



***Picoa Vittad.*, a new truffle genus record for Turkey**

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Abstract

The genus *Picoa* Vittad. is recorded from Turkey for the first time, by determining the *Picoa lefebvrei* (Pat.) Maire. Short description of the taxon is provided together with the photographs of fruit bodies and microstructures.

Key words: *Ascomycota*, Biodiversity, Macrofungi, New record.

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***Picoa Vittad.*, Türkiye için yeni bir domalan cins kaydı**

Özet

Picoa Vittad. cinsi, *P. lefebvrei* (Pat.) Maire.'nin tanımlanmasıyla Türkiye'den ilk kez kaydedildi. Türün makroskobisi ve mikroskobisine ait fotoğraflarla birlikte kısa tanımlaması verildi.

Anahtar Kelimeler: *Ascomycota*, Biyoçeşitlilik, Makromantarlar, Yeni kayıt

1. Introduction

Picoa Vittad. is a mycorrhizal hypogeous ascomycete truffle genus with four confirmed species (*Picoa juniperi* Vittad., *P. lefebvrei* (Pat.) Maire, *P. melospora* G. Moreno and *P. pachyascus* M. Lange) (www.speciesfungorum.org; accessed 15 March 2010). *Picoa lefebvrei*, main interest of this work, was first proposed by Patouillard (1894) as *Phaeangium lefebvrei*, by describing the sample with a smooth, villose, brown surface; a milk-white, homogenous gleba; and ovoid, smooth, hyaline spores. Disputing the Patouillard's description related to sporocarp surface and gleba structure, Maire (1906) synonymized the *Phaeangium lefebvrei* to *Picoa lefebvrei* on the basis of his observations (Alsheikh and Trappe, 1983). Though Alsheikh and Trappe, like Fisher, Masee and Bataille, continued to recognize the genus *Phaeangium* (Alsheikh and Trappe, 1983), we follow the Maire's conclusion, in accordance with the most recent literature (Moreno et al., 2000; Kirk et al., 2008).

The genus *Picoa* is known to occur in Tunisia (Patouillard, 1984), Kuwait, Algeria, Libya, Iraq (Alsheikh and Trappe, 1983), North America (Fellner and Biber, 1989), Egypt (Pacioni and El-Kholy, 1994), France (Riousset et al, 1989), Spain (Moreno et al, 2000), Iran (Ammarellou and Trappe, 2007) and Israel (Kagan-Zur and Roth-Bejerano, 2008). According to the current checklists (Solak et al., 2007; Sesli and Denchev, 2008) *Picoa lefebvrei* has not previously been recorded from Turkey.

The study aims to contribute to macromycota of Turkey by adding a new generic record.

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2. Materials and methods

Picoa samples were collected from Elazığ and Urfa provinces (Fig. 1). Following standard mycological techniques, necessary macroscopic and microscopic data were obtained and the samples were identified with the help of Alsheikh and Trappe (1983) and Moreno et al. (2000). Microphotographs were taken by Leica DFC 290 through a light microscope Leica CME. The specimens are kept in the fungarium of Fatih University, Faculty of Art & Science, Department of Biology.

3. Results

Ascomycota

Pezizomycetes

Pezizomycetidae

Pezizales

Incertae sedis

Picoa lefebvrei (Pat.) Maire (1906).

Synonym: *Phaeangium lefebvrei* Patouillard, (1894)

Terfezia schweinfurthii Hennings, (1901)

Macroscopic features: Ascocarp hypogeous, gregarious 7-25×7-27 mm, subglobose to irregular, brown, reddish-brown to dark brown, covered with a reddish-brown, with more or less irregular pyramidal rounded warty mycelial tomentum. Gleba evenly white when young, white to paler white with fertile pockets separated by pale off-white veins when mature (Fig. 2a). Odour strong, pleasant.

Microscopic features: Ascospores 22-27×20-25 µm, broadly ellipsoid to globose, hyaline with a large lipid guttule, thin and smooth walled when young, the wall become 2-3 µm and covered by uniform, scattered or crowded, hyaline warts at maturity (Fig. 2d,e,f). Asci 90-140×40-65 µm, 2-8 spored, ellipsoid to club-shaped, with a pedicel (Fig. 2b). Peridial tomental hyphae 8-12 µm, cylindrical, septate, yellow to pale brown, with hyaline to light brown surface granules (Fig. 2c). Peridium 180-300 µm thick. Ectal excipulum up to 200 µm thick, composed of globose to subpolygonal cells, brownish-yellow. Ental excipulum up to 100 µm thick, composed of cylindrical, hyaline, interwoven hyphae.

