

Macrofungi Determined in Ulukışla (Niğde-Turkey) District

Osman BERBER¹, Yasin UZUN¹, Abdullah KAYA³^{*}

¹Karaman Provincial Directorate of Agriculture and Forestry, Karaman, Türkiye, ²Karamanoğlu Mehmetbey University, Ermenek Uysal and Hasan Kalan Health Services Vocational School, Department of Pharmacy Services Karaman, Türkiye, ³Gazi University, Science Faculty, Department of Biology, Ankara, Türkiye

¹<https://orcid.org/0000-0002-0265-4441>, ²<https://orcid.org/0000-0002-6423-6085>, ³<https://orcid.org/0000-0002-4654-1406>

✉: kayaabd@hotmail.com

ABSTRACT

This study was based on the macrofungi samples collected from the region within the boundaries of Ulukışla district of Niğde province. As a result of field and laboratory studies, 92 macrofungi species belonging to 6 classes, 14 orders, 42 families and 70 genera within Ascomycota and Basidiomycota were determined. Routine morphological parameters were used for identification. Ninety one of the determined taxa are new for the district. The taxa were listed together with their habitats and localities.

Botanic

Research Article

Article History

Received : 01.07.2021

Accepted : 01.10.2021

Keywords

Biodiversity

Macrofungi

Taxonomy

Turkey

Ulukışla (Niğde-Türkiye) Yöresinde Belirlenen Makromantarlar

ÖZET

Bu çalışma Niğde'nin Ulukışla ilçe sınırları içinde kalan bölgeden toplanan makromantar örneklerine dayanmaktadır. Arazi ve laboratuvar çalışmaları sonucunda Ascomycota ve Basidiomycota bölümleri içinde yer alan 6 sınıf, 14 takım, 42 familya ve 70 cinse ait 92 makromantar türü belirlenmiştir. Teşhis işlemi rutin morfolojik parametreler kullanılmıştır. Belirlenen tüksonlardan 91 tanesi ilçe için yenidir. Taksonlar habitat ve lokaliteleri ile birlikte listelenmiştir.

Botanik

Araştırma Makalesi

Makale Tarihçesi

Geliş Tarihi : 01.07.2021

Kabul Tarihi : 01.10.2021

Anahtar Kelimeler

Biyçeşitlilik

Makromantarlar

Taksonomi

Türkiye

To Cite : Berber O, Uzun Y, Kaya A. 2022. Macrofungi Determined in Ulukışla (Niğde-Turkey) District. KSU J. Agric Nat. 25 (5): 1007-1015. <https://doi.org/10.18016/ksutarimdog.vi.960925>

Atf İçin: Berber O, Uzun Y, Kaya A. 2022. Ulukışla (Niğde-Türkiye) Yöresinde Belirlenen Makromantarlar. KSÜ Tarım ve Doğa Derg. 25 (5): 1007-1015. <https://doi.org/10.18016/ksutarimdog.vi.960925>

INTRODUCTION

Fungi is known as the second diverse kingdom (Hawksworth et al., 1995) with the members growing almost everywhere in the world as saprophytes, parasites and symbionts (Şelem et al., 2021). Macrofungi constitutes a small group of this kingdom with fruiting bodies larger enough to be seen by naked eye (Uzun and Kaya, 2022).

The current checklist (Sesli et al., 2020) and the latest contributions (Alı et al., 2019; Çağlı and Öztürk, 2020; Işık, 2020; Keleş, 2020; Sesli, 2020; Şelem et al., 2021; Uzun et al., 2020a; Kaygusuz et al., 2021) indicate that more than 2.700 macrofungi have been determined in Turkey. Considering the 15.000 macrofungi taxa determined in Europe (Lukić, 2009) and the macrofungal diversity estimates of

Mueller et al. (2007) regarding the plant/macrofungi ratios of temperate regions, there is still much to be done to determine the complete macrofungal data of Turkey. Although many studies have been carried out across the country for this purpose, more than ¾rd of Turkey are still among the unstudied or less-studied regions (Sesli et al., 2020).

Ulukışla, is a district of Niğde province and located within the transition region of Mediterranean and Central Anatolian Region of Turkey (Fig. 1). The district is located between 37°23' – 37°44' north latitudes and 34°17' – 34°53' east longitudes, and surrounded by Pozantı (Adana) and Çamardı (Niğde) to the east, Bor (Niğde) to the north, Ereğli (Konya) to the west and Halkapınar (Konya) and Çamlıyayla (Mersin) to the south. Ulukışla was also among the

unstudied or less studied regions of Turkey. Though some mycological studies had been carried out in neighboring regions (Kaşık et al., 2001, 2003), and a new record was presented (Uzun et al., 2020b), a detailed macrofungal biodiversity study has not been carried out within the boundaries of the Ulukışla district. The present study aims to determine the macrofungal biodiversity of the region and to contribute to the mycobiota of Turkey.

MATERIALS and METHOD

The research materials were collected from the suitable habitats within the boundaries of Ulukışla district between 2017 and 2019 (Table 1). During field studies, fruit bodies were photographed in their natural habitats and the characteristics which are related to morphology and ecology were noted.

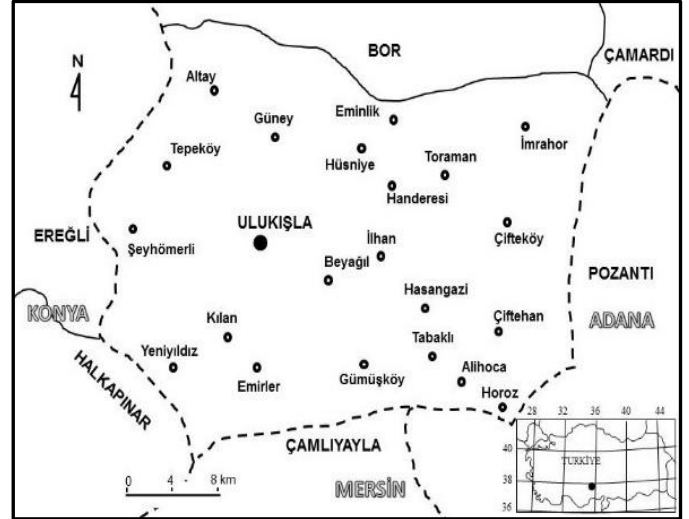


Figure 1. Map of the research area
 Şekil 1. Araştırma alanının haritası

Table 1. Collection localities of the macrofungal samples
 Çizelge 1. Makromantar örneklerinin toplanma lokaliteleri

