

Macromycetes Determined in Tonya (Trabzon) District

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ABSTRACT

This study is based on the macrofungi specimens collected from Tonya district of Trabzon province. As a result, 216 macromycete species belonging to 150 genera, 73 families, 23 orders, and 8 classes, within Ascomycota and Basidiomycota were determined. The list of the determined taxa was provided together with their habitats, collection dates, and collector numbers.

Research Article

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ÖZET

Bu çalışma Trabzon ilinin Tonya ilçesinden toplanan makromantar örneklerine dayanmaktadır. Sonuç olarak, Askomikota ve Bazidyomikota bölümleri içinde yer alan 8 sınıf, 23 takım, 73 familya ve 150 cinse ait 216 makromantar türü tespit edilmiştir. Belirlenen taksonların listesi, türlerin habitatları, toplanma tarihleri ve toplayıcı numaraları ile birlikte verilmiştir.

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INTRODUCTION

Macrofungi are the group of fungi having visible fruiting bodies with saprotrophic, parasitic, or symbiotic lifestyles. Besides their ecological importance, they also serve as food for lots of animals as well as mankind. Tough more than 50.000 macrofungi species have been estimated (Mueller et al., 2007), and more than 15.000 species have been determined in Europe (Lukic, 2008), only a small portion of them (approximately 2.700 species) are currently known from Turkey. Starting from the first quarter of the 20th century, many studies (Sesli et al., 2020) have been conducted to determine the macrofungal biodiversity of Turkey. But the majority of the territory of Turkey could still be regarded among the unstudied or less studied regions, and need to be studied in a detailed manner.

Tonya is a district of Trabzon province within Eastern Black Sea Region of Turkey (Fig. 1). According to Davis' (1965) grid system, it takes place in A7, between 40°42'-40°58' northern latitudes and 39°12'-

39°23' eastern longitudes. Phytogeographically the area falls in Euro-Siberian floristic area within Holarctic flora kingdom (Davis, 1965). The plant cover of Tonya is mainly characterized by forest areas. *Abies nordmanniana* Stev., *Picea orientalis* Link., *Pinus sylvestris* L., *Juglans regia* L., *Tilia tomentosa* Moench., *Platanus orientalis* L., *Juniperus oxycedrus* L., *Castanea sativa* Mill., *Alnus glutinosa* L., *Salix alba* L., *Populus tremula* L., *Corylus avellana* L., *Quercus ilex* L., *Fraxinus oxycarpa* L., *Carpinus betulus* L., *Rhododendron ponticum* L., *Daphne pontica* L., *Fagus orientalis* Lipsky., *Pteridium aquilinum* (L.) Kuhn, *Rubus idaeus* L., *Crataegus monogyna* Jack., *Buxus sempervirens* L., *Prunus laurocerasus* L., *Acacia* L., and *Arbutus* L. sp. are the common tree and shrubby forms in the region.

Though some local lists (Sesli, 1993; Baydar and Sesli, 1994; Akata et al., 2014, 2016) were presented at neighboring districts and provinces, and some new records or new distributions were reported from the region, a detailed research has not so far been conducted on the mycobiota of Tonya.

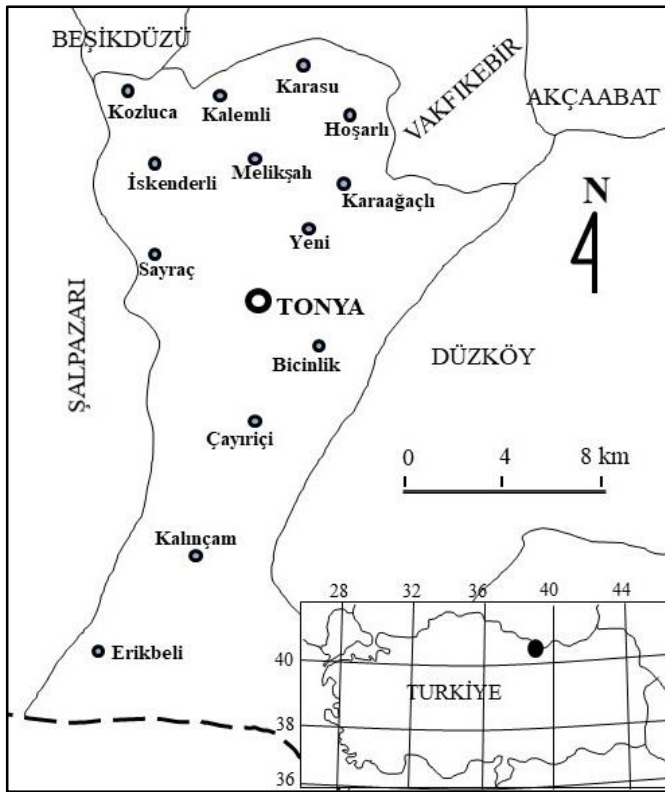


Figure 1. Map of the research area
Şekil 1. Araştırma alanının haritası

The study aims to determine the macrofungal biodiversity of the region and to contribute to the mycobiota of Turkey.

MATERIALS and METHOD

Field studies were carried out in Tonya district of Trabzon province during the period 2014- 2017. The object of investigations was the suitable habitats for macrofungal growth. During the field study, information about the ecology and geographic position of the samples was collected and they were photographed at their natural habitats. GPS data for the localities of fungi were obtained using a Magellan SporTrack Pro GPS Receiver (Table 1), and color photographs were taken by a Sony HX-400V digital camera. Microscopic investigations were carried out on dried samples. Microscopic measurements were made from preparations mounted in water or 3% KOH. A Nikon Eclipse Ci-S trinocular light microscope was used for microscopic investigations. Identification of the collected materials was confirmed using the works of Caillet and Moyne (1980), Breitenbach and Kränzlin (1984-2000), Benkert (1995, 2007), Miller and Miller (1988), Candusso and Lanzoni (1990), Wang and Kimbrough (1992), Courtecuisse and Duhem (1995), Pegler et al. (1995), Bessette et al. (1997, 2007), Cappelli (1997), Ellis and Ellis (1997), Hansen and Knudsen (1992, 1997, 2000), Heilmann-Clausen et al. (1998), Montecchi and Sarasini (2000), Arroyo et al. (2005), Kränzlin (2005),

Medardi (2006), Trappe et al. (2007), Hausknecht (2009), Jaklitsch (2009), Antonin and Noordeloos (2010), Philips (2010), Thompson (2013), Beug et al. (2014), Cripps et al. (2016) and Siegel and Schwarz (2016). The samples are kept in Karamanoğlu Mehmetbey University, Science Faculty, Department of Biology, Karaman.

RESULTS

The determined taxa are listed alphabetically, in accordance with Index Fungorum (www.indexfungorum.org; accessed 10 December 2020), together with their habitats, collection dates, and accession numbers.

Ascomycota Whittaker

Eurotiomycetes O.E. Erikss. & Winka

Eurotiales G.W. Martin ex Benny & Kimbr.

Elaphomycetaceae Tul. ex Paol.

