



## Macromycetes determined in Muradiye (Van) district

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Received : 09.12.2019

Accepted : 01.01.2020

Online : 20.03.2020

## Muradiye (Van) ilçesinde belirlenen makromantarlar

**Abstract:** The study was based on macrofungi samples collected from the region within the boundaries of Muradiye district of Van province in 2014 and 2015. As a result of field and laboratory studies 86 macrofungi species belonging to 50 genera, 25 families, seven orders and three classes within the divisions Ascomycota and Basidiomycota were determined. The determined taxa are listed together with their habitats, substrates, collection locality, geographic coordinates and personel voucher numbers. One of them, *Melanophyllum haematospermum* (Bull.: Fr.) Kreisel, is a new record for Turkey as the first member of the genus *Melanophyllum* Velen.

**Key words:** Biodiversity, new record, macrofungi, mycota, Turkey

**Özet:** Çalışma 2014 ve 2015 yıllarında Van'ın Muradiye ilçe sınırları içinde kalan bölgeden toplanan makromantar örnekleri üzerinde gerçekleştirilmiştir. Arazi ve laboratuvar çalışmaları sonucunda *Ascomycota* ve *Basidiomycota* bölümleri içinde yer alan üç sınıf, yedi takım, 25 familya ve 50 cinse ait 86 tür belirlenmiştir. Belirlenen taksonlar, habitatları, substratları, toplanma yerleri, coğrafi koordinatları ve toplayıcı numaraları ile birlikte listelenmiştir. Bunlardan bir tanesi, *Melanophyllum haematospermum* (Bull.: Fr.) Kreisel, *Melanophyllum* Velen. cinsinin ilk üyesi niteliğinde, Türkiye için yeni kayıttır.

**Anahtar Kelimeler:** Biyoçeşitlilik, yeni kayıt, makromantar, mikota, Türkiye

**Citation:** Çağlı A, Öztürk A (2020). Macromycetes determined in Muradiye (Van) district. Anatolian Journal of Botany 4(1): 57-64.

### 1. Introduction

Fungi are an important group of organism for nature, and about 1.5 million species of them have been supposed to exist in the world (Hawksworth et al., 1995). Those fungi with fruiting bodies that can be seen by naked eye are known as macrofungi and almost 15.000 of them were determined in Europe (Lukić, 2008).

Starting especially from the first quarter of 20<sup>th</sup> century, many studies have also been carried out on the macrofungi of Turkey and almost 2.400 taxa have been determined (Sesli and Denchev, 2014; Solak et al., 2015). But the macrofungal biodiversity of Turkey hasn't completely been determined yet.

Muradiye is a district of Van province within Eastern Anatolian region of Turkey and situated between 38°44' - 39°12' north latitudes and 43°34' - 43°53' east longitudes. The district is surrounded by Diyaridin (Ağrı) district to north, central district of Van to the south, Çaldıran and Özalp districts to the east and Erciş district to the west (Figure 1). Bendimahi and Zincirli streams, and Van lake are the main hydrologic components of the region. According to the data obtained from Muradiye Meteorological Station, the region has an annual average temperature of 9.2 °C and a total precipitation of 582 mm. Steppe vegetation is the dominant vegetation type in the region. *Populus* L., *Salix* L., *Quercus* L., *Malus* Mill. and *Juglans* L. are the major tree population affecting the growth of macrofungi in the region.

Though some macrofungal biodiversity studies have been carried out in neighboring districts and provinces (Demirel, 1996; Demirel and Uzun, 1996; Uzun and Demirel, 1996; Demirel et al., 2002, 2003, 2004, 2010, 2015; Kaya, 2000a,b,c,d; Kaya, 2001; Kaya and Demirel, 2000; Akçay

et al., 2010; Demirel and Koçak, 2016; Şelem et al., 2019) there isn't a complete study on the macrofungi of Muradiye district.

The study aims to determine the macrofungi of the district and make a contribution to the mycobiota of Turkey.

### 2. Materials and Method

Macrofungi samples were collected from the region within the boundaries of Muradiye districts of Van province. They were photographed at their natural habitat and descriptive characteristics of them were noted. Then the samples were transferred to the laboratory and microscopic investigations were performed. The samples were identified with the help of the related references (Phillips, 1981; Moser, 1983; Buczacki, 1989; Bresnky and Besl, 1990; Ellis and Ellis, 1990; Breitenbach and Kränzlin, 1984, 1986, 1991, 1995; 2000; Jordan, 1995; Wasser, 1996, 2000; Peterson et al., 2000; Kränzlin, 2005; Hausknecht, 2009; Amadeep et al., 2015). The samples are kept at the fungarium of Van Yüzüncü Yıl University (VANF).

