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Macrofungi of Yenice (Karabük) District and New Records for Turkey

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ABSTRACT
215 taxa have been identified from different localities of Yenice (Karabük) District between 2012-2014 years.As a result of the field and laboratory studies, 32 taxa belonging to 21 genera, 14 families from *Ascomycota*, 183 taxa belonging to 107 genera, 44 families, from *Basidiomycota* were determined.According to the present literature on the macrofungi, two taxa are new records for the Turkish macrofungi. These are *Hygrocybe substrangulata* (P.D. Orton) P.D. Orton & Watling and *Hygrophorus atramentosus* (Alb. & Schwein.) H. Haas & R. Haller Aar. ex Bon.

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Yenice (Karabük) İlçesinin Makrofungusları ve Türkiye için Yeni Kayıtlar

ÖZET
Karabük İli Yenice İlçesi ve çevresindeki farklı lokalitelerden 2012-2014 yılları arasında 215 takson teşhis edilmiştir. Arazi ve laboratuar çalışmaları sonucunda; *Ascomycota* bölümünden 14 familya, 21 cinse ait 32 takson, *Basidiomycota* bölümünden 44 familya, 107 cinse ait 183 takson tespit edilmiştir. Makromantarlarla ilgili mevcut literatüre göre, iki takson *Hygrocybe substrangulata* (P.D. Orton) P.D. Orton & Watling ve *Hygrophorus atramentosus* (Alb. & Schwein.) H. Haas & R. Haller Aar. ex Bon türleri Türkiye için yeni kayıt olarak belirlenmiştir.

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INTRODUCTION
Fungi have a wide distribution area, just like plants and animals. Therefore, mushrooms have been a curiosity for humans since prehistoric times. Organisms known as fungi are eukaryotic, chlorophyll-free, generally filamentous, and spore forming organisms, usually having structures with complex carbohydrates and chitin or cellulose or both (Kaşık, 2010).

Since the existence of human beings, mushrooms have been consumed by societies as food. In addition, it is the fact that in Turkey, which is very rich in terms of natural mushroom species, our people do not know mushrooms enough. While some mushrooms are known as edible in one or a few regions of Turkey, they are recognized or known as poisonous in another region. Turkey is particularly rich in mushroom diversity due to its favourable ecological conditions. If the forests in the Mediterranean, Aegean, Marmara and the Black Sea regions are visited in autumn, it will be noticed that these forests are very rich in terms of both mushroom species and the amount grown.

The number of flowering plant species in Turkey is almost equal to the number of flowering plant species in almost all of Europe. This clearly shows that the flowering plant flora of Turkey has quite a number of species. This abundance of species also allows other living things to develop in large numbers in this geography. For this reason, besides the climatic conditions, this rich flowering plant flora of Turkey has an important share in the interpretation of the richness in terms of mushroom diversity(Mat, 1998).

Mushrooms; can be seen in all seasons. So, they grow under suitable humidity and temperature, under coniferous and broad-leaved forests, in meadows rich in organic matter and on decaying branches, stumps, or live tree trunks.

Many studies on the macrofungi of Turkey are continuing rapidly. In this way, the macrofungal biodiversity and species distribution in Turkey will be determined, while at the same time, it will contribute to the recognition of these mushrooms by the local people and the knowledge of poisonous ones.

With this study, it is aimed to contribute to the macrofungi of Turkey by determining the macrofungi grown in the Yenice district of Karabük and their distribution areas. New records were also added to the list of Turkey Macrofungi.