1. *Elaphomyces citrinus* Vittad.: (Uzun and Kaya, 2020).
2. *Elaphomyces cyanosporus* Tul. & C. Tul.: In soil under mixed forest, locality 11, 13.04.2017, Yuzun 5536; in soil under *Fagus* L. sp., locality 18, 12.11.2016, Yuzun 5464; locality 15, 17.09.2015, Yuzun 4547.
3. *Elaphomyces granulatus* Fr.: (Uzun and Kaya, 2019a).
4. *Elaphomyces muricatus* Fr.: In soil under mixed forest, locality 40, 12.04.2017, Yuzun 5527; locality 7, 11.04.2017, Yuzun 5518; locality 28, 21.05.2016, Yuzun 5112.

Leotiomycetes O.E. Erikss. & Winka

Helotiales Nannf.

Cenangiaceae Rehm

5. *Heyderia abietis* (Fr.) Link: On *Picea* Link sp. needles, locality 3, 01.11.2015, Yuzun 4706.

Chlorociboriaceae Baral & P.R. Johnst.

6. *Chlorociboria aeruginascens* (Nyl.) Kanouse ex C.S. Ramamurthi, Korf & L.R. Batra: On decaying *Alnus* Mill. sp. branches, locality 8, 07.09.2014, Yuzun 1604.

Gelatinodiscaceae S.E. Carp.

7. *Ascocoryne cylichnium* (Tul.) Korf: On decaying *Picea* sp. stump, locality 33, 01.11.2015, Yuzun 4710.

Helotiaceae Rehm

8. *Bisporella citrina* (Batsch) Korf & S.E. Carp.: On dead *Fagus* sp. branches, locality 33, 01.11.2015, Yuzun 4714; locality 14, 19.09.2015, Yuzun 4573.
9. *Hymenoscyphus fagineus* (Pers.) Dennis: On decaying *Facus* sp. cone, locality 3, 01.11.2015, Yuzun 4708.

Lachnaceae Raitv.

10. *Lachnum pygmaeum* (Fr.) Bres.: On decaying herb stem, locality 25, 20.06.2016, Yuzun 5157.
11. *Lachnum virgineum* (Batsch) P. Karst.: On dead *Corylus* L. sp. twigs, locality 37, 20.06.2017, Yuzun 5558.

Table 1. Collection localities of the macrofungal samples

Çizelge 1. Makromantar örneklerinin toplanma lokaliteleri

Loc. No	Locality name	Coordinates	Altitude (m)
1	Bicinlik village	40°50'N-39°16'E	1070
2	Bicinlik village	40°51'N-39°17'E	1150
3	Büyük village	40°53'N-39°16'E	1070
4	Büyük village	40°54'N-39°16'E	960
5	Çamlı village	40°54'N-39°17'E	915
6	Çayırbağ village	40°50'N-39°19'E	1160
7	Çayırçı village	40°49'N-39°17'E	1300
8	Çayırçı village	40°50'N-39°18'E	1040
9	Çayırçı village	40°50'N-39°17'E	1070
10	Erikbeli village	40°45'N-39°14'E	1420
11	Erikbeli village	40°46'N-39°14'E	1500
12	Erikbeli yaylası	40°46'N-39°13'E	1650
13	Hoşarlı village	40°55'N-39°18'E	850
14	Hoşarlı village	40°56'N-39°18'E	910
15	Hoşarlı village	40°56'N-39°19'E	1100
16	İskenderli village	40°56'N-39°13'E	780
17	İskenderli village	40°55'N-39°13'E	800
18	İskenderli village	40°55'N-39°14'E	760
19	Kadralak high plateau	40°50'N-39°15'E	1280
20	Kalemlı village	40°56'N-39°16'E	830
21	Kalemlı village	40°56'N-39°17'E	700
22	Kalınçam village	40°46'N-39°16'E	1500
23	Kalınçam village	40°47'N-39°16'E	1110
24	Kalınçam village	40°47'N-39°17'E	1300
25	Karaağaçlı village	40°55'N-39°17'E	640
26	Karaağaçlı village	40°55'N-39°18'E	1000
27	Karasu village	40°56'N-39°18'E	845
28	Karasu village	40°57'N-39°18'E	900
29	Kayacan village	40°56'N-39°16'E	870
30	Kozluca village	40°56'N-39°13'E	1000
31	Kösecik village	40°57'N-39°17'E	600
32	Melikşah village	40°54'N-39°16'E	910
33	Melikşah village	40°55'N-39°15'E	1040
34	Sağrı village	40°57'N-39°18'E	780
35	Sayraç village	40°53'N-39°14'E	1060
36	Sayraç village	40°54'N-39°13'E	1100
37	Sayraç village	40°54'N-39°14'E	1100
38	Yakçukur village	40°54'N-39°14'E	960
39	Yakçukur village	40°54'N-39°15'E	1000
40	Yeni köy village	40°53'N-39°18'E	1200
41	Yeni köy village	40°54'N-39°18'E	1150

12. *Neodasyscypha cerina* (Pers.) Spooner: On *Prunus* L. sp. stump, locality 26, 07.11.2016, Yuzun 5371; on *Castanea* Mill. stump, locality 32, 26.03.2016, Yuzun 4965.

Mollisiaceae Rehm

13. *Mollisia cinerea* (Batsch) P. Karst.: On decaying *Fagus* sp. twigs, locality 27, 21.06.2017, Yuzun 5595;

locality 34, 17.05.2016, Yuzun 5092.

14. *Mollisia ventosa* P. Karst.: On decaying *Fagus* sp. stump, locality 27, 21.06.2017, Yuzun 5594.

15. *Tapesia fusca* (Pers.) Fuckel: On decaying *Fagus* sp. twigs, locality 17, 24.03.2016, Yuzun 4896.

Rutstroemiaceae Holst-Jensen, L.M. Kohn & T. Schumach.