### 3. Results

The determined taxa are listed in alphabetical order and the systematics follows Index Fungorum (accessed on 5 December 2019).

*Ascomycota* Whittaker

*Leotiomycetes* O.E. Erikss. & Winka

*Helotiales* Nannf.

*Helotiaceae* Rehm

1. *Hymenoscyphus calyculus* (Fr.) W. Phillips

Muradiye district centre, on *Salix* sp. stumps, 38°59'783"N, 43°46'093"E, 1724 m, 24.10.2014, Çağlı. 181; Değerbilir

village, on *Populus* sp. stump, 39°03'646"N, 43°44'799"D, 1806 m, 24.10.2014, Çağlı. 187.

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

**Pezizales** J.Schröt.

**Helvellaceae** Fr.

2. ***Helvella leucopus*** Pers.

Around Muradiye Waterfall, on soil under *Populus* sp., 39°03'915"N, 43°45'400"E, 1828 m, 19.05.2015, Çağlı. 209.

3. ***Paxina queletii*** (Bres.) Stangl

Değerbilir village, on soil under *Populus* sp., 39°03'646"N, 43°44'799"D, 1806 m, 27.05.2015, Çağlı. 293.

**Morchellaceae** Rchb.

4. ***Morchella elata*** Fr.

Değerbilir village, on soil under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, 19.05.2015, Çağlı. 239.

5. ***Verpa bohemica*** (Krombh.) J. Schröt

Muradiye District centre, on soil under *Populus* sp., 38°59'783"N, 43°46'093"E, 1724 m, 03.05.2015, Çağlı. 206.

6. ***Verpa conica*** (O.F. Müll.) Sw.

Old Görecek village, on soil *Populus* sp., 39°04'881"N, 43°45'514"E, 1813 m, 19.05.2015, Çağlı. 243.

**Pezizaceae** Dumort.

7. ***Peziza domiciliana*** Cooke

Küçükköy village, on soil under *Populus* sp. 38°59'473"N, 43°46'421"E, 1667 m, 26.05.2014, Çağlı. 73.

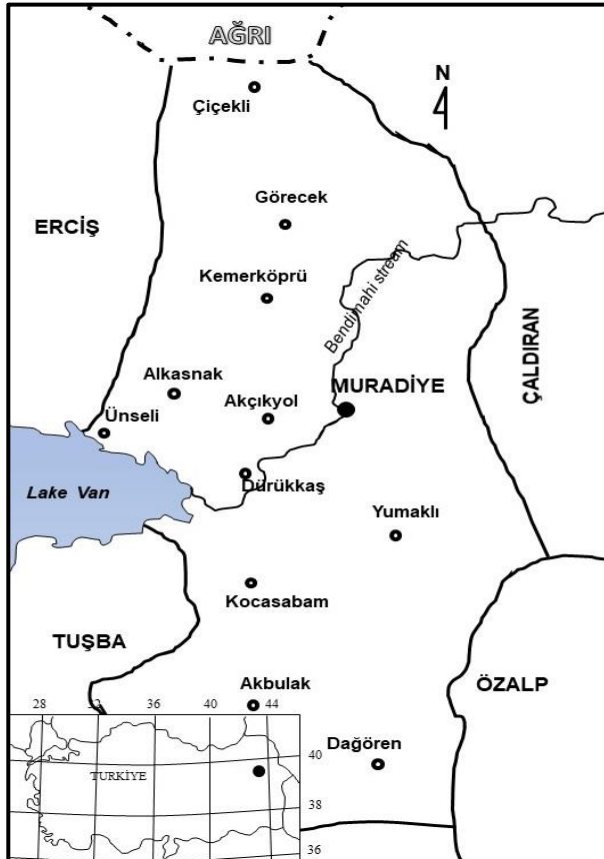


Figure 1. Map of the research area.

8. ***Peziza praetervisa*** Bres

Küçükköy village, on burned place under *Salix* sp., 38°59'473"N, 43°46'421"E, 1667 m, 26.05.2014, Çağlı. 82.

**Pyronemataceae** Corda

9. ***Geopora arenosa*** (Fuckel) S. Ahmad

Muradiye District centre, on soil under *Populus* sp., 38°59'783"N, 43°46'093"E, 1724 m, 26.05.2014, Çağlı. 78.

10. ***Scutellinia scutellata*** (L.) Lambotte

Muradiye district centre, on *Salix* and *Populus* sp. stumps, 38°59'783"N, 43°46'093"E, 1724 m, 06.05.2014, Çağlı. 36; Around Muradiye Waterfall, 39°03'913"N, 43°45'400"E, 1828 m, 26.05.2014, Çağlı. 95.

**Basidiomycota** R.T.Moore

**Agaricomycetes** Doweld

**Agaricales** Underw.

**Agaricaceae** Chevall.

11. ***Agaricus arvensis*** Schaeff.