In terms of these systematic studies, there are projects made in different regions of Turkey. The earliest known first study published on macrofungi in Turkey was made by Rigler (1852) with an article named "Die Türkei und deren Bewohner". In Turkey, a lot of studies have been done on macrofungi in recent years and a checklist regarding the studies has been published (Sesli et al. 2020). However, numerous publications have also been made after the checklists; Akata et al. (2014), Güngör et al. (2014), Sesli and Kobayashi, (2014), Solak et al. (2014a), Solak et al. (2014b), Şen et al. (2014), Türkoğlu and Castellano, (2014), Acar et al. (2015), Çolak et al. (2015), Demirel et al. (2015), Doğan and Akata, (2015), Güngör et al. (2015a), Güngör et al. (2015b), Türkoğlu et al. (2015), Sesli et al. (2015), Uzun et al. (2015), Karacan et al. (2015), Kaya, (2015), Kaya and Uzun, (2015), Kaya et al. (2015), Akata et al. (2016), Akçay and Uzun, (2016), Demirel and Koçak, (2016), Demirel et al. (2016), Doğan and Kurt, (2016), Güngör et al. (2016), Kaya et al. (2016), Öztürk et al. (2016), Sesli and Sesli, (2016a), Sesli and Sesli, (2016b), Sesli et al., (2016), Uzun et al., (2016), Demirel et al., (2017), Kaşık et al., (2017), Keleş et al., (2017), Sesli and Vizzini, (2017), Uzun et al. (2017), Akata et al. (2018), Işık and Türkekul, (2018), Kaya and Uzun, (2018), Uzun et al. (2018), Akçay, (2019).

An important part of Yenice's surface area, which has a total area of 1150 km², is covered with fertile forests. Since the land structure has the characteristics of the Western Black Sea Region, it has almost no flat and plain land. The sloping and rugged land structure is not suitable for agriculture (Fig. 1).

Yenice Forests, one of Turkey's most pristine and uninterrupted forest, trees in the monumental, natural old forests, deep valleys, river ecosystems and the diversity of wildlife hosts one of the best-preserved private mountainous areas of Turkey. Therefore, Yenice Forests are determined as one of the 9 hot spots in Turkey. With this study, it is aimed to determine the macrofungi list of Yenice District of Karabük Province, which is one of the richest places in Turkey in terms of forest. In addition, it is aimed to identify the fungi that have not been detected in the macrofungi list of Turkey before, and to add them to this list.

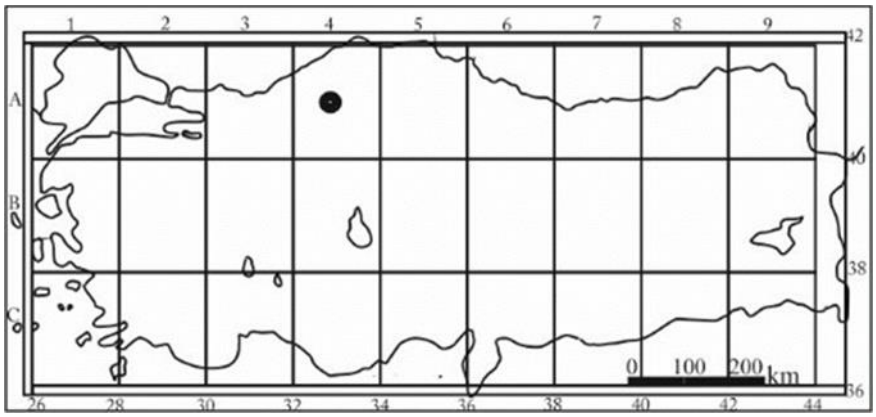

Figure 1. The location of the research area in Turkey.
Şekil 1. Araştırma alanının Türkiye'deki konumu

MATERIAL and METHOD

The study material consists of fungal samples collected between 2012-2014. In the preliminary study of the research, the geographical structure of the research area, rivers, lakes and plant diversity and suitable environments for fungi were determined.

In this study we conducted on the macrofungi of Karabük Yenice District, a total of 37 localities were determined in the forest areas within the borders of the district and in other areas where mushrooms grow (Table 1). Locations determined by the Magellan explorisit XL GPS device are given on the google earth map, respectively (Fig. 2).