| Loc. No | Locality name | Coordinates | Altitude (m) |
|---------|---------------------|-----------------|--------------|
| 1 | Alihoca village | 37°29'N-34°43'E | 1090 |
| 2 | Altay village | 37°39'N-34°27'E | 1200 |
| 3 | Belpınar village | 37°12'N-36°45'E | 545 |
| 4 | Çiftehan village | 37°30'N-34°45'E | 1000 |
| 5 | Çiftehan village | 37°30'N-34°46'E | 950 |
| 6 | Çiftehan village | 37°30'N-34°47'E | 930 |
| 7 | Çifteköy village | 37°35'N-34°44'E | 1150 |
| 8 | Darboğaz village | 37°29'N-34°33'E | 1330 |
| 9 | Darboğaz village | 37°29'N-34°34'E | 1330 |
| 10 | Eminlik village | 37°38'N-34°37'E | 1350 |
| 11 | Emirler village | 37°27'N-34°30'E | 1520 |
| 12 | Emirler village | 37°28'N-34°29'E | 1560 |
| 13 | Emirler village | 37°29'N-34°30'E | 1400 |
| 14 | Güney village | 37°38'N-34°30'E | 1360 |
| 15 | Hacıbekirli village | 37°30'N-34°22'E | 1540 |
| 16 | Handeresi village | 37°36'N-34°37'E | 1460 |
| 17 | Hasangazi village | 37°32'N-34°37'E | 1350 |
| 18 | Horoz village | 37°29'N-34°48'E | 990 |
| 19 | Hüsniye village | 37°38'N-34°35'E | 1410 |
| 20 | İlhanköy village | 37°33'N-34°36'E | 1490 |
| 21 | İmrahor village | 37°40'N-34°45'E | 1400 |
| 22 | Kılan village | 37°28'N-34°28'E | 1560 |
| 23 | Köşkönü village | 37°30'N-34°40'E | 1450 |
| 24 | Köşkönü village | 37°30'N-34°41'E | 1100 |
| 25 | Köşkönü village | 37°31'N-34°39'E | 1170 |
| 26 | Köşkönü village | 37°31'N-34°39'E | 1170 |
| 27 | Saklıbahçe village | 37°30'N-34°44'E | 980 |
| 28 | Tabaklı village | 37°30'N-34°40'E | 1450 |
| 29 | Toraman village | 37°38'N-34°40'E | 1300 |
| 30 | Yeni yıldız village | 37°27'N-34°22'E | 1575 |
| 31 | Yeni yıldız village | 37°27'N-34°23'E | 1600 |
| 32 | Yeni yıldız village | 37°28'N-34°25'E | 1630 |

Then the samples were transferred to the fungarium. Microscopic characteristics were investigated under a Nikon Eclipse Ci-S trinocular light microscope after mounting the specimens in water, KOH, Congo red, and Melzer's reagent. Identification was carried out with the help of Dennis and Itzerott (1973), Moser (1983), Philips (1981, 2010), Breitenbach and Kränzlin (1984-2000), Arora (1986), Wang and Kimbrough (1992), Benkert (1995,2007), Courtecuisse and Duhem (1995), Pegler et al. (1995), Abbott and Currah (1997), Bessette et al. (1997, 2007), Cappelli (1997), Hansen and Knudsen (1992, 1997, 2000), Montecchi and Sarasini (2000), Kränzlin (2005), Medardi (2006), Antonin and Noordeloos (2010), Buczacki (2012), Thompson (2013), Beug et al. (2014), Cripps et al. (2016) and Siegel and Schwarz (2016). The samples are kept in Department of Biology, Science Faculty, Karamanoğlu Mehmetbey University, Karaman, Türkiye.

RESULTS

The taxa determined in the region were listed alphabetically, in accordance with Index Fungorum (www.indexfungorum.org; accessed 5 May 2021). Habitats, collection dates, and accession numbers were also provided.

Ascomycota Whittaker

Chaetomellales Crous & Denman

Marthamycetaceae Baral, Lantz, Hustad & Minter

1. *Cyclaneusma minus* (Butin) DiCosmo, Peredo & Minter: On dead pine needles in pine forest, locality 31, 22.12.2018, O. Ber-291.

Helotiales Nannf.

Lachnaceae Raitv.

2. *Lachnum virgineum* (Batsch) P. Karst.: On *Quercus* sp. cupules in mixed forest, locality 31, 16.04.2018, O. Ber-163; locality 22, 02.03.2019, O. Ber-311.

Mollisiaceae Rehm

3. *Mollisia cinerea* (Batsch) P. Karst.: On decaying wood, locality 5, 07.12.2019, O. Ber-366.

Hypocreales Lindau

Nectriaceae Tul. & C. Tul.

4. *Nectria peziza* (Tode) Fr.: On dead *Populus* sp. branches, locality 22, 01.06.2018, O. Ber-183.

Patellariales D. Hawksw. & O.E. Erikss.

Patellariaceae Corda

5. *Patellaria atrata* (Hedw.) Fr.: On *Quercus* L. sp. twigs in mixed forest, locality 2, 11.06.2017, O. Ber-065.

Pezizales J. Schröt.

Helvellaceae Fr.

6. *Helvella acetabulum* (L.) Quél.: Among leaf litter in *Quercus* sp. forest, locality 2, 02.03.2019, O. Ber-307; locality 31, 17.03.2019, O. Ber-327.

7. *Helvella fibrosa* (Wallr.) Korf: On soil among leaf litter under *Corylus* sp., locality 18, 19.05.2017, O. Ber-022.

8. *Helvella fusca* Gillet: Among leaf litter in poplar grove, locality 22, 19.05.2017, O. Ber-010; among leaf litter under *Quercus* sp., locality 11, 01.06.2018, O. Ber-180.