Yumaklı village, on soil among grass under *Populus* sp., 38°56'565"N, 43°45'078"E, 1639 m, 19.05.2015, Çağlı. 221.

12. ***Agaricus bernardii*** Quéf.

Küçükköy village, meadow, 38°59'473"N, 43°46'421"E, 1667 m, 24.10.2014, Çağlı. 178.

13. ***Agaricus campestris*** L.

Değerbilir village, meadow, 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 129.

14. ***Agaricus pampeanus*** Speng.

Görecek village, meadow, 39°03'520"N, 43°45'517"E, 1865 m, 24.10.2014, Çağlı. 165.

15. ***Bovista plumbea*** Pers.

Kemerköprü village, meadow, 39°01'701"N, 43°43'921"E, 1822 m, 06.05.2014, Çağlı. 17.

16. ***Coprinus comatus*** (O.F. Müll.) Pers.

Değerbilir village, meadow, 39°03'732"N, 43°45'169"E, 1827 m, 19.05.2015, Çağlı. 237.

17. ***Lepiota cristata*** (Bolton) P. Kumm.

Değerbilir village, among leaf litter under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 111.

18. ***Lepiota helveola*** Bres.

Değerbilir village, among leaf litter under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, Çağlı. 116; Gönderme village, 39°05'152"N, 43°49'028"E, 1907 m, 20.10.2014, Çağlı. 118.

19. ***Leucoagaricus leucothites*** (Vittad.) Wasser

Değerbilir village, among grass with needle litter, 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 117.

20. ***Lycoperdon pratense*** Pers.

Küçükköy village, meadow, 38°59'473"N, 43°46'421"E, 1667 m, 24.10.2014, Çağlı. 179.

21. ***Lycoperdon utriforme*** Bull.

Değerbilir village, meadow, 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 131; Balaklı village,

38°58'507"N, 43 44'083"E, 1695 m, 19.05.2015, Çağlı. 236.

22. *Macrolepiota excoriata* (Schaeff.) Wasser

Görecek village, among grass, 39°03'520"N, 43°45'517"E, 1865 m, 24.10.2014, Çağlı. 166.

23. *Melanophyllum haematospermum* (Bull.: Fr.) Kreisel

Pileus 12-24 mm in diameter, at first hemispherical to obtuse-conic, then campanulate later convex or applanate, with or without a small umbo; margin incurved when young, decurved to level at maturity, with greyish to greyish-brown veil fragments; surface cottony when young, suede-like to granulose, light to dingy-brown, darker at the center. Lamellae free to deeply adnexed, crowded, pinkish-brown, vinaceous-brown. Stipe 20-30 × 3.5-5 mm, cylindrical, straight to somewhat bent, enlarged to bulbous at the base, hollow or with a pith-like core in age, fragile, greyish, covered by reddish-brown to vinaceous-brown remnants of the universal veil (Figure 2a). Basidia 15-19 × 5.5-6.5 µm, clavate to clavate-cylindrical, 4-spored. Spores 4.5-6.5 × 2.5-4 µm, elliptic, oblong-elliptic to reniform, thin walled, smooth to minutely roughened, olive-brown (Figure 2b).

*Melanophyllum haematospermum* was reported to grow on humus-rich soil under both conifers and deciduous trees as solitary or in groups (Wasser, 2000; Bujakiewicz, 2010).

Değerbilir village, on soil among leaf litter under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 112.

**Bolbitiaceae** Singer

24. *Conocybe semiglobata* Kühner & Watling

Küçükköy village, among grass, 38° 59'473"N, 43°46'421"E, 1667 m, 26.05.2014, Çağlı. 46; Yakıncak village, 38°57'107"N, 43°46'429"E, 1660 m, Çağlı. 74.

25. *Conocybe siennophylla* (Berk. & Broome) Singer

Muradiye District centre, among leaf litter under *Populus* sp., 38°59'783"N, 43°46'093"E, 1724 m, 26.05.2014, Çağlı. 91; Duruktaş village, 38°57'391"N, 43°40'898"E, 1670 m, 24.10.2014, Çağlı. 169.

26. *Conocybe subovalis* Kühner & Watling

Değerbilir village, meadow, 39°03'732"N, 43°45'169"E, 1827 m, 06.05.2014, Çağlı. 16; Ayrancı village, 39°96'929"N, 43°51'673"E, 1937 m, 26.05.2014, Çağlı. 68; Küçükköy village, 38°59'473"N, 43°46'421"E, 1667 m, 20.10.2014, Çağlı. 138.