Specimens examined: Elazığ, Baskil, Harabakayış village, hillside, 38°28' N – 38°45' E, 1200 m, 22.04.1984, F Gücin: 284517; Kadıköy village, arid hillside, 38°26' N – 38°43' E, 1100 m, 08.05.1984, F Gücin: 284521. Şanlıurfa, Bozova, Küçük Tümlen village, arid hillside, 37°18' N – 38°38' E, 729 m, M.K.Soylu: 69.

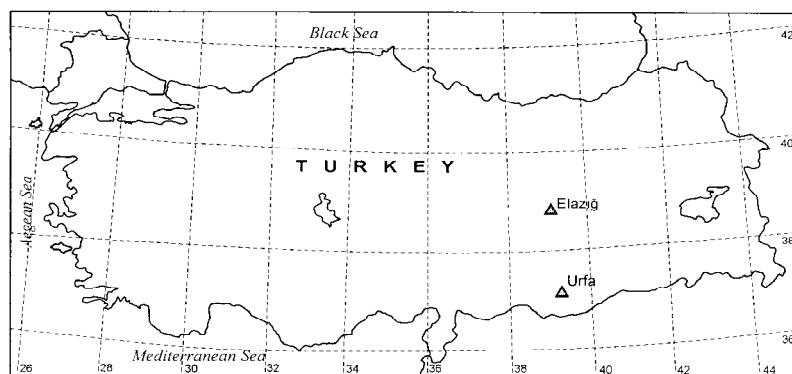


Figure 1. Collection sites of *Picoa lefebvrei*

4. Conclusions and discussion

Hypogeous fungi are those fungi which produce macroscopic fruit-bodies partially or completely embedded in soil. Although they show a superficial similarity correlated with habitat, they include members of the *Basidiomycetes*, *Ascomycetes* and *Phycomycetes* (Hawker, 2008).

According to latest contributions (Akata et al., 2009; Kaya, 2009; Sesli et al., 2009; Doğan and Aktaş, 2010) and the current checklists (Solak et al., 2007; Sesli and Denchev, 2010) six hypogeous Ascomycete truffle taxa have so far been recorded from Turkey. Two of them (*Terfezia arenaria* (Moris) Trappe, *T. boudieri* Chatin belong to the genus *Terfezia* (Tul. & C. Tul.) Tul. & C. Tul., one (*Tirmania pinoyi* (Maire) Malençon) to *Tirmania* Chatin and three (*Tuber aestivum* Vittad., *T. brumale* Vittad. and *T. borchii* Vittad.) to *Tuber* Vittad. With the addition of *P. lefebvrei* the number of Turkish Ascomycete truffle taxa increased to seven.

P. lefebvrei is seldom known in the regions where collected and named as “kara kumi” in Urfa. It usually shares the similar habitats with *T. boudieri* which is heavily collected and consumed especially in Urfa province.