9. *Helvella leucomelaena* (Pers.) Nannf.: On soil in mixed forest, locality 6, 19.05.2017, O. Ber-036; 23.03.2019, O. Ber-045; locality 26, 23.03.2019, O. Ber-335.

10. *Helvella leucopus* Pers.: On sandy soil under *Salix* and *Populus* sp., locality 9, 17.03.2019, O. Ber-326; among leaf litter under *Quercus* sp., locality 12, 17.03.2019, O. Ber-328.

Morchellaceae Rchb.

11. *Morchella esculenta* (L.) Pers.: On soil in fruit garden, locality 22, 19.05.2017, O. Ber-018; on soil in mixed forest, locality 6, 19.05.2017, O. Ber-039; locality 31, 16.04.2018, O. Ber-170.

12. *Verpa conica* (O.F. Müll.) Sw.: On soil among leaf litter under *Corylus* sp., locality 18, 23.03.2019, O. Ber-349.

Pezizaceae Dumort.

13. *Peziza fimeti* (Fuckel) E.C. Hansen: On cow dung, locality 13, 23.03.2019, O. Ber-134.

14. *Sarcosphaera coronaria* (Jacq.) J. Schröt.: In soil under needle litter, locality 6, 23.03.2019, O. Ber-341; in mixed forest, locality 31, 23.03.2019, O. Ber-354.

15. *Terfezia claveryi* Chatin: In soil among *Helianthemum* sp., locality 10, 14.04.2018, O. Ber-141; locality 21, 23.03.2019, O. Ber-354.

Pyronemataceae Corda

16. *Anthracobia melaloma* (Alb. & Schwein.) Arnould: On ash, locality 5, 07.12.2019, O. Ber-359.

17. *Genea lobulata* (Mor.-Arr., J. Gómez & Calonge) P. Alvarado & Mor.-Arr.: In soil under *Quercus* sp., Locality 31, 16.04.2018, O. Ber-167.

18. *Lamprospora miniata* De Not.: On moss in *Pinus* sp. forest, locality 6, 22.12.2018, O. Ber-277.

19. *Octospora leucoloma* Hedw.: Among moss, in mixed forest, locality 22, 07.12.2019, O. Ber-385.

20. *Octospora musci-muralis* Graddon: Among mosses in *Pinus* sp. forest, locality 26, 23.03.2019, O. Ber-356; among mosses in mixed forest, locality 4, 07.12.2019, O. Ber-374.

21. *Octospora neerlandica* Benkert & Brouwer: On soil among mosses under *Pinus* sp., locality 6, 07.01.2018, O. Ber-108.

22. *Octospora polytrichi* (Schumach.) Caillet & Moyne: On mosses in *Pinus* sp. forest, locality 6, 04.11.2018, O. Ber-138.

23. *Picoa juniperi* Vittad.: In soil among grasses, locality 10, 14.04.2018, O. Ber-142.

24. *Picoa lefebvrei* (Pat.) Maire: In soil among grasses, locality 21, 16.04.2018, O. Ber-171.

Sarcoscyphaceae Le Gal ex Eckblad

25. *Pithya cupressina* (Batsch) Fuckel: On dead branches of *Juniperus* sp., locality 4, 07.12.2019, O. Ber-368.

Tuberaceae Dumort.

26. *Tuber* sp.: In soil under *Pinus* sp., locality 6, 23.03.2019, O. Ber-334.

Basidiomycota R.T. Moore

Agaricales Underw.

Agaricaceae Chevall.

27. *Coprinus comatus* (O.F. Müll.) Pers.: On soil among grasses, locality 22, 19.05.2017, O. Ber -019; locality 8, 23.03.2019, O. Ber-169.

28. *Leucoagaricus leucothites* (Vittad.) Wasser: On soil among grasses, locality 10, 11.06.2017, O. Ber-064; locality 16, 01.06.2018, O. Ber-178.

29. *Tulostoma fimbriatum* Fr.: On soil under *Juniperus* sp., locality 22, 07.01.2018, O. Ber-095; locality 32, 16.04.2018, O. Ber-152.

Bolbitiaceae Singer

30. *Conocybe apala* (Fr.) Arnolds: On soil among grasses, locality 24, 19.05.2017, O. Ber-038; locality 10, 11.06.2017, O. Ber-061.

31. *Conocybe deliquescens* Hauskn. & Krisai: On soil among grasses, locality 9, 15.04.2018, O. Ber-148.

Chromocyphellaceae Knudsen

32. *Chromocyphella muscicola* (Fr.) Donk: On mosses in *Pinus* sp. forest, locality 5, 07.12.2019, O. Ber-375.

Hygrophoraceae Lotsy

33. *Arrhenia obscurata* (D.A. Reid) Redhead, Lutzoni, Moncalvo & Vilgalys: On soil, roadside, locality 4, 07.12.2019, O. Ber-382.

34. *Arrhenia rickenii* (Hora) Watling: On soil among mosses in *Pinus* sp. forest, locality 5, 07.12.2019, O. Ber-376.

35. *Arrhenia spathulata* (Fr.) Redhead: On moss in *Pinus* sp. forest, locality 5, 07.12.2019, O. Ber-363.

Hymenogastraceae Vittad.

36. *Hymenogaster bulliardii* Vittad.: In soil in mixed forest, locality 30, 02.03.2019, O. Ber-309.

37. *Psilocybe coronilla* (Bull.) Noordel.: On soil among grasses under *Juniperus* sp., locality 13, 07.01.2018, O. Ber-095; locality 31, 22.12.2018, O. Ber-268.

Incertae Sedis

38. *Crucibulum laeve* (Huds.) Kambly: On soil or on decaying hardboard particles, locality 10, 11.06.2017, O. Ber-062.

39. *Cyathus stercoreus* (Schwein.) De Toni: On dung, locality 14, 19.05.2017, O. Ber-042.

40. *Cystodermella cinnabarina* (Alb. & Schwein.) Harmaja: On soil among *Pinus* sp. needles, locality 28, 01.12.2017, O. Ber-088; locality 6, 07.01.2018, O. Ber-111; locality 5, 07.12.2019, O. Ber-362.