27. *Conocybe tenera* (Schaeff.) Fayod

Küçükköy village, among grass under *Populus* sp., 38°59'473"N, 43°46'421"E, 1667 m, 26.05.2014, Çağlı. 67; Around Muradiye Waterfall, 39° 03'915"N, 43°45'400"E, 1828 m, 19.05.2015, Çağlı. 226.

28. *Conocybe velutipes* (Velen.) Hauskn. & Svrček

Değerbilir village, among leaf litter under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 113 (Çağlı et al., 2019).

29. *Galeropsis desertorum* Velen. & Dvořák

Değerbilir village, meadow, 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 144.

**Cortinariaceae** R. Heim ex Pouzar

30. *Cortinarius vernus* H. Lindstr. & Melot

Değerbilir village, among leaf litter under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, 06.05.2014, Çağlı. 15; Around Muradiye Waterfall, 39°03'915"N, 43°45'400"E, 1828 m, Çağlı. 214; Muradiye District centre, 38°59'783"N, 43°46'093"E, 1724 m, Çağlı. 223, Gönderme village, 39°05'152"N, 43°49'028"E, 1907 m, 19.05.2015, Çağlı. 229.

**Cyphellaceae** Lotsy

31. *Chondrostereum purpureum* (Pers.) Pouzar

Muradiye District centre, on *Salix* sp. stump, 38° 59'783"N, 43°46'093"E, 1724 m, 24.10.2014, Çağlı. 185.

**Entolomataceae** Kotl. & Pouzar

32. *Entoloma ameides* (Berk. & Broome) Sacc.

Görecek old village, meadow, 39°04'881"N, 43°45'514"E, 1813 m, 19.05.2015, (Çağlı et al., 2019).



**Figure 2.** Basidiocarps (a) and basidiospores (b) of *Melanophyllum haematospermum* (bar: 10 µm).

**Hymenogastraceae** Vittad.

33. *Hebeloma cavipes* Huijsman

Muradiye District centre, among leaf litter under *Populus* sp., 38°59'783"N, 43°46'093"E, 1724 m, 06.05.2014, Çağlı. 35.

34. *Hebeloma crustuliniforme* (Bull.) Quéf.

Görecek village, among leaf litter under *Populus* sp., 39°03'520"N, 43°45'517"E, 1865 m, 20.10.2014, Çağlı. 136; Muradiye district centre, 38°59'783"N, 43°46'093"E, 1724 m, Çağlı. 155; Yumaklı village, 38°56'565"N, 43°45'078"E, 1639 m, 24.10.2014, Çağlı. 164; Yakıncak village, 38°57'107"N, 43°46'429"E, 1660 m, 19.05.2015, Çağlı. 224.

35. *Hebeloma pusillum* J.E. Lange

Değerbilir village, among leaf litter under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, Şelale dere yanı; 39°03'913"N, 43°45'400"E, 1828 m, 20.10.2014, Çağlı. 141, 142.

36. *Psilocybe coronilla* (Bull.) Noordel.

Çayırılık, Kemerköprü köyü; 39°01'701"N, 43°43'921"E, 1822 m, 06.05.2014, Çağlı. 21; Görecek village, 39°03'520"N, 43°45'517"E, 1865 m, 24.10.2014, Çağlı. 168; Ayrancı village, 39°06'405"N, 43°50'567"E, 1972 m, Çağlı. 242.

**Incertae Sedis**

37. *Panaeolus papilionaceus* (Bull.) Quéf.

Muradiye district centre, on manured soil, 38°59'783"N, 43°46'093"E, 1724 m, 26.05.2014, Çağlı. 40; Küçükköy village, 38°59'473"N, 43°46'421"E, 1667 m, 24.10.2014, Çağlı. 176; Gönderme village, 39°05'152"N, 43°49'028"E, 1907 m, 27.05.2015, Çağlı. 270.

**Inocybaceae** Jülich

38. *Inocybe dulcamara* (Pers.) P. Kumm

Muradiye District centre, among grass under *Populus* and *Salix* sp., 38°59'783"N, 43°46'093"E, 1724 m, 03.05.2014, Çağlı. 1; Küçükköy village, 38°59'473"N, 43°46'421"E, 1667 m, 03.06.2014, Çağlı. 96; Yumaklı village, 38°56'565"N, 43°45'078"E, 1639 m, 03.05.2015, Çağlı. 207.

39. *Inocybe flocculosa* Sacc

Değerbilir village, among grass under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 137; Around Muradiye Waterfall, 39°03'915"N, 43°45'400"E, 1828 m, 19.05.2015, Çağlı. 213.

40. *Inocybe rimosa* (Bull.) P. Kumm.

