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## *Thecotheus lundqvistii*, A New Coprophilous Ascomycete Record for Turkey

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**Abstract:** The fimicolous *Thecotheus* Boud. species, *Thecotheus lundqvistii* Aas., is reported in Turkey for the first time. A brief description of the species and the photographs related to its macro and micromorphologies are provided.

**Key words:** Biodiversity, Macrofungi, Taxonomy, Karaman

### *Thecotheus lundqvistii*, Türkiye İçin Yeni Bir Koprofil Askomiset Kaydı

**Öz:** Gübre üzerinde gelişim gösteren bir *Thecotheus* Boud. türü, *Thecotheus lundqvistii* Aas., Türkiye’de ilk kez rapor edilmiştir. Türün kısa betimlemesi ve makro ve mikromorfolojilerine ilişkin fotoğrafları verilmiştir.

**Anahtar kelimeler:** Biyoçeşitlilik, Makromantarlar, Taksonomi, Karaman

#### Introduction

*Thecotheus* Boud. is an ascomycete genus within the family *Ascobolaceae*. Members of the genus are characterized by membranous to fleshy rough or papillate disc shaped ascocmata, operculate, diffusely amyloid, 8-32-spored asci, ellipsoidal, symmetrical to slightly or greatly inequilateral, smooth to verrucose, biapiculate or non-apiculate ascospores (Doveri, 2007). Most members of the genus are coprophilous, often with a specific dung preference and widespread, especially in temperate regions (Doveri and Coué, 2008; Kirk et al., 2008).

Though Kirk et al. (2008) give the species number of *Thecotheus* as 17, Index Fungorum (accessed on 15 April 2020) lists 26 conformed *Thecotheus* species. But the current checklists (Sesli and Denchev, 2014; Solak et al., 2015) on Turkish macromycota and the later contributions (Kaşık et al., 2017; Akçay et al., 2018; Işık and Türkekul, 2018; Sadullahoğlu and Demirel, 2018; Acar et al., 2019; Keleş, 2019; Sesli, 2019; Yıldız et al.,

2019; İleri et al., 2020; Uzun et al., 2020) indicate that only two of them, *Thecotheus pelletieri* (Crouan) Boud. and *Thecotheus holmskioldii* (E.C.Hansen) Eckblad, of the genus have so far been recorded from Turkey (Kaya and Uzun, 2015; Uzun et al., 2018).

Here we report *Thecotheus lundqvistii* Aas as a new member of the Turkish *Thecotheus*. The study aims to make a contribution to the mycobiota of Turkey.

#### Material and Method

The *Thecotheus* samples were collected from Yeşildere village of Karaman province in 2015. The fructification organs were photographed at their natural habitats and ecologic characters were recorded. Detailed investigations related to their macroscopy and microscopy were carried out in the fungarium. A Nikon Eclipse Ci-S trinocular light microscope was used for microscopic investigations, and a Nikon DS-Fi2 camera was used for photographing micromorphologic structures. The samples were identified by comparing the obtained



data with relevant literature (Doveri et al., 2000; Nagao et al., 2003; Doveri, 2007; Richardson, 2007, 2008; Doveri and Coué, 2008; Bronckers, 2011). The specimens are kept at Karamanoğlu Mehmetbey University, Kâmil Özdağ Science Faculty, Department of Biology.

## Results

**Ascomycota** Caval-Smith

**Pezizomycetes** O.E.Erikss. & Winka

**Pezizales** J.Schröt.

**Ascobolaceae** Boud. ex Sacc.

**Thecotheus lundqvistii** Aas

### Macroscopic and microscopic features:

Apothecia 0.8-3 mm in diam., rounded at first, then cup shaped to cylindrical with a subiculum-like base, grey brownish to whitish. Hymenial surface smooth to finely

rough or pruinose. Outer surface covered with small grayish granulations which are more visible near the margin. Asci 260-300 x 21-28  $\mu\text{m}$ , cylindrical, operculate, tapering towards the base, uniseriate, 8-spored. Paraphyses filiform, hyaline, septate, enlarged at the apices. Ascospores 24-29 x 12-14  $\mu\text{m}$ , ellipsoid with an apiculus of 2-3  $\mu\text{m}$  at each pole, ornamented with minute granules or subreticulate structures, surrounded by gelatinous envelope. *Thecotheus lundqvistii* was reported to grow on cow dung as solitary, gregarious or in large groups (Garcia and Ormad, 2010).

**Specimen examined:** Karaman, Yeşildere village, on cow dung as solitary or in large groups, 37°09'N-33°25'E, 1150 m, 25.04.2015, AÇK. 181.