41. *Lepista nuda* (Bull.) Cooke: On soil among plant debris, locality 6, 16.12.2018, O. Ber-242.

42. *Panaeolina foenicicii* (Pers.) Maire: On manured

soil among grasses, locality 2, 01.06.2018, O. Ber-176.

Inocybaceae Jülich

43. *Pseudosperma rimosum* (Bull.) Matheny & Esteve-Rav.: On soil in mixed forest, locality 30, 11.06.2017, O. Ber-050; locality 22, 22.06.2017, O. Ber-079.

Lycoperdaceae Chevall.

44. *Lycoperdon molle* Pers.: On soil among mosses in pine forest, locality 26, 23.03.2019, O. Ber-336; locality 6, 23.03.2019, O. Ber-346.

45. *Lycoperdon nigrescens* Pers.: On soil in *Pinus* sp. forest, locality 4, 07.12.2019, O. Ber-373.

Marasmiaceae Roze ex Kühner

46. *Marasmius epodius* Bres.: On decaying herb remains in pine forest, locality 23, 07.01.2018, O. Ber-028; locality 6, 07.01.2018, O. Ber-109.

Mycenaceae Overeem

47. *Hemimycena lactea* (Pers.) Singer: On needle litter in pine forest, locality 28, 07.01.2018, O. Ber -100; locality 6, 07.01.2018, O. Ber-109.

48. *Mycena epipterygioides* A. Pearson: Among needle litter in pine forest, locality 6, 07.01.2018, O. Ber-121.

49. *Mycena meliigena* (Berk. & Cooke) Sacc.: On decaying barks of *Pinus* sp., locality 31, 07.12.2019, O. Ber-387.

50. *Mycena seynii* Quél.: Among needle litter in pine forest, locality 6, 07.01.2018, O. Ber-114; locality 26, 22.12.2018, O. Ber-282.

51. *Xeromphalina caudicinalis* (Fr.) Kühner & Maire: On soil under *Populus* and *Salix* sp., locality 6, 01.12.2017, O. Ber-091; locality 31, 22.12.2018, O. Ber-253.

Phyllostopsidaceae Locquin ex Olariaga, Huhtinen, Læssøe, J.H. Petersen & K. Hansen

52. *Phyllostopsis nidulans* (Pers.) Singer: On rotting wood in *Pinus* sp. forest, locality 4, 07.12.2019, O. Ber-380.

Physalacriaceae Corner

53. *Flammulina velutipes* (Curtis) Singer: Around *Salix* sp. stump, locality 11, 07.01.2018, O. Ber-097; locality 18, 16.12.2018, O. Ber-241.

Pleurotaceae Kühner

54. *Pleurotus ostreatus* (Jacq.) P. Kumm.: On *Populus* sp. stump, locality 10, 1.12.2017, O. Ber-085; locality 13, 04.11.2018, O. Ber-216.

Psathyrellaceae Vilgalys, Moncalvo & Redhead

55. *Coprinellus disseminatus* (Pers.) J.E. Lange: Among herbaceous plant debris, locality 25, 14.10.2018, O. Ber-189; locality 31, 04.11.2018, O. Ber-202.

56. *Coprinellus micaceus* (Bull.) Vilgalys, Hopple & Jacq. Johnson: Around *Populus* sp. stump, locality 22, 19.5.2017, O. Ber-011; locality 27, 19.05.2017, O. Ber-027; locality 25, 19.05.2017, O. Ber-029; locality 7, 22.06.2017, O. Ber-076; locality 17, 16.04.2018, O. Ber-164.