16. *Lanzia echinophila* (Bull.) Korf: On dead cupules of *Castanea* sp., locality 8, 07.09.2014, Yuzun 1615.
Sclerotiniaceae Whetzel
17. *Ciboria caucus* (Rebent.) Fuckel: On dead spikes of *Alnus* sp., locality 8, 06.02.2015, Yuzun 3269.
Tricladaceae P.R. Johnst. & Baschien
18. *Cudoniella acicularis* (Bull.) J. Schröt.: On decaying stump in mixed forest, locality 3, 01.11.2015, Yuzun 4699.
Leotiales Korf & Lizoň
Leotiaceae Corda
19. *Leotia lubrica* (Scop.) Pers.: On soil in mixed forest, locality 11, 28.10.2015, Yuzun 4626; locality 38, 26.08.2015, Yuzun 4453.
Orbiliomycetes O.E. Erikss. & Baral
Orbiliales Baral, O.E. Erikss., G. Marson & E. Weber
Orbiliaceae Nannf.
20. *Hyalorbilia inflatula* (P. Karst.) Baral & G. Marson: On dead *Acacia* Martius sp. branches, locality 33, 08.09.2014, Yuzun 1667.
Pezizomycetes O.E. Erikss. & Winka
Pezizales J. Schröt.
Ascobolaceae Boud. ex Sacc.
21. *Ascobolus furfuraceus* Pers.: On cow dung, locality 35, 27.03.2016, Yuzun 4975; locality 32, 26.03.2016, Yuzun 4926.
22. *Saccobolus glaber* (Pers.) Lambotte: On cow dung, locality 36, 27.03.2016, Yuzun 4978; locality 37, 28.08.2015, Yuzun 4514.
23. *Thecotheus pelletieri* (P. Crouan & H. Crouan) Boud.: On cow dung, locality 36, 28.08.2015, Yuzun 4515; locality 18, 23.07.2015, Yuzun 4364.
Discinaceae Benedix
24. *Gyromitra infula* (Schaeff.) Quél.: On decaying *Picea* sp. stump, locality 23, 09.10.2014, Yuzun 1966.
Helvellaceae Fr.
25. *Dissingia leucomelaena* (Pers.) K. Hansen & X.H. Wang: On soil among needle litter, locality 32, 12.04.2017, Yuzun 5526.
26. *Helvella acetabulum* (L.) Quél.: On soil among grasses under *Corylus* sp., locality 34, 17.05.2016, Yuzun 5088; locality 14, 25.03.2016, Yuzun 4950.
27. *Helvella atra* J. König: On soil among grasses under *Corylus* sp., locality 20, 22.06.2017, Yuzun 5605; locality 27, 07.11.2016, Yuzun 5369.
28. *Helvella crispa* (Scop.) Fr.: On soil among grasses under *Corylus* sp., locality 26, 07.11.2016, Yuzun 5367.
29. *Helvella elastica* Bull.: On soil under *Corylus* sp., locality 38, 10.11.2016, Yuzun 5440; on soil under mixed forest, locality 10, 19.09.2015, Yuzun 4571.
30. *Helvella lactea* Boud.: On soil under *Corylus* sp., locality 31, 22.06.2017, Yuzun 5609.
31. *Helvella lacunosa* Afzel.: On soil under mixed forest, locality 34, 17.05.2016, Yuzun 5090.
32. *Helvella macropus* (Pers.) P. Karst.: On soil under *Corylus* sp., locality 38, 10.11.2016, Yuzun 5432.
33. *Helvella phlebophora* Pat. & Doass.: On soil among grasses under *Corylus* sp., locality 31, 22.06.2017, Yuzun 5612.
Pezizaceae Dumort.
34. *Adelphella babingtonii* (Sacc.) Pfister, Matočec & I. Kušan: On *Fagus* sp. stump, locality 39, 20.06.2017, Yuzun 5575; locality 38, 26.08.2015, Yuzun 4452.
35. *Hydnobolites cerebriformis* Tul. & C. Tul.: (Uzun and Kaya, 2018).
36. *Pachyella clypeata* (Schwein.) Le Gal: (Uzun and Kaya, 2019b).
37. *Pachyphloides citrina* (Berk. & Broome) Doweld: (Uzun and Kaya, 2018).
38. *Peziza michelii* (Boud.) Dennis: On soil under mixed forest, locality 22, 21.07.2015, Yuzun 4296.
39. *Peziza phyllogena* Cooke: On soil at roadside, locality 19, 20.07.2015, Yuzun 4268.
40. *Peziza saniosa* Schrad.: On soil in mixed forest, locality 22, 21.07.2015, Yuzun 4307.
41. *Peziza succosa* Berk.: On soil under *Corylus* sp., locality 31, 22.06.2017, Yuzun 5611.
42. *Peziza violacea* Pers.: On burned ground, locality 33, 12.04.2017, Yuzun 5524.
43. *Plicaria carbonaria* Fuckel: (Kaya and Uzun, 2018).
44. *Terfezia cistophila* Ant. Rodr., Bordallo, V. Kaounas, & Morte: (Uzun and Kaya, 2019b).
Pyronemataceae Corda
45. *Aleuria aurantia* (Pers.) Fuckel: On soil under mixed forest, locality 10, 22.09.2015, Yuzun 4609; 19.09.2015, Yuzun 4567; locality 22, 21.07.2015, Yuzun 4315.
46. *Anthracobia melaloma* (Alb. & Schwein.) Boud.: On ash on burned ground, locality 30, 27.03.2016, Yuzun 4988; 13.11.2016, Yuzun 5471.
47. *Cheilymenia vitellina* (Pers.) Dennis: On herbaceous remains among mosses, locality 38, 10.11.2016, Yuzun 5445.
48. *Humaria hemisphaerica* (F.H. Wigg.) Fuckel: On soil under *Picea* sp., locality 22, 21.07.2015, Yuzun 4312.
49. *Lamprospora campylopodis* W.D. Buckley: (Uzun and Kaya, 2019b).
50. *Lamprospora dictydiola* Boud.: On moss, locality 31, 07.11.2016, Yuzun 5398.
51. *Melastiza cornubiensis* (Berk. & Broome) J. Moravec: On soil at roadside, locality 10, 19.09.2015, Yuzun 4568.
52. *Neottiella rutilans* (Fr.) Dennis: On moss under *Corylus* sp., locality 31, 22.06.2017, Yuzun 5607; locality 2, 10.04.2017, Yuzun 5513; locality 38, 10.11.2016, Yuzun 5436; locality 26, 07.11.2016, Yuzun 5375.
53. *Octospora axillaris* (Nees) M.M. Moser: On moss under *Corylus* sp., locality 26, 07.11.2016, Yuzun 5381.
54. *Octospora rustica* (Velen.) J. Moravec: On moss

at roadside, locality 14, 22.07.2015, Yuzun 4343.

55. *Octospora tuberculatella* (Seaver) Caillet & Moyne: (Uzun and Kaya, 2019b).

56. *Pulvinula alba* (Velen.) Svrček: On damp soil among mosses and liverworts in *Corylus* L. garden, locality 35, 23.07.2015, Yuzun 4390.

57. *Pulvinula convexella* (P. Karst.) Pfister: (Uzun and Kaya, 2019b).

58. *Pyronema omphalodes* (Bull.) Fuckel: On burned ground, locality 11, 13.04.2017, Yuzun 5535; locality 28, 21.05.2016, Yuzun 5110.

59. *Scutellinia armatospora* Denison: On damp soil, locality 31, 22.06.2017, Yuzun 5608; on damp soil among mosses, locality 34, 17.05.2016, Yuzun 5080; on damp soil under *Corylus* sp., locality 20, 14.05.2016, Yuzun 5039.

60. *Tarsetta catinus* (Holmsk.) Korf & J.K. Rogers: On soil under *Corylus* sp., locality 38, 10.11.2016, Yuzun 5439.

61. *Tarsetta cupularis* (L.) Svrček: On soil under *Corylus* sp., locality 13, 21.09.2015, Yuzun 4590.

Sarcoscyphaceae Le Gal ex Eckblad

62. *Sarcoscypha coccinea* (Gray) Boud.: On decaying *Corylus* sp. twigs, locality 2, 06.02.2015, Yuzun 3237.

Sarcosomataceae Kobayasi

63. *Plectania rhytidia* (Berk.) Nannf. & Korf: On *Corylus* sp. wood, locality 15, 22.06.2017, Yuzun 5631; locality 20, 14.05.2016, Yuzun 5037; On soil, locality 28, 25.03.2016, Yuzun 4933.

Tuberaceae Dumort.

64. *Tuber puberulum* Berk. & Broome: Erikbeli village, in soil under broadleaved forest, locality 10, 22.09.2015, Yuzun 4605.

Sordariomycetes O.E. Erikss. & Winka

Hypocreales Lindau

Hypocreaceae De Not.

65. *Trichoderma alni* Jaklitsch: On decaying *Alnus* Mill. sp. branches, locality 9, 07.09.2014, Yuzun 1603.

Nectriaceae Tul. & C. Tul.