**Figure 1.** Ascocarps of *Thecotheus lundqvistii* on cow dung

## Discussions

*Thecotheus lundqvistii* is reported as new record for the mycobiota of Turkey. After the reports of *T. pelletieri* and *T. holmskjoldii* (Kaya and Uzun, 2015; Uzun et al., 2018), it seems to be the third member of the genus *Thecotheus* in Turkey. General characteristics of Turkish specimens are in agreement with those given by Richardson (2007, 2008) and Garcia and Ormad (2010).

*Thecotheus lundqvistii* is similar to *T. harasisus* and *T. holmskjoldii* in terms of ecological and some macro

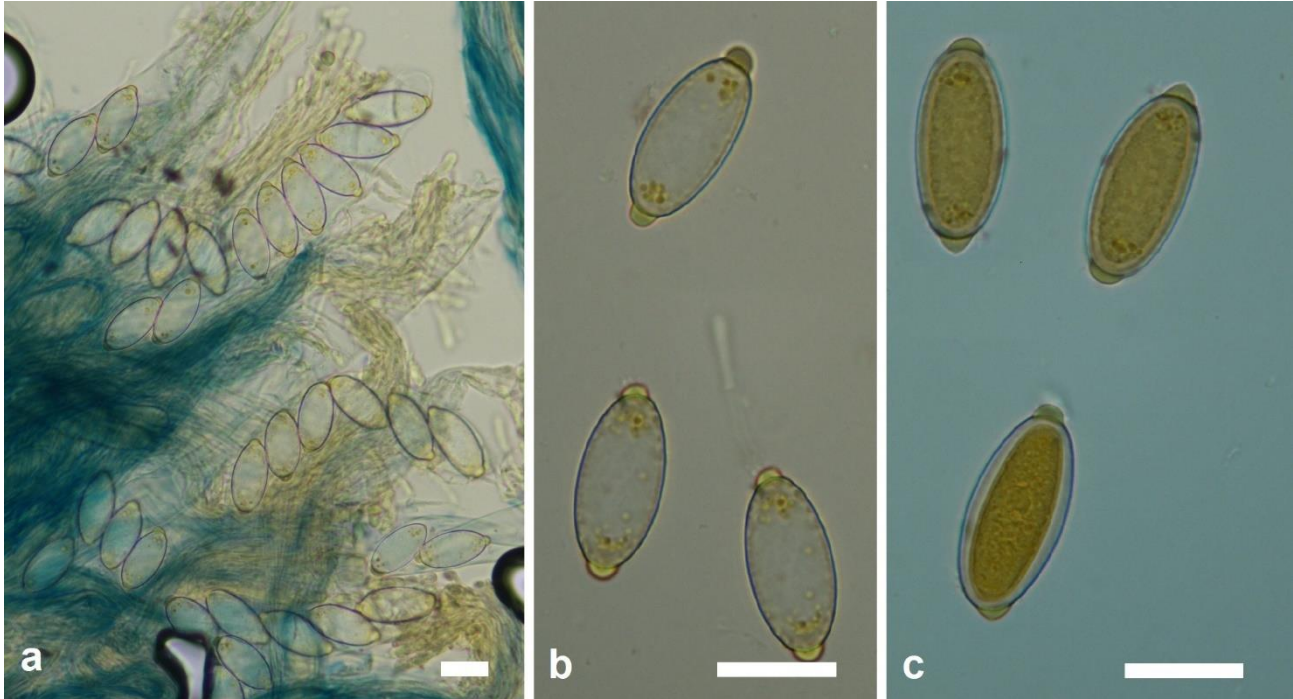
and micromorphological characters. All the three species grow on coprophilous substrata. Larger ascospores (29-38 x 14-18  $\mu\text{m}$ ) of *T. holmskjoldii* easily differentiates it from *T. lundqvistii* (24-29 (30) x 12-14  $\mu\text{m}$ ) (Nagao et al., 2003; Uzun et al., 2018). The subiculum-like base of apothecia and the verruculose ascospore ornamentation differs *T. lundqvistii* both from *T. harasisus* and *T. holmskjoldii* (Bronckers, 2011).