57. *Coprinopsis atramentaria* (Bull.) Redhead, Vilgalys & Moncalvo: Among plant debris aronud *Populus* sp. stump, locality 11, 14.10.2018, O. Ber-190.
58. *Coprinopsis nivea* (Pers.) Redhead, Vilgalys & Moncalvo: On cow dung, locality 17, 16.04.2018, O. Ber-168; locality 19, 14.10.2018, O. Ber-188.
59. *Psathyrella bipellis* (Quél.) A.H. Sm.: On soil among grasses in mixed forest, locality 22, 23.12.2018, O. Ber-302.
60. *Psathyrella candolleana* (Fr.) Maire: On soil around *Populus* sp. stump, locality 6, 19.05.2017, O. Ber-040; locality 20, 16.04.2018, O. Ber-165.
- Schizophyllaceae** Quél.
61. *Schizophyllum amplum* (Lév.) Nakasone: On decaying *Populus* sp. twigs, locality 27, 19.05.2017, O. Ber-026; locality 9, 22.12.2018, O. Ber-276.
62. *Schizophyllum commune* Fr.: On decaying *Populus* sp. stump, locality 27, 19.05.2017, O. Ber-024; locality 24, 19.05.2017, O. Ber-276.
- Strophariaceae** Singer & A.H. Sm.
63. *Agrocybe molesta* (Lasch) Singer: On soil among grasses, locality 14, 01.06.2018, O. Ber-035; locality 21, 15.04.2018, O. Ber-145; locality 10, 01.06.2018, O. Ber-179.
64. *Agrocybe vervacti* (Fr.) Singer: On soil among grasses, locality 10, 15.04.2018, O. Ber-146; locality 19, 01.06.2018, O. Ber-177.
65. *Pholiota populnea* (Pers.) Kuyper & Tjall.-Beuk.: On *Salix* sp. trunk, locality 31, 04.11.2018, O. Ber-198.
- Tricholomataceae** R. Heim ex Pouzar
66. *Tricholoma terreum* (Schaeff.) P. Kumm.: On soil among needle litter in pine forest, locality 28, 01.12.2017, O. Ber-089; locality 11, 07.01.2018, O. Ber-137; locality 1, 16.12.2018, O. Ber-236.
- Tubariaceae** Vizzini
67. *Cyclocybe cylindracea* (DC.) Vizzini & Angelini: Around *Populus* sp. stump, locality 31, 11.06.2017, O. Ber-055; locality 9, 11.06.2017, O. Ber-057.
68. *Tubaria furfuracea* (Pers.) Gillet: On soil among plant debris, locality 11, 01.12.2017, O. Ber-090; locality 22, 07.01.2018, O. Ber-130.
- Boletales** E.-J. Gilbert
- Diplocystidiaceae** Kreisel
69. *Astraeus hygrometricus* (Pers.) Morgan: Among leaf-needle litter in mixed forest, locality 6, 01.12.2017, O. Ber-087; locality 27, 07.01.2018, O. Ber-112.
- Gomphidiaceae** Maire ex Jülich
70. *Chroogomphus rutilus* (Schaeff.) O.K. Mill.: Among leaf-needle litter in mixed forest, locality 1, 07.01.2018, O. Ber-135; locality 27, 7.1.2018, O. Ber-112.
- Paxillaceae** Lotsy
71. *Melanogaster broomeanus* Berk.: In soil under mixed forest, locality 22, 22.06.2017, O. Ber-071.
- Rhizopogonaceae** Gäum. & C.W. Dodge
72. *Rhizopogon luteolus* Fr.: Among soil in mixed forest, locality 11, 07.01.2018, O. Ber-136; locality 7, 22.12.2018, O. Ber-283.
73. *Rhizopogon roseolus* (Corda) Th. Fr.: Among soil in pine forest, locality 1, 04.11.2018, O. Ber-219; locality 13, 04.11.2018, O. Ber-222.
- Sclerodermataceae** Corda
74. *Pisolithus arhizus* (Scop.) Rauschert: On soil under *Populus* & *Salix* sp., locality 26, 22.06.2017, O. Ber-081; locality 18, 01.06.2018, O. Ber-175.
- Suillaceae** Besl & Bresinsky
75. *Suillus collinitus* (Fr.) Kuntze: On soil among needle litter, locality 31, 16.12.2018, O. Ber-237; locality 6, 22.12.2018, O. Ber-285.
- Dacrymycetales** Henn.
- Dacrymycetaceae** J. Schröt.
76. *Dacrymyces capitatus* Schwein.: On decaying logs in pine forest, locality 6, 07.01.2018, O. Ber-115; locality 4, 07.12.2019, O. Ber-375.
- Geastrales** K. Hosaka & Castellano
- Geastraceae** Corda
77. *Geastrum minimum* Schwein.: On soil in *Pinus* sp. forest, locality 4, 07.12.2019, O. Ber-378.
78. *Schenella pityophila* (Malençon & Rioussset) Estrada & Lado: In soil under leaf litter in mixed forest, locality 6, 23.03.2019, O. Ber-343.
- Gloeophyllales** Thorn
- Gloeophyllaceae** Jülich
79. *Gloeophyllum trabeum* (Pers.) Murrill: On rotting wood in *Pinus* sp. forest, locality 4, 07.12.2019, O. Ber-379.
- Hymenochaetales** Oberw.
- Hymenochaetaceae** Donk
80. *Inonotus hispidus* (Bull.) P. Karst.: On *Malus* sp. trunk, locality 6, 22.06.2017, O. Ber-080.
81. *Phellinus igniarius* (L.) Quél.: On *Salix* sp. trunk, locality 6, 22.06.2017, O. Ber-077; locality 23, 01.06.2018, O. Ber-182.
82. *Phellinus lundellii* Niemelä: On *Amygdalus* sp. trunk, locality 6, 22.06.2017, O. Ber-314.
- Hysterangiales** K. Hosaka & Castellano
- Trappeaceae** P.M. Kirk
83. *Trappea darkeri* (Zeller) Castellano: (Uzun et al., 2020b).
- Polyporales** Gäum.
- Laetiporaceae** Jülich
84. *Laetiporus sulphureus* (Bull.) Murrill: On *Salix* sp. trunk, locality 29, 01.12.2017, O. Ber-086; locality 14, 15.04.2018, O. Ber-147.
- Phanerochaetaceae** Jülich
85. *Bjerkandera adusta* (Willd.) P. Karst.: On *Populus* sp. stump, locality 16, 01.12.2017, O. Ber-084; locality 11, 07.01.2018, O. Ber-098.
- Polyporaceae** Fr. ex Corda
86. *Cerioporus squamosus* (Huds.) Quél.: On decaying *Salix* sp. stump, locality 26, 07.01.2018, O. Ber-098.
87. *Fomes fomentarius* (L.) Fr.: On *Populus* sp.

stump, locality 22, 04.11.2018, O. Ber-223.

88. *Lentinus arcularius* (Batsch) Zmitr.: On dead branches of *Quercus* sp., locality 27, 19.05.2017. O. Ber-023.

89. *Lentinus tigrinus* (Bull.) Fr.: Around *Salix* sp. stumps, locality 17, 14.10.2018, O. Ber-186; locality 11, 04.11.2018, O. Ber-220.

90. *Trametes trogii* Berk.: On decaying *Populus* sp. stump, locality 22, 19.05.2017, O. Ber-001.

Russulales Kreisel ex P.M. Kirk, P.F. Cannon & J.C. David

Russulaceae Lotsy

91. *Lactarius deliciosus* (L.) Gray: On soil among needle litter in pine forest, locality 6, 22.06.2017, O. Ber-082.

Stereaceae Pilát

92. *Stereum hirsutum* (Willd.) Pers.: On decaying *Quercus* sp. stump in mixed forest, locality 22, 07.01.2018, O. Ber-128.

DISCUSSION

Ninety two macrofungi species were determined within the boundaries of Ulukışla district. Twenty six (%28.26) of them belong to *Ascomycota* and 66 (%71.74) to *Basidiomycota*. All the taxa are new for the region except, *Trappea darkeri* which was reported before (Uzun et al., 2020). The taxa determined in the region are distributed in 6 classes (Fig. 2), 14 orders (Fig. 3), 42 families and 70 genera. *Pyronemataceae*, *Agaricaceae*, *Psathyrellaceae*, *Helvellaceae*, and *Mycenaceae* were found to be the most crowded 5 families with, 9, 8, 6, 5 and 5 taxa respectively. The most crowded 4 genera were determined as *Helvella*, *Octospora*, *Arrhenia* and *Mycena* with 5, 4, 3, and 3 taxa respectively. Following 10 genera (*Agrocybe*, *Conocybe*, *Coprinellus*, *Coprinopsis*, *Lentinus*, *Lycoperdon*, *Phellinus*, *Picoa*, *Psathyrella*, *Rhizopogon*, *Schizophyllum*) are represented with two taxa while the other genera are represented with only one taxa in the region.