*Populus* sp. altı, Görecek village, among grass, 39°03'520"N, 43°45'517"E, 1865 m, 26.05.2014, Çağlı. 76; Muradiye District centre, 38°59'783"N, 43°46'093"E, 1724 m, Çağlı. 92; Yumaklı village, 38°56'565"N, 43°45'078"E, 1639 m, 03.06.2014, Çağlı. 98; Yakıncak village, 38°57'107"N, 43°46'429"E, 1660 m, Çağlı. 99; Keçikıran village, 38°58'252"N, 43°38'170"E, 1705 m, Çağlı. 100; Ünseli village, 38°58'821"N, 43°35'283"E, 1667 m, 20.10.2014, Çağlı. 134.

41. *Inocybe splendens* R. Heim

*Populus* sp., altı, Şelale yanı; 39°03'915"N, 43°45'400"E, 1828 m, 19.05.2015, Çağlı. 231.

**Marasmiaceae** Roze ex Kühner

42. *Marasmius oreades* (Bolton) Fr.

Kemerköprü village, meadow, 39°01'701"N, 43°43'921"E, 1822 m, 06.05.2014, Çağlı. 25; Küçükköy village, 38°59'473"N, 43°46'421"E, 1667 m, Çağlı. 275; Alkasnak village, 39°58'171"N, 43°38'317"E, 1702 m, 27.05.2015, Çağlı. 288.

**Mycenaceae** Roze

43. *Mycena galericulata* (Scop.) Gray

Değerbilir village, on decaying *Quercus* sp. stump, 39°03'646"N, 43°44'799"E, 1806 m, 06.05.2014, Çağlı. 34; Muradiye District centre, 38°59'783"N, 43°46'093"E, 1724 m, 19.05.2015, Çağlı. 259.

44. *Mycena niveipes* (Murrill) Murrill

Muradiye District centre, on decaying stump, 38°59'783"N, 43°46'093"E, 1724 m, 26.05.2014, Çağlı. 88.

45. *Hemimycena delectabilis* (Peck) Singer

Around Muradiye Waterfall, on leaf litter under *Populus* sp., 39°03'915"N, 43°45'400"E, 1828 m, 20.10.2014, Çağlı. 114.

**Pleurotaceae** Kühner

46. *Pleurotus eryngii* (DC.) Quéf.

Around Muradiye Waterfall, on *Eryngium* sp. remains, 39°03'915"N, 43°45'400"E, 1828 m, 06.05.2014, Çağlı. 3.

47. *Pleurotus ostreatus* (Jacq.) P. Kumm.

Değerbilir village, on *Populus* and *Salix* sp. stumps, 39°03'732"N, 43°45'169"E, 1827 m, 06.05.2014, Çağlı. 11; Muradiye District centre, 38°59'783"N, 43°46'093"E, 1724 m, 26.05.2014, Çağlı. 89; Karahan village, 38°56'725"N, 43°39'836"E, 1645 m, Çağlı. 105; Değerbilir village, 39°03'646"N, 43°44'799"E, 1806 m, 20.10.2014, Çağlı. 195; Kemerköprü village, 39°01'701"N, 43°43'921"E, 1822 m, 27.10.2015, Çağlı. 263.

**Pluteaceae** Kotl. & Pouzar

48. *Pluteus salicinus* (Pers.) P. Kumm.

Değerbilir village, on wood remains, 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 110; Yakıncak village, 38°57'107"N, 43°46'429"E, 1660 m, 24.10.2014, Çağlı. 170.

49. *Volvopluteus gloiocephalus* (DC.) Vizzini, Contu & Justo

Değerbilir village, among grass, 39°03'646"N, 43°44'799"E, 1806 m, 19.05.2015, Çağlı. 253.

**Psathyrellaceae** Vilgalys, Moncalvo & Redhead

50. *Coprinellus disseminatus* (Pers.) J.E. Lange

Muradiye District centre, around *Salix* sp. stump, 38°59'783"N, 43°46'093"E, 1724 m, 06.05.2014, Çağlı. 28; Karahan village, 38°56'725"N, 43°39'836"E, 1645 m, 03.06.2014, Çağlı. 104; Balaklı village, 38°58'507"N, 43°44'083"E, 1695 m, 19.05.2015, Çağlı. 220.

51. *Coprinellus micaceus* (Bull.) Vilgalys, Hopple & Jacq. Johnson

Değerbilir village, around *Salix* sp. stump, 39°03'732"N, 43°45'169"E, 1827 m, 06.05.2014, Çağlı. 10; Açıkyol village, 38°57'997"N, 43°42'0568"E, 1673 m, 03.06.2014, Çağlı. 48; Muradiye District centre, 38°59'783"N,

43°46'093"E, 1724 m, 20.10.2014, Çağlı. 102; Küçükköy village, 38°59'473"N, 43°46'421"E, 1667 m, 26.05.2014, Çağlı. 132; Görecek village, 39°04'881"N, 43°45'514"E, 1813m, 19.05.2015, Çağlı. 234; Around Muradiye Waterfall, 39°03'915"N, 43°45'400"E, 1828 m, 27.05.2015, Çağlı. 262.