66. *Neonectria coccinea* (Pers.) Rossman & Samuels: On decaying woody remains, locality 33, 08.09.2014, Yuzun 1679.

Xylariales Nannf.

Diatrypaeae Nitschke

67. *Diatrype stigma* (Hoffm.) Fr.: On decaying *Fagus* sp. twigs, locality 7, 07.09.2014, Yuzun 1581.

Xylariaceae Tul. & C. Tul.

68. *Daldinia concentrica* (Bolton) Ces. & De Not.: On decaying *Alnus* Mill. sp. remains, locality 36, 08.11.2016, Yuzun 5418.

69. *Hypoxylon fragiforme* (Pers.) J. Kickx f.: On decaying *Fagus* sp. branches, locality 30, 13.11.2016, Yuzun 5474.

70. *Hypoxylon fuscum* (Pers.) Fr.: On dead *Corylus* sp. twigs, locality 2, 06.02.2015, Yuzun 3244.

71. *Kretzschmaria deusta* (Hoffm.) P.M.D. Martin: On *Alnus* Mill. sp. stump, locality 9, 06.02.2015, Yuzun 3260.

72. *Nemania serpens* (Pers.) Gray: On *Castanea* sp. stump, locality 2, 06.02.2015, Yuzun 3243.

73. *Xylaria hypoxylon* (L.) Grev.: On *Fagus* sp. stump, locality 31, 22.06.2017, Yuzun 5622; locality 38, 26.08.2015, Yuzun 4450; on *Corylus* sp. stump, locality 25, 20.06.2016, Yuzun 5166.

74. *Xylaria longipes* Nitschke: On *Fagus* sp. stump, locality 25, 17.09.2015, Yuzun 4551.

75. *Xylaria polymorpha* (Pers.) Grev.: On *Fagus* sp. stump, locality 27, 21.06.2017, Yuzun 5593.

Basidiomycota R.T. Moore

Agaricomycetes Doweld

Agaricales Underw.

Agaricaceae Chevall.

76. *Coprinus comatus* (O.F. Müll.) Pers.: On soil among grass, locality 6, 09.10.2014, Yuzun 1913.

77. *Echinoderma asperum* (Pers.) Bon: On soil under mixed forest, locality 6, 09.10.2014, Yuzun 1933.

78. *Leucoagaricus nymphaeum* (Kalchbr.) Bon: On soil among grass under mixed forest, locality 18, 23.07.2015, Yuzun 4374.

79. *Macrolepiota mastoidea* (Fr.) Singer: On soil among grass, locality 33, 08.09.2014, Yuzun 1686.

80. *Macrolepiota procera* (Scop.) Singer: On soil among grass, locality 4, 11.11.2016, Yuzun 5457.

81. *Tulostoma brumale* Pers.: On soil among mosses, locality 2, 10.04.2017, Yuzun 5512; on soil among grass, locality 33, 01.11.2015, Yuzun 4717.

Amanitaceae R. Heim ex Pouzar

82. *Amanita citrina* Pers.: On soil under mixed forest, locality 11, 28.10.2015, Yuzun 4623.

83. *Amanita gemmata* (Fr.) Bertill.: On soil under mixed forest, locality 11, 28.10.2015, Yuzun 4621.

84. *Amanita muscaria* (L.) Lam.: On soil under *Picea* sp., locality 23, 19.09.2015, Yuzun 4584.

85. *Amanita pantherina* (DC.) Krombh.: On soil under mixed forest, locality 6, 09.10.2014, Yuzun 1917.

86. *Amanita phalloides* (Vaill. ex Fr.) Link: On soil under mixed forest, locality 31, 07.11.2016, Yuzun 5385; locality 11, 28.10.2015, Yuzun 4625.

87. *Amanita rubescens* Pers.: On soil under mixed forest, locality 15, 22.06.2017, Yuzun 5632; locality 18, 23.07.2015, Yuzun 4361.

Chromocyphellaceae Knudsen

88. *Chromocyphella muscicola* (Fr.) Donk: On mosses, locality 20, 07.09.2014, Yuzun 1620.

Clavariaceae Chevall.

89. *Clavaria acuta* Sowerby: On soil at roadside, locality 31, 07.11.2016, Yuzun 5392.

Cortinariaceae R. Heim ex Pouzar

90. *Protoglossum niveum* (Vittad.) T.W. May: In soil under mixed forest, locality 3, 01.11.2015, Yuzun 4692; locality 33, 01.11.2015, Yuzun 4711.

Entolomataceae Kotl. & Pouzar

91. *Entoloma chalybeum* (Pers.) Noordel.: On soil among grass, locality 19, 20.07.2015, Yuzun 4275.

92. *Entoloma sinuatum* (Bull.) P. Kumm.: On soil

under mixed forest, locality 39, 20.06.2017, Yuzun 5573.

Hydnangiaceae Gäum. & C.W. Dodge

93. *Laccaria amethystina* Cooke: On soil among leaf litter, locality 1, 07.09.2014, Yuzun 1652.

94. *Laccaria laccata* (Scop.) Cooke: On soil under *Corylus* sp., locality 26, 07.11.2016, Yuzun 5382; on soil under mixed forest, locality 31, 07.11.2016, Yuzun 5390.

Hygrophoraceae Lotsy

95. *Ampulloclitocybe clavipes* (Pers.) Redhead, Lutzoni, Moncalvo & Vilgalys: On soil among grass, locality 6, 09.10.2014, Yuzun 1950.

96. *Cuphophyllus virgineus* (Wulfen) Kovalenko: On soil among grass, 22, 09.10.2014, Yuzun 1962.

97. *Hygrocybe acutoconica* (Clem.) Singer: On soil among grass, locality 25, 21.06.2015, Yuzun 4107.

98. *Hygrocybe cantharellus* (Schwein.) Murrill: On soil among grass, locality 24, 07.09.2014, Yuzun 1638.

99. *Hygrocybe conica* (Schaeff.) P. Kumm.: On soil among grass, locality 6, 09.10.2014, Yuzun 1915.

100. *Hygrophorus eburneus* (Bull.) Fr.: On soil under mixed forest, locality 3, 01.11.2015, Yuzun 4694.

Hymenogastraceae Vittad.

101. *Galerina marginata* (Batsch) Kühner: On *Picea* sp. stump, locality 22, 09.10.2014, Yuzun 1954.

102. *Hymenogaster citrinus* Vittad.: In soil under mixed forest, locality 33, 01.11.2015, Yuzun 4713; locality 22, 28.10.2015, Yuzun 4641; locality 13, 21.09.2015, Yuzun 4592; locality 10, 19.09.2015, Yuzun 4565.

103. *Hymenogaster hessei* Soehner: In soil under mixed forest, locality 3, 01.11.2015, Yuzun 4698; locality 33, 01.11.2015, Yuzun 4712.

104. *Hymenogaster luteus* Vittad.: In soil and rotting plant residues under mixed forest, locality 34, 17.05.2016, Yuzun 5085.

Incertae Sedis

105. *Calyptella capula* (Holmsk.) Quéf.: On dead *Sambucus* L. sp. stem, locality 20, 07.09.2014, Yuzun 1617.

106. *Clitocybe gibba* (Pers.) P. Kumm.: On soil among needle litter under *Picea* sp., locality 37, 21.06.2015, Yuzun 4098.

107. *Clitocybe nebularis* (Batsch) P. Kumm.: On soil under mixed forest, locality 23, 09.10.2014, Yuzun 1987.