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**Figure 2.** Asci, paraphyses and ascospores (a), and ascospores (b,c) of *Thecotheus lundqvistii*

### References

- Acar, İ., Uzun, Y., Keleş, A. and Dizkırıcı, A. (2019). *Suilellus amygdalinus*, a new species record for Turkey from Hakkari Province. *Anatolian Journal of Botany*, 3(1): 25-27.
- Akçay, M.E., Uzun, Y. and Kesici, S. (2018). *Conocybe anthracophila*, A new record for the Turkish Mycobiota. *Anatolian Journal of Botany*, 2(2): 84-87.
- Bronckers, R.J.C. (2011). *Thecotheus phycophilus*, a rare non-coprophilous species with remarkable apiculate ascospores. *Sterbeekia*, 30: 51-59.
- Doveri, F. (2007). An updated key to coprophilous *Pezizales* and *Thelebolales* in Italy. *Mycologia Montenegrina*, 10: 55-82.
- Doveri, F. and Coué, B. (2008). On two new taxa of *Thecotheus*. *Documents Mycologiques*, 34: 15-40.
- Doveri, F., Cacialli, G. and Caroti, V. (2000). Guide pour l'identification des *Pezizales* fimicoles d'Italie. Contribution à l'étude des champignons fimicoles – XXXII. *Documents Mycologiques*, 30 (117-118): 3-97.
- Garcia, F. and Ormad, J. (2010). Ascomycetes de la zona de Morella (Castellón) II. *Butll. Soc. Micol. Valenciana*, 15: 71-96.
- İleri, R., Uzun, Y. and Kaya, A. (2020). Macromycetes of Karadağ (Karaman) and its environs. *The Journal of Fungus*, 11(1): 57-63.
- Index Fungorum. (2020). <http://www.indexfungorum.org/Names/Names.asp>. Accessed 15 April 2020.
- Işık, H. and Türkekul, İ. (2018). New additions to Turkish macrofungi from Tokat and Yozgat Provinces. *Mycotaxon*, 133(4): 697-709.
- Kaşık, G., Aktaş, S., Alkan, S. and Öztürk, C. (2017). Additions to the Macrofungi of Selçuk University Alaeddin Keykubat Campus (Konya). *The Journal of Fungus*, 8(2): 129-136.
- Kaya, A. and Uzun, Y. (2015). Six new genus records for Turkish *Pezizales* from Gaziantep Province. *Turkish Journal of Botany*, 39(3): 506-511.
- Keleş, A. (2019). New records of macrofungi from Trabzon province (Turkey). *Applied Ecology and Environmental Research*, 17(1): 1061-1069.
- Kirk, P.M., Cannon, P.F., Minter, D.W. and Stalpers, J.A. (2008). *Dictionary of the Fungi*, 10th ed., Wallingford: CAB International.



- Nagao, H., Udagawa, S., Bougherş N.L., Suzuki, A. and Tommerup, I.C. (2003). The genus *Thecotheus* (Pezizales) in Australia: *T. urinamans* sp. nov. from urea-treated jarrah (*Eucalyptus marginata*) forest. *Mycologia*, 95(4): 688-693.
- Richardson, M.J. (2007). The distribution and occurrence of coprophilous *Ascobolaceae*. *Mycologia Montenegrina*, 10: 211-227.
- Richardson, M.J. (2008). Coprophilous fungi from the Greek Aegean Islands. *Mycologia Balcanica*, 5: 23-32.
- Sadullahoğlu, C. and Demirel, K. (2018). *Flammulina fennae* Bas, A New Record from Karz Mountain (Bitlis). *Anatolian Journal of Botany*, 2(1):19-21.
- Sesli, E. (2019). *Inocybe griseotarda* Poirier (Inocybaceae, Agaricales): Türkiye mikotası için yeni bir kayıt. *Bağbahçe Bilim Dergisi*, 6(2): 95-98.
- Sesli, E. and Denchev, C.M. (2014). Checklists of the myxomycetes, larger ascomycetes, and larger basidiomycetes in Turkey. 6th edn. *Mycotaxon Checklists Online* (<http://www.mycotaxon.com/resources/checklists/sesli-v106-checklist.pdf>): 1-136.
- Solak, M.H., Işiloğlu, M., Kalmış, E. and Allı, H. (2015). Macrofungi of Turkey, Checklist. Volume- II. Üniversiteliler Ofset, İzmir.
- Uzun, Y., Acar, İ., Akçay, M.E. and Sadullahoğlu, C. (2020). Kağızman (Kars) Yöresi Makrofungusları. *Mantar Dergisi*, 11(1): 19-28.
- Uzun, Y., Yakar, S., Karacan, İ.H. and Kaya, A. (2018). New Additions to Turkish Pezizales. *Turkish Journal of Botany*, 42(3): 335-345.
- Yıldız, M.S., Türkekul, İ. and Işık, H. (2019). Macrofungal Biodiversity of Pazar (Tokat) District. *Bitlis Eren University Journal of Science*, 8(2): 387-395.