52. *Coprinopsis atramentaria* (Bull.) Redhead, Vilgalys & Moncalvo

Muradiye District centre, around decaying *Populus* sp. stump, 38°59'783"N, 43°46'093"E, 1724 m, 26.05.2014, Çağlı. 37; Değerbilir village, 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 151; Around Muradiye Waterfall, 39°03'915"N, 43°45'400"E, 1828 m, 19.05.2015, Çağlı. 233.

53. *Coprinopsis marcescibilis* (Britzelm.) Örstadius & E. Larss.

Görecek village, among leaf litter, 39°03'520"N, 43°45'517"E, 1865 m, Çağlı. 167; Küçükköy village, 38°59'473"N, 43°46'421"E, 1667 m, 24.10.2014, Çağlı. 177; Around Muradiye Waterfall, 39°03'915"N, 43°45'400"E, 1828 m, 19.05.2015, Çağlı. 235.

54. *Coprinopsis patouillardii* (Quél.) G. Moreno

Muradiye District centre, on manured soil, 38°59'783"N, 43° 46'093"E, 1724 m, 20.10.2014, Çağlı. 156.

55. *Parasola plicatilis* (Curtis) Redhead, Vilgalys & Hopple

Küçükköy village, on manured soil among grass, 38°59'473"N, 43°46'421"E, 1667 m, 26.05.2014, Çağlı. 79.

56. *Psathyrella bipellis* (Quél.) A.H. Sm.

Görecek village, among grass under *Populus* sp., 39°04'881"N, 43°45'514"E, 1813 m, 20.10.2014, Çağlı. 147.

57. *Psathyrella candolleana* (Fr.) Maire

Muradiye District centre, around *Populus* sp. stump, 38°59'783"N, 43°46'093"E, 1724 m, 26.05.2014, Çağlı. 43; around Muradiye Waterfall, 39°03'915"N, 43°45'400"E, 1828 m, 20.10.2014, Çağlı. 119; Değerbilir village, 39°03'732"N, 43°45'169"E, 1827 m, Çağlı. 123; Yumaklı village, 38°56'565"N, 43°45'078"E, 1639 m, Çağlı. 203; Küçükköy village, 38°59'473"N, 43°46'421"E, 1667 m, 27.05.2015, Çağlı. 264.

58. *Psathyrella corrugis* (Pers.) Konrad & Maubl.

Muradiye District centre, among leaf litter under *Populus* sp., 38°59'783"N, 43°46'093"E, 1724 m, 19.05.2015, Çağlı. 257.

59. *Psathyrella microrhiza* (Lasch) Konrad & Maubl.

Değerbilir village, among leaf litter under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 122.

60. *Psathyrella prona* (Fr.) Gillet

*Populus* sp. altı, Merkez; 38° 59'783"N, 43° 46'093"E, 1724 m, 26.05.2014, Görece eski köy; 39° 04'881"N, 43° 45'514"E, 1813 m, Balaklı köyü; 38° 58'507"N, 43° 44'083"E, 1695 m, 19.05.2015, ÇAĞLI. 41, 222, 244.

61. *Psathyrella pseudogracilis* (Romagn.) M.M. Moser

Muradiye District centre, on decaying stump, 38°59'783"N, 43°46'093"E, 1724 m, 24.10.2014, Çağlı. 186.

62. *Psathyrella spadiceogrisea* (Schäeff.) Maire

Küçükköy village, on decaying stump, 38°59'473"N, 43°46'421"E, 1667 m, 26.05.2014, Çağlı. 66; Gönderme village, 39°05'152"N, 43°49'028"E, 1907 m, 24.10.2014, Çağlı. 175.

*Strophariaceae* Singer & A.H. Sm.

63. *Agrocybe dura* (Bolton) Singer

Görecek village, meadow, 39°03'520"N, 43°45'517"E, 1865 m, 06.05.2014, Çağlı. 7; Kemerköprü village, 39°01'701"N, 43°43'921"E, 1822 m, 06.05.2014, Çağlı. 18; Ünseli village, 38°58'821"N, 43°35'283"E, 1667 m, 26.05.2014, Çağlı. 45.

64. *Agrocybe paludosa* (J.E. Lange) Kühner & Romagn. ex Bon

Muradiye District centre, meadow, 38°59'783"N, 43°46'093"E, 1724 m, 06.05.2014, Çağlı. 30.