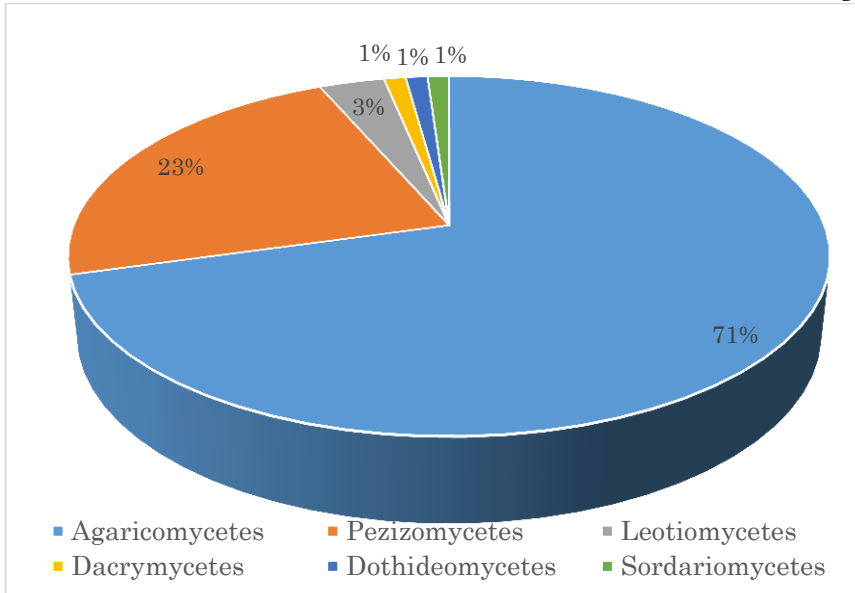


Figure 2. Class-wise distribution of the determined taxa
Şekil 2. Tespit edilen taksonların sınıf bazında dağılımı

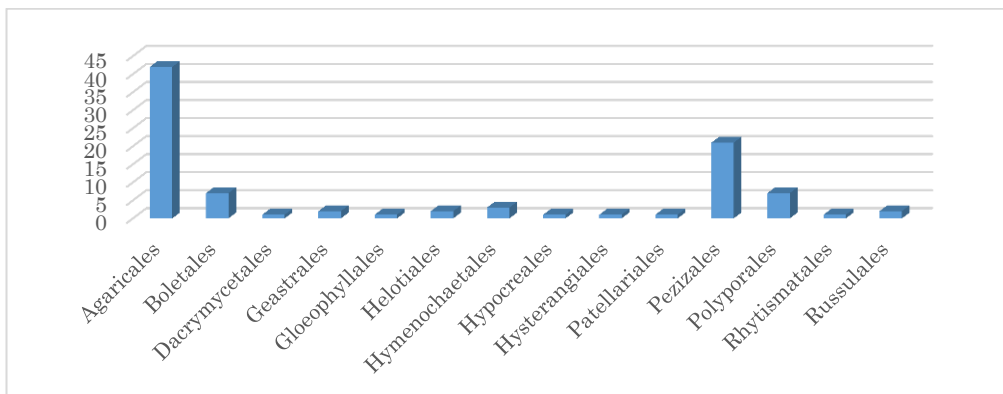


Figure 3. Order-wise distribution of the determined taxa
Şekil 3. Tespit edilen taksonların takım bazında dağılımı

Comparison of the determined taxa with the literature data indicate that 26 of them (*Cerioporus squamosus*, *Chroogomphus rutilus*, *Coprinellus disseminatus*, *C. micaceus*, *Coprinus comatus*, *Cyclocybe cylindracea*, *Flammulina velutipes*, *Helvella acetabulum*, *H. leucomelaena*, *H. leucopus*, *Lactarius deliciosus*, *Laetiporus sulphureus*, *Lentinus tigrinus*, *Lepista nuda*, *Leucoagaricus leucothites*, *Lycoperdon molle*, *Morchella esculenta*, *Pleurotus ostreatus*, *Psathyrella candolleana*, *Rhizopogon luteolus*, *R. roseolus*, *Suillus collinitus*, *Terfezia claveryi*, *Tricholoma terreum*, *Tuber* sp., *Verpa conica*) are edible. Nine of the edible species are collected and consumed by local public with different local names (Table 2). Among the edible taxa, two of them have local economic importance. During spring *Morchella esculenta* and *Terfezia claveryi* are collected and sold in public bazaars. Sixty two of the determined taxa are regarded as inedible while four of them (*Coprinopsis atramentaria*, *Inocybe rimosa*, *Psilocybe coronilla*, *Sarcosphaera coronaria*) are more or less poisonous (Thomas et al., 1977; Gücin et al., 2000).

Fourty four of the determined taxa are terricolous, 25 are lignicolous (*Bjerkandera adusta*, *Cerioporus squamosus*, *Coprinellus micaceus*, *Cyclaneusma minus*, *Dacrymyces capitatus*, *Fomes fomentarius*, *Gloeophyllum trabeum*, *Inonotus hispidus*, *Lachnum virgineum*, *Laetiporus sulphureus*, *Lentinus arcularius*, *L. tigrinus*, *Mollisia cinerea*, *Mycena meliigena*, *Nectria peziza*, *Patellaria atrata*, *Phellinus igniarius*, *Ph. lundellii*, *Phyllotopsis nidulans*, *Pithya cupressina*, *Pleurotus ostreatus*, *Schizophyllum amplum*, *S. commune*, *Stereum hirsutum*, *Trametes trogii*), 8 are bryophilous

(*Arrhenia rickenii*, *A. spathulata*, *Chromocyphella muscicola*, *Lamprospora miniata*, *Octospora leucoloma*, *O. musci-muralis*, *O. neerlandica*, *O. polytrichi*), 3 are coprophilous (*Coprinopsis nivea*, *Cyathus stercoreus*, *Peziza fimeti*) while one of them (*Anthracobia melaloma*) was found to be growing on ash. Twelve of them (*Genea lobulata*, *Hymenogaster bulliardii*, *Melanogaster broomeanus*, *Picoa juniperi*, *P. lefebvrei*, *Rhizopogon luteolus*, *R. roseolus*, *Sarcosphaera coronaria*, *Schenella pityophila*, *Terfezia claveryi*, *Trappea darkeri*, *Tuber* sp.) were also determined to be hypogeous or semi-hypogeous.