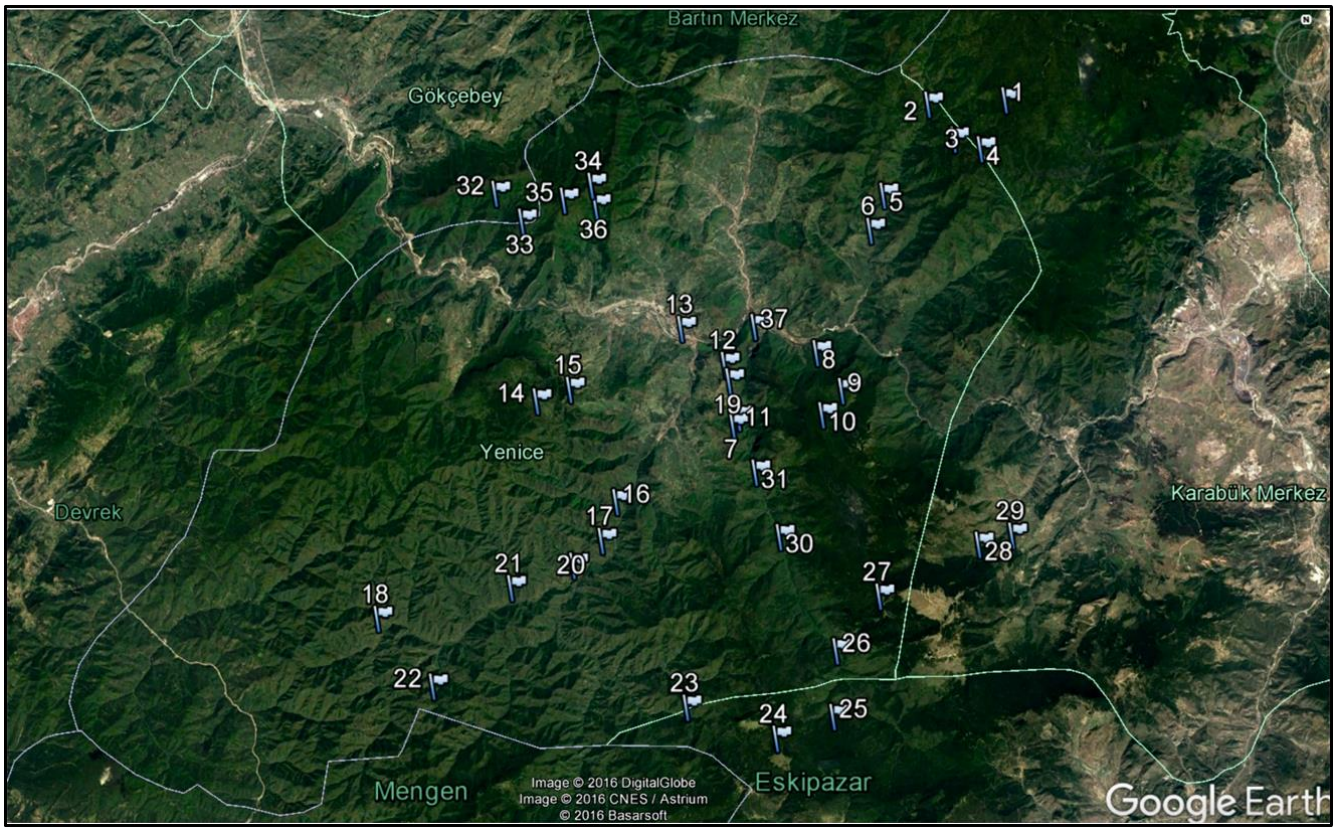

Figure 2. Localities in the study
Şekil 2. Çalışma lokaliteleri

Attention was paid to the fact that the fungi detected in the field studies show all stages of their development and the growing environment during the photoshoots. Later, the sample number was given and its ecological and morphological characteristics were recorded in the field book. Each sample collected was individually placed in an aluminum foil and brought to the laboratory. Species were identified by the obtained data obtained from mushroom samples with the help of available literature (Watling, 1973; Watling and Gregory, 1977; Dennis, 1981; Phillips, 1981; Watling, 1982; Breitenbach and Kranzlin, 1983; Moser, 1983; Grünert and Grünert, 1984; Breitenbach and Kranzlin, 1986; Hennig and Kreisel, 1987; Dahncke, 1988, Svreck, 1988; Trudell and Ammirati, 1989; Watling and Gregory, 1989; Webster, 1989; Bresinsky and Besl, 1990; Ellis and Ellis, 1990; Breitenbach and Kranzlin, 1991; Dahncke, 1993; Pacioni, 1993; Breitenbach and Kranzlin, 1995; Jordan, 1996; Smith and Smith, 1996; Winkler, 1996; Pace, 1998; Riva, 2003; Jordan, 2004; Kranzlin, 2005; Medardi, 2006; Cannon and Kirk, 2007; Trudell and Ammirati, 2009).

