, 0.2–0.4(–0.6) mm in diam., thalline margin thick, persistent. Apothecial cortex up to 20 µm, I+ blue; disc brown, plane; epihymenium red-brown. Ascospores 12–15(–17) × 6–8 µm, *Physconia*-type.

Rinodina orculata occurs at high altitudes in coniferous forests, where it grows mainly on small coniferous twigs. Our lichen sample, which was found on *Quercus* bark in a broad-leaved forest, was diagnosed by its numerous and round apothecia with dark brown discs.

This is a montane species with a distribution centered in the European Alps where it mostly grows on *Rhododendron* spp. Giralt (2001), who describes the species in detail, has reported the species from the Iberian Pyrenees and Portugal; *R. orculata* has also been recorded in the Czech Republic (Liška et al. 2008).

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