Table 2. Locally consumed taxa and their regional Turkish names

Tablo 2. Yöresel olarak tüketilen taksonlar ve onların bölgedeki Türkçe isimleri

| Locally consumed taxa | Local Turkish name of the taxa |
|----------------------------------|--------------------------------|
| <i>Coprinus comatus</i> | Ekin mantarı |
| <i>Pleurotus ostreatus</i> | Kavak mantarı |
| <i>Leucoagaricus leucothites</i> | Çayır mantarı |
| <i>Terfezia claveryi</i> | Domalan, dolaman, keme |
| <i>Morchella esculenta</i> | Kuzu göbeği |
| <i>Lycoperdon molle</i> | Puf mantarı |
| <i>Tricholoma terreum</i> | Karakız mantarı |
| <i>Picoa juniperi</i> | Kara domalan |
| <i>Picoa lefebvrei</i> | Kara domalan |

The comparison of the determined taxa with the findings of the studies carried out in close environs indicated some similarities. These studies and the similarity percentages are given in Table 3. The reason for this similarity may be the common climate and vegetation.

Table 3. Similarity percentages of neighbouring studies with Ulukışla district
 Çizelge 3. Ulukışla bölgesi ile komşu çalışmaların benzerlik yüzdeleri

| | # of Identical taxa | Total taxa | Similarity (%) |
|-------------------------|---------------------|------------|----------------|
| Kaşık et al. (2001) | 14 | 32 | 43,75 |
| Kaşık et al. (2002) | 16 | 53 | 30,19 |
| Kaşık et al. (2003) | 20 | 94 | 21,28 |
| Doğan and Öztürk (2006) | 30 | 202 | 14,85 |
| Doğan et al. (2007) | 21 | 95 | 22,11 |
| Türkoğlu et al. (2007) | 12 | 31 | 38,71 |
| Kaya et al. (2009) | 30 | 110 | 27,27 |

Author's Contributions

Authors declare the contribution of the authors is equal.

Statement of Conflict of Interest

The authors have declared no conflict of interest.

KAYNAKLAR

Abbott SP, Currah RS 1997. The Helvellaceae:

Systematic Revision and Occurrence in Northern and Northwestern North America. Mycotaxon 62: 1-125.

Allı H, Tevlim G, Şen İ 2019. A New Record for Turkey's Mycobiota from an Interesting Habitat in the Mugla Province: *Hortiboletus bubalinus* (Oolbekk. & Duin) L. Albert & Dima" Mugla Journal of Science and Technology 5(1): 114-118.

Antonin V, Noordeloos ME 2010. A Monograph of Marasmioid and Collybioid Fungi in Europe. IHW-