65. *Agrocybe pediades* (Fr.) Fayod

Kemerköprü village, meadow, 39°01'701"N, 43°43'921"E, 1822 m, 06.05.2014, Çağlı. 20; Keçikıran village, 38°58'252"N, 43°38'170"E, 1705 m 26.05.2014; Çağlı. 42; Alkasnak village, 39°58'171"N, 43°38'317"E, 1702 m 19.05.2015, Çağlı. 238.

66. *Agrocybe praecox* (Pers.) Fayod

Muradiye District centre, among grass, 38°59'783"N, 43°46'093"E, 1724 m, Çağlı. 44; Küçükköy village, 38°59'473"N, 43° 46'421"E, 1667 m, 26.05.2014, Çağlı. 55; around Muradiye Waterfall, 39°03'915"N, 43°45'400"E, 1828 m, 19.05.2015, Çağlı. 208.

67. *Agrocybe vervacti* (Fr.) Singer

Kemerköprü village, among leaf litter under *Populus* sp., 39°01'701"N, 43°43'921"E, 1822 m, Çağlı. 23; Değerbilir village, 39°03'646"N, 43°44'799"E, 1822 m, 06.05.2014, Çağlı. 24.

68. *Cyclocybe cylindracea* (DC.) Vizzini & Angelini

Muradiye District centre, around *Populus* sp. stump, 38°59'783"N, 43°46'093"E, 1724 m, 24.10.2014, Çağlı. 192.

69. *Deconica merdicola* (Huijsman) Noordel.

Değerbilir village, on manure, 39°03'646"N, 43°44'799"E, 1806 m, 20.10.2014, Çağlı. 152.

70. *Hypoloma fasciculare* (Huds.) P. Kumm.

Muradiye District centre, around *Salix* sp. stump, 38°59'783"N, 43°46'093"E, 1724 m, 06.05.2014, Çağlı. 33.

71. *Pholiota aurivella* (Batsch) P. Kumm.

Küçükköy village, on *Salix* sp. trunk, 38°59'473"N, 43° 46'421"E, 1667 m, 26.05.2014, Çağlı. 80; Değerbilir village, 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 135.

72. *Pholiota conissans* (Fr.) M.M. Moser

Küçükköy village, among grass around *Populus* sp. stump, 38°59'473"N, 43°46'421"E, 1667 m, 26.05.2015, Çağlı. 81.

73. *Pholiota gummosa* (Lasch) Singer

Değerbilir village, around *Salix* sp. stump, 39°03'646"N, 43°44'799"E, 1806 m, Çağlı. 149; Karahan village, 38°56'725"N, 43°39'836"E, 1645 m, 20.10.2014, Çağlı. 150.

**Tricholomataceae** R. Heim ex Pouzar

74. *Melanoleuca excissa* (Fr.) Singer

Değerbilir village, among grass, 39°03'646"N, 43°44'799"E, 1806 m, 19.05.2015, Çağlı. 241.

75. *Tricholoma populinum* J.E. Lange

Görecek village, under *Populus* sp., 39°03'520"N, 43°45'517"E, 1865 m, 24.10.2014, Çağlı. 163.

76. *Tricholoma scalpturatum* (Fr.) Quéf.

Değerbilir village, under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, 20.10.2014, Çağlı. 154.

77. *Lepista irina* (Fr.) H.E. Bigelow

Muradiye District centre, under *Populus* sp., 38°59'783"N, 43°46'093"E, 1724 m, 26.05.2014, Çağlı. 90.

78. *Lepista nuda* (Bull.) Cooke

Muradiye District centre, under *Populus* sp., 38°59'783"N, 43°46'093"E, 1724 m, 24.10.2014, Çağlı. 189.

79. *Lepista personata* (Fr.) Cooke

Değerbilir village, under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, 03.06.2014, Çağlı. 13; Muradiye District centre, 38°59'783"N, 43°46'093"E, 1724 m, 06.05.2014, Çağlı. 31; Açıkyol village, 38°57'997"N, 43°42'0568"E, 1673 m, 24.10.2014, Çağlı. 188; Duruktaş village, 38°57'391"N, 43°40'898"E, 1670 m, Çağlı. 258.

**Tubariaceae** Vizzini

80. *Tubaria furfuracea* (Pers.) Gillet

Muradiye District centre, on soil among leaf litter, 38°59'783"N, 43°46'093"E, 1724 m, 06.05.2014, Çağlı. 29; Küçükköy village, 38°59'473"N, 43°46'421"E, 1667 m, Çağlı. 53; Yumaklı village, 38°56'565"N, 43°45'078"E, 1639 m, 26.05.2014, Çağlı. 54.

**Boletales** E.-J. Gilbert

**Paxillaceae** Lotsy

81. *Paxillus involutus* (Batsch) Fr.

Değerbilir village, among grass under *Populus* sp., 39°03'732"N, 43°45'169"E, 1827 m, Çağlı. 125; Karahan village, 38°56'725"N, 43°39'836"E, 1645 m, 20.10.2014, Çağlı. 145.