108. *Crucibulum laeve* (Huds.) Kambly: On decaying woody remains, locality 3, 01.11.2015, Yuzun 4696.

109. *Cyathus olla* (Batsch) Pers.: On decaying woody remains, locality 20, 22.06.2017, Yuzun 5603.

110. *Cyathus striatus* (Huds.) Willd.: On wood chips at roadside, locality 31, 22.06.2017, Yuzun 5620; on soil among woody debris, locality 5, 26.08.2015, Yuzun 4463.

111. *Delicatula integrella* (Pers.) Fayod: On dead *Alnus* sp. branches, locality 20, 07.09.2014, Yuzun 1622.

112. *Fistulina hepatica* (Schaeff.) With.: On *Castanea* sp. stump, locality 15, 17.09.2015, Yuzun 4534.

113. *Lepista nuda* (Bull.) Cooke: On soil among needle-litter, locality 25, 21.06.2015, Yuzun 4119.

114. *Panaeolus papilionaceus* (Bull.) Quéf.: On decaying cow dung, locality 37, 20.06.2017, Yuzun 5564.

115. *Tricholomopsis rutilans* (Schaeff.) Singer: On *Picea* sp. stump, locality 23, 09.10.2014, Yuzun 1979.

Lycoperdaceae Chevall.

116. *Bovista nigrescens* Pers.: On soil among grass, locality 1, 07.09.2014, Yuzun 1663.

117. *Bovista plumbea* Pers.: On soil among grass, locality 37, 21.06.2015, Yuzun 4105.

118. *Lycoperdon echinatum* Pers.: On soil under *Picea* sp., locality 22, 21.07.2015, Yuzun 4309.

119. *Lycoperdon excipuliforme* (Scop.) Pers.: On soil under mixed forest, locality 18, 12.11.2016, Yuzun 5461.

120. *Lycoperdon perlatum* Pers.: On soil among grass, locality 3, 01.11.2015, Yuzun 4693.

121. *Lycoperdon pyriforme* Schaeff.: On *Picea* sp. stump, locality 23, 09.10.2014, Yuzun 1974.

122. *Lycoperdon utriforme* Bull.: On soil among grass, locality 15, 22.06.2017, Yuzun 5633.

Marasmiaceae Roze ex Kühner

123. *Marasmius curreyi* Berk. & Broome: On grass remains in *Corylus* sp. Garden, locality 25, 20.06.2016, Yuzun 5156.

124. *Marasmius oreades* (Bolton) Fr.: On soil among grass, locality 3, 20.07.2015, Yuzun 4280.

125. *Marasmius rotula* (Scop.) Fr.: On *Fagus* sp. stump, locality 27, 21.06.2017, Yuzun 5598; locality 15, 17.09.2015, Yuzun 4541.

Mycenaceae Roze

126. *Mycena acicula* (Schaeff.) P. Kumm.: On dead herbaceous stem, locality 20, 07.09.2014, Yuzun 1618.

127. *Mycena haematopus* (Pers.) P. Kumm.: On decaying *Picea* stump, locality 1, 07.09.2014, Yuzun 1653.

128. *Mycena pura* (Pers.) P. Kumm.: On leaf litter under mixed forest, locality 22, 21.07.2015, Yuzun 4305.

129. *Mycena renati* Quéf.: On decaying woody remains, locality 13, 21.09.2015, Yuzun 4598.

130. *Mycena rosea* Gramberg: On leaf litter under mixed forest, locality 33, 01.11.2015, Yuzun 4715.

131. *Panellus stipticus* (Bull.) P. Karst.: On *Alnus* sp. stump, locality 30, 27.03.2016, Yuzun 4984; locality 3, 01.11.2015, Yuzun 4701.

Omphalotaceae Bresinsky

132. *Gymnopus dryophilus* (Bull.) Murrill: On soil under mixed forest, locality 29, 21.06.2017, Yuzun 5582; locality 37, 20.06.2017, Yuzun 5561; locality 14, 25.03.2016, Yuzun 4949.

133. *Gymnopus foetidus* (Sowerby) P.M. Kirk: On *Quercus* L. sp. twigs, locality 39, 20.06.2017, Yuzun

5572.

134. *Marasmiellus ramealis* (Bull.) Singer: On dead herbaceous stem, locality 27, 21.06.2017, Yuzun 5596.

135. *Marasmiellus vaillantii* (Pers.) Singer: On decaying *Rhododendron* twigs, locality 29, 21.06.2017, Yuzun 5587.

136. *Mycetinis scorodonius* (Fr.) A.W. Wilson & Desjardin: On *Rhododendron* L. sp. twigs, locality 37, 21.06.2015, Yuzun 4100.

Physalacriaceae Corner

137. *Armillaria mellea* (Vahl) P. Kumm.: On *Castanea* sp. stump, locality 3, 01.11.2015, Yuzun 4702.

138. *Armillaria ostoyae* (Romagn.) Herink: On *Alnus* Mill. sp. stump, locality 13, 21.09.2015, Yuzun 4596.

139. *Hymenopellis radicata* (Relhan) R.H. Petersen: On soil under mixed forest, locality 25, 17.09.2015, Yuzun 4556.

Pleurotaceae Kühner

140. *Pleurotus ostreatus* (Jacq.) P. Kumm.: On *Populus* L. sp. stump, locality 8, 07.11.2016, Yuzun 5411.

Psathyrellaceae Vilgalys, Moncalvo & Redhead

141. *Coprinellus micaceus* (Bull.) Vilgalys, Hopple & Jacq. Johnson: On soil around decaying stump, locality 17, 24.03.2016, Yuzun 4907.

142. *Parasola auricoma* (Pat.) Redhead, Vilgalys & Hopple: On soil under mixed forest, locality 19, 20.07.2015, Yuzun 4274.

Schizophyllaceae Qué. l.

143. *Schizophyllum commune* Fr.: On decaying *Fagus* sp. branches, locality 30, 13.11.2016, Yuzun 5476; locality 3, 11.11.2016, Yuzun 5450; locality 17, 24.03.2016, Yuzun 4906.

Strophariaceae Singer & A.H. Sm.

144. *Agrocybe praecox* (Pers.) Fayod: On soil among grass, locality 40, 12.04.2017, Yuzun 5531; locality 30, 27.03.2016, Yuzun 4989.

145. *Hypholoma fasciculare* (Huds.) P. Kumm.: On decaying *Corylus* sp. stump, locality 23, 07.11.2016, Yuzun 5402; locality 23, 25.03.2016, Yuzun 4952; On *Castanea* sp. stump, locality 3, 01.11.2015, Yuzun 4704; locality 18, 23.07.2015, Yuzun 4370.

146. *Kuehneromyces mutabilis* (Schaeff.) Singer & A.H. Sm.: On decaying *Picea* sp. stump, locality 13, 21.09.2015, Yuzun 4600.

147. *Pholiota populnea* (Pers.) Kuyper & Tjall.-Beuk.: On *Salix* sp. stump, locality 36, 08.11.2016, Yuzun 5421.

148. *Stropharia rugosoannulata* Farl. ex Murrill: On woody sawdust, locality 25, 20.06.2016, Yuzun 5158.