- Verlag, 480 s, Berchtesgaden-Almanya.
- Arora D 1986. Mushrooms Demystified. Ten Speed Press, 1056 s, USA.
- Benkert D 1995. Becherlinge als Moosparasiten. *Boletus* 19: 97-127.
- Benkert D 2007. Zur Kenntnis des Vorkommens bryophiler Pezizales (Ascomycota) in Südost-Europa. *Mycologia Montenegrina* 10: 7-21.
- Bessette AE, Bessette AR, Fischer DW 1997. Mushrooms of northeastern North America. Hong Kong, Syracuse University Press.
- Bessette AE, Roody WC, Bessette AR, Dunaway DL 2007. Mushrooms of the Southeastern United States.
- Beug MW, Bessette AE, Bessette AR 2014. Ascomycete Fungi of North America. A Mushroom Reference Guide. Pp. 502.
- Breitenbach J, Kränzlin F 1984-2000. Fungi of Switzerland, vols. 1-5 Lucerne, Verlag Mykologia.
- Buczacki S 2012. Collins Fungi Guide, Collins. Harper Collins Publishers Ltd., 640 s., London.
- Çağlı G, Öztürk A 2020. Macromycetes determined in Muradiye (Van) district. *Anatolian Journal of Botany* 4(1): 57-64.
- Cappelli A 1997. *Agaricus*. Libreria editrice Biella Giovanna, Saronno, Pp: 558.
- Courtecuisse R, Duhem B 1995. Collins Field Guide, Mushrooms and Toadstools of Britain and Europe. Harper Collins, Italy.
- Cripps CL, Evenson VS, Kuo M 2016. The essential guide to Rocky Mountain mushrooms by habitat. University of Illinois Press.
- Dennis RWG, Itzerott H 1973. *Octospora* and *Inermisia* in Western Europe. *Kew Bulletin* 28(1): 5-23.
- Doğan HH, Öztürk C 2006. Macrofungi and their distribution in Karaman Province, Turkey. *Turkish Journal of Botany* 30(3): 193-207.
- Doğan HH, Öztürk C, Kaşık G, Aktaş S 2007. Macrofungi Distribution of Mut Province in Turkey. *Pakistan Journal of Botany* 38(1): 293-308.
- Gücin F, Işıloğlu M, Kaya A 2000. Türkiye'nin Zehirli Mantarları. In Mat A (ed.). Türkiye'de Mantar Zehirlenmeleri ve Zehirli Mantarlar. İstanbul: Nobel Tıp Kitabevleri Ltd.
- Hansen L, Knudsen H 1992. Nordic Macromycetes. Volume 2. Polyporales, Boletales, Agaricales, Russulales. Nordsvamp, Copenhagen, Denmark.
- Hansen L, Knudsen H 1997. Nordic Macromycetes. Volume 3. Heterobasidioid, Aphyllophoroid, and Gastromycetoid Basidiomycetes. Nordsvamp (1. Basım). Copenhagen-Denmark: Nordsvamp.
- Hansen L, Knudsen H 2000. Nordic Macromycetes. Volume 1. (Ascomycetes). Nordsvamp, Copenhagen, Denmark.
- Hawksworth DL, Kirk PM, Sutton BC, Pegler DM. 1995. Ainsworth & Bisby's dictionary of the fungi. 8th edition. CAB International, Wallingford.
- Index Fungorum 2021: <http://www.indexfungorum.org/Names/Names.asp>. Accessed 5 May 2021.
- Işık H 2020. *Agaricus*, *Steccherinum*, and *Typhula* species new for Turkey. *Mycotaxon* 135(1): 213-222.
- Kaşık G, Öztürk C, Toprak E. 2001. Macrofungi of Niğde Province (Turkey). *The Herb Journal of Systematic Botany* 8(2): 137-142.
- Kaşık G, Öztürk C, Türkoğlu A, Doğan HH 2003. Macrofungi of Yahyalı (Kayseri) Province. *Turkish Journal of Botany* 27(6): 453-462.
- Kaşık G, Öztürk C, Türkoğlu A, Doğan HH. 2002. Macrofungi flora of Yeşilhisar District (Kayseri). *The Herb Journal of Systematic Botany* 9(2): 123-134.
- Kaya A, Uzun Y, Karacan İH 2009. Macrofungi of Göksun (Kahramanmaraş) district. *Turkish Journal of Botany* 33(2): 131-139.
- Kaygusuz O, Türkekul İ, Knudsen H, Menolli N 2021. *Volvopluteus* and *Pluteus* section *Pluteus* (Agaricales: Pluteaceae) in Turkey based on morphological and molecular data, *Turkish Journal of Botany* 45: 224-242.
- Keleş A. 2020. Türkiye Mikotası İçin Yeni Bir Cins (*Gerronema* Singer) Kaydı, *The Journal of Fungus* 11(2): 168-171.
- Kränzlin F 2005. Fungi of Switzerland, Volume 6, Russulaceae 2. Verlag Mykologia, Switzerland, 319 pp.
- Lukić N 2009. The distribution and diversity of *Boletus* genus in central Serbia. *Kragujevac Journal of Science* 31: 59-68.
- Medardi G 2006. Atlante Fotografico Degli Ascomiceti d'Italia. A.M.B. Fondazione, Centro Studi Micologici, 454 s, Italia.
- Montecchi A, Sarasini M 2000. Fungi Ipogei D'Europa. Vicenza: Fondazione Centro Studi Micologici dell'AMB.
- Moser M 1983. Keys to Agarics and Boleti (Polyporales, Boletales, Agaricales, Russulales). Stuttgart, Gustav Fischer Verlag.
- Mueller GM, Schmit JP, Leacock PR, Buyck B, Cifuentes J, Desjardin DE, Halling RE, Hjortstam K, Iturriaga T, Larsson KH, Lodge DJ, May TW, Minter D, Rajchenberg M, Redhead SA, Ryvarden L, Trappe JM, Watling R, Wu Q 2007. Global diversity and distribution of macrofungi. *Biodiversity and Conservation* 16: 37-48.
- Pegler DN, Læssøe T, Spooner BM. 1995. British Puffballs, Earthstars and Stinkhorns. Royal Botanic Gardens, Whitstable.
- Philips R 2010. Mushrooms and Other Fungi of North America. The most comprehensive mushroom guide with over 1000 colour photographs.
- Phillips R 1981. Mushrooms and Other Fungi of Great Britain, Europe, Pan Books, London, 288 s.

- Sesli E 2020. Presence of *Cortinarius atroalbus* M.M.Moser and *C. duracinobtus* Rob. Henry (Basidiomycota, Cortinariaceae) in Turkey. *Anatolian Journal of Botany* 4(2): 92-95.
- Sesli E, Asan A, Selçuk F. (edlr.) Abacı Günyar Ö, Akata I, Akgül H, Aktaş S, Alkan S, Allı H, Aydoğdu H, Berikten D, Demirel K, Demirel R, Doğan HH, Erdoğan M, Ergül CC, Eroğlu G, Giray G, Halikî Uztan A, Kabaktepe Ş, Kadaifçiler D, Kalyoncu F, Karaltı İ, Kaşık G, Kaya A, Keleş A, Kırbağ S, Kıvanç M, Ocak İ, Ökten S, Özkale E, Öztürk C, Sevindik M, Şen B, Şen İ, Türkekul İ, Ulukapı M, Uzun Ya, Uzun Yu, Yoltaş A 2020. Türkiye Mantarları Listesi. Ali Nihat Gökyiğit Vakfı Yayını. İstanbul.
- Siegel N, Schwarz C 2016. Mushrooms of the redwood coast: a comprehensive field guide to the fungi of coastal northern California. Ten Speed Press. Berkeley.
- Şelem E, Keleş A, İşler S 2021. Macrofungual biodiversity of Gürpınar (Van) district. *Anatolian Journal of Botany* 5(1): 23- 28.
- Thomas HW, Mitchel DH and Rumack BW 1977. Poisoning from the Mushroom *Stropharia coronilla*. *The Journal of the Arkansas Medical Society* 73(8): 311-312.
- Thompson PI 2013. *Ascomycetes in Colour. Found and Photographed in Mainland*. Xlibris Corporation, USA.
- Türkoğlu A, Kaşık G, Öztürk C, Doğan HH 2007. Some macrofungi of Ihlara Valley. *Afyon Kocatepe Üniversitesi Fen Bilimleri Dergisi* 7(1): 1-9.
- Uzun Y, Acar İ, Akçay ME, Sadullahoğlu C 2020a. Kağızman (Kars) Yöresi Makrofungusları. *Mantar Dergisi* 11(1): 19-28.
- Uzun Y, Kaya A 2022. Macromycetes Determined in Tonya (Trabzon) District. *KSU J. Agric Nat* 25(1): 66-77.
- Uzun Y, Berber O, Kaya A 2020. First record of *Trappea darkeri* from Turkey. *Mycotaxon* 135(3): 613-616.
- Wang YZ, Kimbrough JW. 1992. Monographic studies of North American species of *Octospora* previously ascribed to *Lamprospora* (Pezizales, Ascomycetes). Special Publication no. 4, National Museum of Natural Science (Taiwan).