**Hymenochaetales** Oberw.

**Hymenochaetaceae** Donk

82. *Phellinus igniarius* (L.) Quéf.

Küçükköy village, on *Salix* sp. trunk, 38°59'473"N, 43°46'421"E, 1667 m, 26.05.2014, Çağlı. 83.

**Polyporales** Gäum.

**Polyporaceae** Fr. ex Corda

83. *Cerioporus squamosus* (Huds.) Quéf.

Değerbilir village, on *Populus* sp. stump, 39°03'732"N, 43°45'169"E, 1827 m, 06.05.2014, Çağlı. 14; Yakıncak village, 38°57'107"N, 43°46'429"E, 1660 m, 19.05.2015, Çağlı. 219.

84. *Lentinus tigrinus* (Bull.) Fr.

Muradiye District centre, around *Salix* sp. stump, 38°59'783"N, 43°46'093"E, 1724 m, 06.05.2014, Çağlı. 27; 26.05.2014, Çağlı. 87; 24.10.2014, Çağlı. 191; Küçükköy

village, 38°59'473"N, 43°46'421"E, 1667 m, 19.05.2015, Çağlı. 260.

85. *Polyporus rhizophilus* Pat.

Kemerköprü village, meadow, 39°01'701"N, 43°43'921"E, 1822 m, 06.05.2014, Çağlı. 22.

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

**Russulaceae** Lotsy

86. *Lactarius controversus* Pers.

Değerbilir village, in poplar grove, 39°03'732"N, 43°45'169"E, 1827 m 20.10.2014, Çağlı. 146; Muradiye District centre, 38°59'783"N, 43°46'093"E, 1724 m, 24.10.2014, Çağlı. 190.

**4. Discussions**

Eighty six macrofungi species belonging to 50 genera, 25 families, seven orders and three classes were determined from Muradiye district of Van province. Ten of the determined taxa belong to *Ascomycota* (1 *Helotiales*, 9 *Pezizales*) while 76 belong to *Basidiomycota* (70 *Agaricales*, 1 *Boletales*, 1 *Hymenochaetales*, 3 *Polyporales*, 1 *Russulales*).

The taxa are distributed in 25 families. *Agaricaceae* and *Psathyrellaceae* were found to the most crowded families each with 13 taxa. *Strophariaceae* is the second crowded one with 11 taxa. Two of the families (*Bolbitiaceae*, *Tricholomataceae*) comprises 6, two of them (*Hymenogastraceae*, *Inocybaceae*) comprises 4, three of them (*Morchellaceae*, *Mycenaceae*, *Polyporaceae*) comprises 3 taxa, five of them (*Helvellaceae*, *Pezizaceae*, *Pyronemataceae*, *Pleurotaceae*, *Pluteaceae*) comprises 2 taxa, and the rest of the 10 families comprises 1 taxon.

Thirty five (%40.79) of the determined taxa are edible. But only three of them are collected and consumed by local people. Among them *Agrocybe dura* is known as "çimen mantarı" in the region while *Pleurotus ostreatus* is known as "ağaç/kavak mantarı" and *Pleurotus eryngii* is known as "heliz mantarı". Forty two (%48.84) of them are inedible and 9 (%10.47) of them are more or less poisonous.

The taxa determined in Muradiye district were compared with the findings of the studies carried out in neighbouring regions and some similarities were observed. These studies and the similarity percentages are given in Table 1.

**Table 1.** Similarity percentages of neighbouring studies with Muradiye district.

| Neighbouring study     | # of identical taxa | Total taxa | Similarity (%) |
|------------------------|---------------------|------------|----------------|
| Demirel (1996)         | 18                  | 50         | 36.00          |
| Demirel et al. (2002)  | 23                  | 45         | 51.11          |
| Demirel et al. (2003)  | 23                  | 114        | 20.18          |
| Demirel et al. (2004)  | 17                  | 162        | 10.49          |
| Akçay et al. (2010)    | 20                  | 50         | 40.00          |
| Demirel & Koçak (2016) | 46                  | 96         | 47.92          |
| Demirel et al. (2017)  | 21                  | 172        | 12.21          |

Among the determined taxa, *Bovista plumbea*, *Coprinus comatus*, *Psilocybe coronilla*, *Volvopluteus gloiocephalus* and *Polyporus rhizophilus* were also recorded from the region by Demirel (1996). All the other taxa are new for the region while *Melanophyllum haematospermum* are new for Turkish mycobiota at genus level.

**Acknowledgments**

The authors would like to thank Van Yüzüncü Yıl

University Research Project Unit (Project No: 2014-FBE-YL-089) for its financial support.

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