Amylocorticiales K.H. Larss., Manfr. Binder & Hibbett

Amylocorticaceae Jülich

149. *Plicaturopsis crispa* (Pers.) D.A. Reid: On decaying *Alnus* sp. stump, locality 9, 06.02.2015, Yuzun 3262.

Auriculariales J. Schröt.

Auriculariaceae Fr.

150. *Exidia glandulosa* (Bull.) Fr.: On decaying stump under mixed forest, locality 2, 10.04.2017, Yuzun 5509; on *Quercus* sp. stump, locality 4, 11.11.2016, Yuzun 5454.

Incertae Sedis

151. *Pseudohydnum gelatinosum* (Scop.) P. Karst.: On decaying stump under mixed forest, locality 23, 07.11.2016, Yuzun 5399.

Boletales E.-J. Gilbert

Boletaceae Chevall.

152. *Aureoboletus gentilis* (Qué. l.) Pouzar: On soil under mixed forest, locality 11, 28.10.2015, Yuzun 4624.

153. *Boletus edulis* Bull.: On soil under mixed forest, locality 6, 09.10.2014, Yuzun 1918.

154. *Boletus erythropus* Pers.: On soil among leaf litter, locality 35, 21.06.2015, Yuzun 4106.

155. *Leccinum pseudoscabrum* (Kallenb.) Šutara: On soil under *Corylus* sp., locality 33, 08.09.2014, Yuzun 1672.

156. *Octaviania asterosperma* Vittad.: In soil under mixed forest, locality 30, 13.11.2016, Yuzun 5479; locality 33, 01.11.2015, Yuzun 4717; locality 11, 28.10.2015, Yuzun 4628; locality 23, 28.10.2015, Yuzun 4639.

157. *Xerocomellus chrysenteron* (Bull.) Šutara: On soil among needle litter, locality 3, 01.11.2015, Yuzun 4707.

Diplocystidiaceae Kreisel

158. *Astraeus hygrometricus* (Pers.) Morgan: On soil under mixed forest, locality 2, 10.04.2017, Yuzun 5505; locality 4, 11.11.2016, Yuzun 5458; locality 30; 27.03.2016, Yuzun 4986; on soil under *Corylus* sp., locality 26, 07.11.2016, Yuzun 5379.

Paxillaceae Lotsy

159. *Alpova diplophloeus* (Zeller & C.W. Dodge) Trappe & A.H. Sm.: (Yakar et al., 2019).

160. *Gyrodon lividus* (Bull.) Sacc.: On soil under *Corylus* sp., locality 13, 21.09.2015, Yuzun 4595.

161. *Melanogaster ambiguus* (Vittad.) Tul. & C. Tul.: In soil under mixed forest, locality 20, 19.05.2016, Yuzun 5100.

162. *Melanogaster broomeanus* Berk.: In soil under *Corylus* sp., locality 28, 22.06.2017, Yuzun 5628; locality 25, 20.06.2016, Yuzun 5162.

163. *Melanogaster variegatus* (Vittad.) Tul. & C. Tul.: In soil under mixed forest, locality 37, 20.06.2017, Yuzun 5566.

164. *Paxillus involutus* (Batsch) Fr.: On soil among leaf litter, locality 8, 07.09.2014, Yuzun 1598.

Rhizopogonaceae Gäum. & C.W. Dodge

165. *Rhizopogon obtextus* (Spreng.) R. Rauschert: In soil among leaf litter under mixed forest, locality 34, 17.05.2016, Yuzun 5091.

Sclerodermataceae Corda

166. *Scleroderma areolatum* Ehrenb.: In soil under *Corylus* sp., locality 26, 07.11.2016, Yuzun 5380.

167. *Scleroderma citrinum* Pers.: On soil among leaf litter, locality 10, 22.09.2015, Yuzun 4607.
Sclerogastraceae Locq.
168. *Sclerogaster candidus* (Tul. & C. Tul.) Zeller & C.W. Dodge: In soil under mixed forest, locality 28, 22.06.2017, Yuzun 5625.
Suillaceae Besl & Bresinsky
169. *Suillus lakei* (Murrill) A.H. Sm. & Thiers: On soil under *Pseudotsuga* Carrière sp., locality 26, 07.11.2016, Yuzun 5376.
Tapinellaceae Locq.
170. *Tapinella atrotomentosa* (Batsch) Šutara: On *Quercus* sp. stump, locality 28, 22.06.2017, Yuzun 5629; on *Rhododendron* sp. stump, locality 25, 17.09.2015, Yuzun 4548.
Cantharellales Gäum.
Cantharellaceae J. Schröt.
171. *Cantharellus cibarius* Fr.: On soil under mixed forest, locality 31, 22.06.2017, Yuzun 5615; on soil among grass, locality 1, 07.09.2014, Yuzun 1659.
Hydnaceae Chevall.
172. *Clavulina cinerea* (Bull.) J. Schröt.: On soil among needle-litter, locality 22, 21.07.2015, Yuzun 4313.
173. *Clavulina rugosa* (Bull.) J. Schröt.: On soil among needle-litter, locality 22, 21.07.2015, Yuzun 4319.
174. *Craterellus cornucopioides* (L.) Pers.: On soil under mixed forest, locality 31, 07.11.2016, Yuzun 5387.
175. *Craterellus lutescens* (Fr.) Fr.: On soil under mixed forest, locality 1, 07.09.2014, Yuzun 1660.
176. *Hydnum repandum* L.: On soil under mixed forest, locality 3, 01.11.2015, Yuzun 4705.
177. *Pseudocraterellus undulatus* (Pers.) Rauschert: On soil under mixed forest, locality 7, 07.09.2014, Yuzun 1590.
Geastrales K. Hosaka & Castellano
Geastraceae Corda
178. *Geastrum minimum* Schwein.: On soil among needle litter, locality 38, 10.11.2016, Yuzun 5441.
179. *Geastrum saccatum* Fr.: On soil under *Picea* sp., locality 38, 26.08.2015, Yuzun 4454.
Gomphales Jülich
Clavariadelphaceae Corner
180. *Clavariadelphus truncatus* Donk: On soil under *Picea* sp., locality 23, 09.10.2014, Yuzun 1969.
Gomphaceae Donk
181. *Gautieria graveolens* Vittad.: In soil under mixed forest, locality 8, 11.04.2017, Yuzun 5517.
Hymenochaetales Oberw.
Hymenochaetaceae Imazeki & Toki
182. *Hymenochaete rubiginosa* (Dicks.) Lév.: On *Castanea* sp. stump, locality 38, 10.11.2016, Yuzun 5433.
Incertae sedis
183. *Trichaptum abietinum* (Dicks.) Ryvarden: On dead *Rhododendron* sp. stump, locality 7, 06.02.2015, Yuzun 3272.
Rickenellaceae Vizzini
184. *Rickenella fibula* (Bull.) Raitelh.: On mosses under *Corylus* sp., locality 13, 21.09.2015, Yuzun 4591.
Hysterangiales K. Hosaka & Castellano
Hysterangiaceae E. Fisch.
185. *Hysterangium clathroides* Vittad.: In soil under *Picea* sp., locality 18, 12.11.2016, Yuzun 5462.
186. *Hysterangium nephriticum* Berk.: In soil under mixed forest, locality 11, 28.10.2015, Yuzun 4629; in soil under *Fagus* sp., locality 25, 17.09.2015, Yuzun 4557.
Phallales E. Fisch.
Phallaceae Corda
187. *Clathrus ruber* P. Micheli ex Pers.: On soil among needle litter, locality 31, 07.11.2016, Yuzun 5391; on soil under *Corylus* sp, locality 25, 20.06.2016, Yuzun 5147; on soil in bean grow, locality 14, 22.05.2016, Yuzun 5129.
188. *Phallus impudicus* L.: On soil under mixed forest, locality 10, 22.09.2015, Yuzun 4606.
189. *Pseudocolus fusiformis* (E. Fisch.) Lloyd: On soil under *Corylus* sp., locality 37, 28.08.2015, Yuzun 4525.
Polyporales Gäum.
Fomitopsidaceae Jülich
190. *Daedalea quercina* (L.) Pers.: On *Castanea* sp. stump, locality 25, 20.06.2016, Yuzun 5148.
191. *Fomitopsis pinicola* (Sw.) P. Karst.: On *Picea* sp. stump, locality 32, 26.03.2016, Yuzun 4958.
Meripilaceae Jülich
192. *Meripilus giganteus* (Pers.) P. Karst.: On *Fagus* sp. stump, locality 33, 01.11.2015, Yuzun 4716.
Phanerochaetaceae Jülich
193. *Bjerkandera adusta* (Willd.) P. Karst.: On *Alnus* sp. stump, locality 8, 07.09.2014, Yuzun 1585.
194. *Terana coerulea* (Lam.) Kuntze: On *Castanea* sp. stump, locality 38, 10.11.2016, Yuzun 5435.
Polyporaceae Fr. ex Corda
195. *Cerioporus leptcephalus* (Jacq.) Zmitr.: On *Fagus* sp. stump, locality 37, 20.06.2017, Yuzun 5563.
196. *Polyporus arcularius* (Batsch) Fr.: On dead *Corylus* sp. twigs, locality 7, 06.02.2015, Yuzun 3277.
197. *Trametes gibbosa* (Pers.) Fr.: On decaying *Fagus* sp. stump, locality 36, 08.11.2016, Yuzun 5417.
198. *Trametes hirsuta* (Wulfen) Lloyd: On *Fagus* sp. stump, locality 2, 10.04.2017, Yuzun 5511; locality 28, 25.03.2016, Yuzun 4943; on *Corylus* sp. branch, locality 26, 07.11.2016, Yuzun 5370; locality 17, 24.03.2016, Yuzun 4902.
199. *Trametes versicolor* (L.) Lloyd: On *Quercus* sp. stump, locality 17, 24.03.2016, Yuzun 4905.
Russulales Kreisel ex P.M. Kirk, P.F. Cannon & J.C. David
Albatrellaceae Nuss
200. *Leucogaster nudus* (Hazsl.) Hollós: In soil and rotting plant residues under mixed forest, locality 10,