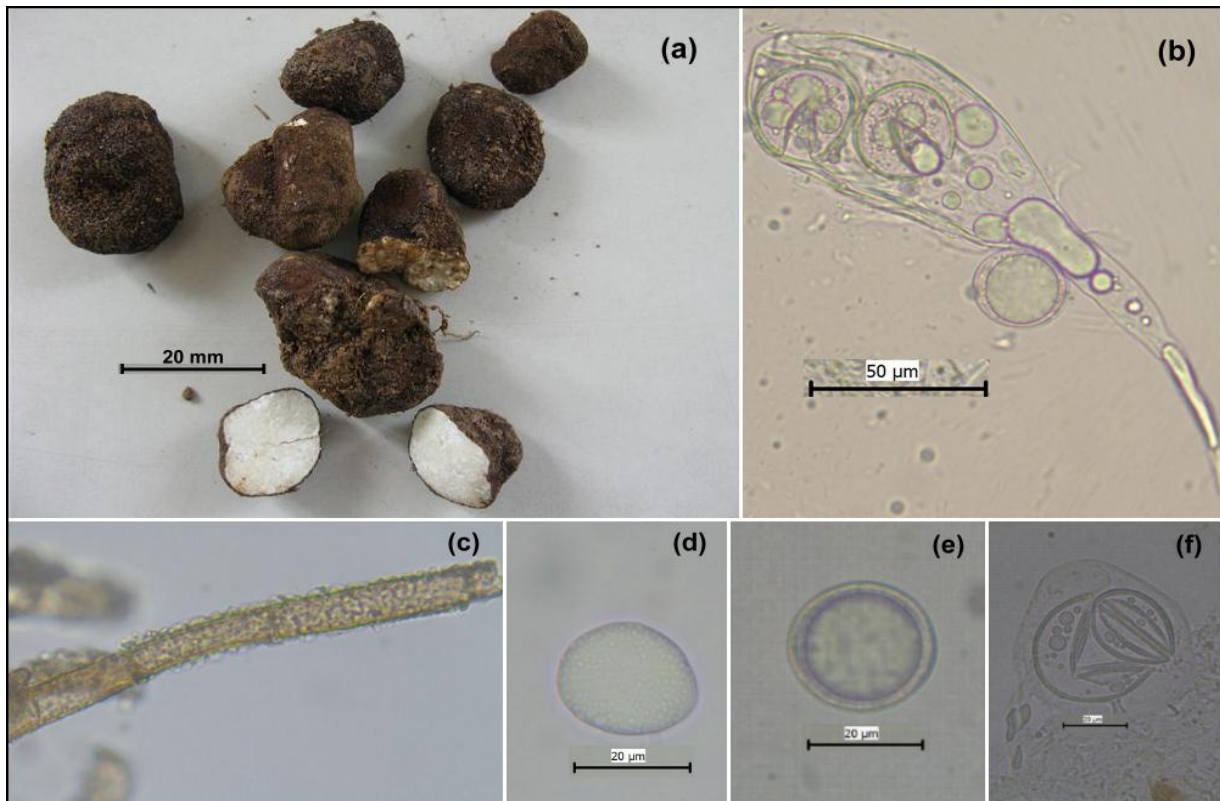


Figure 2. *Picoa lefebvrei*. a. Ascocarps, b. Ascus, c. Tomental hypha, d-e. Ascospores, f. Collapsed ascospores.

References

- Akata, I., Doğan, H.H., Çetin, B., Işiloğlu, M. 2009. *Onnia tomentosa* (Fr.) P. Karst, a new genus record for Turkey. *Biological Diversity and Conservation*. 2/1: 78-81.
- Alsheikh, A.M., Trappe, J.M. 1983. Taxonomy of *Phaeangium lefebvrei*, a desert truffle eaten by birds. *Canadian Journal of Botany*. 61: 1919-1925.
- Ammarellou, A., Trappe, J.M. 2007. A First Ascomycete Genus (*Picoa* sp.) record for the fungi flora of Iran. *Pakistan Journal of Biological Sciences*. 10/10: 1772.
- Doğan, H.H., Aktaş, S. 2010. Two new Ascomycetes records from Mediterranean part of Turkey. *Biological Diversity and Conservation*. 3/1: 83-86.
- Fellner, R., Biber, J. 1989. *Helianthemum* and some *Agaricales*: Unusual case of ectomycorrhizal symbiosis. *Agriculture Ecosystem and Environment*. 28: 121-125.
- Hawker, L.E., 2008. Hypogeous Fungi, *Biological Reviews* 30: 127-158.
- Kagan-Zur, V., Roth-Bejerano, N. 2008. Studying the brown desert truffles of Israel. *Israel Journal of Plant Sciences*. 56: 309-314.
- Kaya, A. 2009. Macromycetes of Kahramanmaraş Province (Turkey). *Mycotaxon*. 108: 31-34.
- Kirk, P.F., Cannon, P.F., Minter, D.W., Stalpers, J.A. 2008. *Dictionary of the fungi*, 10 th ed., CAB International, Wallingford.
- Maire, R. 1906. Notes mycologiques. *Annales Mycologici*. 4: 329-335.
- Moreno, G., Diez, J., Manjon, J.L. 2000. *Picoa lefebvrei* and *Tirmania nivea*, two rare hypogeous fungi from Spain. *Mycological Research*. 104: 378-381.
- Pacioni, G., El-Kholy, H. 1994. Turtufi del deseerto egiziano. *Micologia e Vegetazione Metiterranea*. 9: 69-84.
- Patouillard, N. 1894. Les terfez de la Tunisie. *Journal de Botanique (Morot)*. 8: 153-156.
- RiOUSset, L., RiOUSset, G., Jalade, M., Chevalier, G. 1989. Prima raccolta in Francia di *Phaeangium lefebvrei* Patouillard 1894. *Il Fungo*, 9-11.
- Sesli, E., Antonin, V., Denchev, C.M, 2009. A new record of *Chrysomphalina chrysophylla* (Basidiomycota, Hygrophoraceae) for Turkey. *Biological Diversity and Conservation*. 2/3: 156-158.
- Sesli, E., Denchev, C.M, 2010. Checklists of the myxomycetes, larger ascomycetes, and larger basidiomycetes in Turkey. *Mycotaxon*. 106 [2008]: 65-68 + on-line version: 1-133 (<http://www.mycotaxon.com/resources/checklists/seslisesliv106-checklist.pdf>).
- Solak, M.H., Isiloglu, M., Kalmıs, E., Allı, H. 2007. Macrofungi of Turkey. Checklist, Volume I Üniversiteliler Ofset, Bornova-Izmir.

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