28.10.2015, Yuzun 4620.

Hericiaceae Donk

201. *Hericium erinaceus* (Bull.) Pers.: On *Quercus* sp. stump, locality 18, 12.11.2016, Yuzun 5466; locality 23, 28.10.2015, Yuzun 4637.

Russulaceae Lotsy

202. *Lactarius decipiens* Quél.: On soil under *Quercus* sp., locality 14, 22.05.2016, Yuzun 5125.

203. *Lactarius deliciosus* (L.) Gray: On soil under *Picea* sp., locality 1, 07.09.2014, Yuzun 1654.

204. *Lactarius piperatus* (L.) Pers.: On soil under mixed forest, locality 28, 22.06.2017, Yuzun 5623.

205. *Lactarius stephensii* (Berk.) Verbeken & Walley: In soil under mixed forest, locality 7, 11.04.2017, Yuzun 5519.

206. *Lactarius volemus* (Fr.) Fr.: On soil under mixed forest, locality 28, 22.06.2017, Yuzun 5627; locality 25, 20.06.2016, Yuzun 5150.

207. *Russula cyanoxantha* (Schaeff.) Fr.: On soil among grasses under *Corylus* sp., locality 25, 20.06.2016, Yuzun 5163.

Stereaceae Pilát

208. *Stereum hirsutum* (Willd.) Pers.: On decaying *Castanea* Mill. sp. stump, locality 4, 11.11.2016, Yuzun 5449; locality 17, 24.03.2016, Yuzun 4903.

209. *Stereum ochraceoflavum* (Schwein.) Sacc.: On decaying *Castanea* Mill. sp. stump, locality 8, 07.09.2014, Yuzun 1579.

Thelephorales Corner ex Oberw.

Bankeraceae Donk

210. *Hydnellum caeruleum* (Hornem.) P. Karst.: On soil under mixed forest, locality 25, 20.06.2016, Yuzun

5153.

211. *Sarcodon imbricatus* (L.) P. Karst.: On soil among needle litter, locality 23, 19.09.2015, Yuzun 4579.

Dacrymycetes Doweld

Dacrymycetales Henn.

Dacrymycetaceae J. Schröt.

212. *Calocera cornea* (Batsch) Fr.: On dead *Fagus* sp. branches, locality 29, 21.06.2017, Yuzun 5586.

213. *Dacrymyces capitatus* Schwein.: On dead *Fagus* sp. branches, locality 2, 10.04.2017, Yuzun 5510.

214. *Guepiniopsis buccina* (Pers.) L.L. Kenn.: On dead *Fagus* sp. branches, locality 29, 21.06.2017, Yuzun 5585; on *Corylus* sp. stump, locality 3, 01.11.2015, Yuzun 4700.

Tremellomycetes Doweld

Tremellales Fr.

Tremellaceae Fr.

215. *Tremella foliacea* Pers.: On dead *Corylus* sp. branch, locality 9, 06.02.2015, Yuzun 3273.

216. *Tremella mesenterica* Retz.: On dead *Erica* L. stem, locality 2, 06.02.2015, Yuzun 3241.

DISCUSSION

A list of 216 macrofungi species was presented from Tonya district. Seventy five of them (%34.72) belong to Ascomycota and 141 (%65.28) to Basidiomycota. The taxa are distributed in 8 classes. The class-wise distribution of the determined taxa is presented in Figure 2.

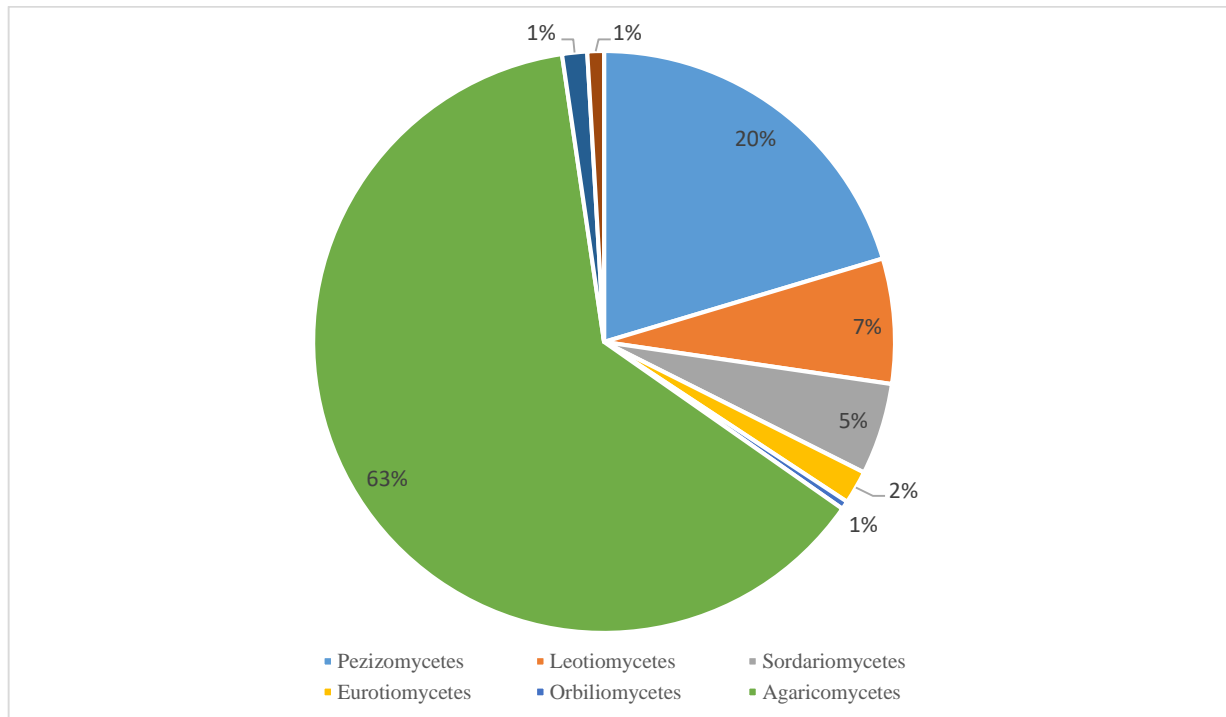


Figure 2. Class-wise distribution of the determined taxa

Şekil 2. Tespit edilen taksonların sınıf bazında dağılımı

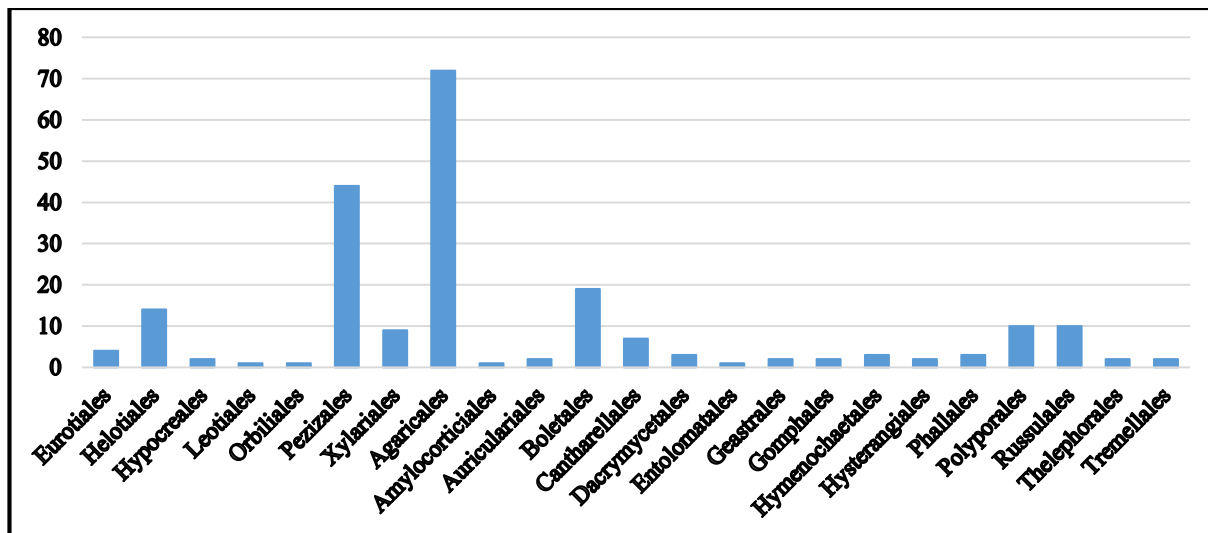


Figure 3. Order-wise distribution of the determined taxa
Şekil 3. Tespit edilen taksonların takım bazında dağılımı

Considering the determined taxa, 23 orders were found to be represented in the region, and the order-wise distribution of the taxa is given in Figure 3. Except for previously presented new records (*Elaphomyces citrinus*, *E. granulatus*, *Helvella phlebophora*, *Hydnobolites cerebriformis*, *Lactarius stephensii*, *Lamprospora campylopodis*, *Marasmiellus vaillantii*, *Marasmius curreyi*, *Octospora tuberculatella*, *Pachyella clypeata*, *Pachyphlodes citrina*, *Plicaria carbonaria*, *Pulvinula alba*, *P. convexella*, *Sclerogaster candidus*, *Terfezia cistophila*) and new locality records (*Alpova diplophloeus*, *Hymenogaster luteus*, *Leucogaster nudus*, *Tuber puberulum*) all the taxa are new for the region.

The macromycete taxa determined in Tonya district are distributed in 73 families and 150 genera. The most crowded 5 families are Pyronemataceae, Pezizaceae, Helvellaceae, Xylariaceae, and Lycoperdaceae with 17, 11, 9, 8 and 7 taxa respectively. Likewise *Helvella*, *Amanita*, *Lactarius*, *Lycoperdon*, *Mycena*, *Peziza* and *Elaphomyces* were found to be the most crowded genera in the region with 8, 6, 5, 5, 5, 5, and 4 taxa respectively.

According to the current literature, 52 of the determined taxa are edible. Eight of them are collected, with different names, and consumed by

locals. Locally consumed taxa and their local names are as follows: *Cantharellus cibarius* (yumurta mantarı, tavuk tirmiti, sarı mantar), *Craterellus cornucopioides* (huni mantarı, borazan mantarı), *Fistulina hepatica* (karaciğer mantarı, biftek mantarı), *Hydnum repandum* (sığır dili), *Lactarius volemus* (sütlü mantar), *Lepista nuda* (mor mantar), *Macrolepiota procera* (turna bacağı, kartal kanadı) and *Pleurotus ostreatus* (kavak mantarı). Among them *C. cibarius*, *C. cornucopioides*, *L. volemus* and *M. procera* also have regional economic importance. They are collected and sold in public bazaars. Fifteen of the determined taxa are more or less poisonous while 149 are regarded as inedible.

One hundred and twenty one of the determined taxa are terricolous, 72 are lignicolous, 8 are bryophilous, 4 are coprophilous, 4 are herbicolous and 4 are pyrophilous. Twenty five of them were also determined to be hypogeous or semi-hypogeous.

The determined taxa were also compared with the studies carried out in close environs and some similarities were observed. These studies and the similarity percentages are given in Table 2. The reason for this similarity may be the common climate and vegetation.

Table 2. Similarity percentages of neighbouring studies with Tonya district
Çizelge 2. Tonya bölgesi ile komşu çalışmaların benzerlik yüzdeleri

	# of Identical taxa	Total taxa	Similarity (%)
Pekşen and Karaca (2003)	56	169	33,14
Demirel et al. (2010)	31	126	24,60
Keleş and Demirel (2010)	33	191	17,28
Akata et al. (2014)	104	236	44,07
Keleş et al. (2014)	35	127	27,56
Akata et al. (2016)	84	166	50,60
Akata and Uzun (2017)	95	205	46,34
Demirel et al. (2017)	39	172	22,67

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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.

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