Fungarium samples identified within the vicinity of Yenice district of Karabük province are stored in the Fungarium of the Mushroom Application and Research Center of Selçuk University.

RESULTS and DISCUSSION

Macrofungi species determined as a result of field and laboratory studies belonged to *Ascomycota* and *Basidiomycota* divisions. The systematic sequence of the species was prepared according to Index Fungorum (URL1: see www.indexfungorum.org) [date of visit: 13.07.2021].

The numbers of mushrooms collected from each locality are given in Table 1.

The ecological properties of all the samples other then the new records are in agreement with Sesli et al., (2020). In the list, Turkish name(T.N.) of each taxon was also given in paranthesis, after the author(s) name.

Table 1 Information of stations determined in the study area A: Ascomycota, B: Basidiomycota
Çizelge 1. Araştırma alanında belirlenen istasyon bilgileri: A: Ascomycota, B: Basidiomycota

Locality	GPS	Height	Division	The numbers of the mushroom detected
1. Yalak Yanı	41°17'23N 32°30'46E	1470m	A	
			B	146
2. Büyük Düz	41°17'21N 32°28'11E	933m	A	14, 18, 19
			B	52, 55, 78, 84, 96, 168, 174, 195, 207
3. Tütünlük	41°16'27N 32°29'00E	1236m	A	13, 14, 14, 30
			B	43, 64, 71, 75, 82, 90, 96, 156, 162, 174, 195, 204
4. Kara Kaya	41°16'10N 32°29'52E	1369m	A	16, 14, 30
			B	41, 49, 58, 72, 124, 138, 138, 146, 146, 150, 151, 155, 171, 174, 176, 179, 198, 200, 201, 206,
5. Kızıl Kaya	41°15'06N 32°26'32E	399m	A	28, 30
			B	42, 48, 52, 55, 57, 58, 68, 72, 72, 73, 77, 82, 86, 96, 100, 105, 125, 125, 126, 146, 172, 179, 198, 198, 198, 201, 206, 207, 209
6. Gökbel	41°14'14N 32°26'03E	308m	A	14
			B	85, 87, 93, 96, , 127, 138, 139, 140, 140, 163, 167, 173, 174, 178, 197, 198, 207, 207, 211
7. Şen Köy Taşlıoğlu Mahallesi	41°14'47N 32°23'38E	698m	A	2, 9,
			B	34, 35, 42, 47, 48, 54, 65, 92, 96, 99, 108, 109, 112, 122, 134, 148, 184, 192, 201, 212, 213
8. Arberatum	41°11'12K 32°24'04E	529m	A	9, 30,
			B	44, 55, 83, 84, 125, 133, 141, 162, 172, 174, 174, 195, 198, 198, 198, 207
9. Kuz Dağı	41°10'14N 32°24'51E	1071m	A	5
			B	38, 56, 82
10. Anıt Porsuk	41°09'38N 32°24'10E	1201m	A	
			B	52, 172, 198, 201
11. Seyir Tepesi	41°09'40N 32°21'22E	470m	A	1, 6, 25, 27, 32
			B	39, 41, 45, 46, 50, 52, 55, 56, 63, 65, 74, 79, 84, 84, 88, 89, 90, 91, 94, 98, 119, 122, 123, 136, 138, 141, 142, 143, 145, 146, 147, 151, 152, 154, 158, 160, 160, 162, 164, 168, 168, 169, 172, 174, 174, 180, 184, 186, 194, 195, 195, 195, 197, 198, 200, 201, 201, 201, 201, 207, 209, 214
12. İnce Bacaklar Üstü	41°11'00N 32°20'59E	549m	A	
			B	76, 180, 196
13. Yenice Forest Management Directorate	41°11'57N 32°19'35E	182m	A	
			B	33, 199
14. Göktepe Piknik Alanı	41°10'17N 32°14'39E	946m	A	
			B	82, 197, 207
15. Göktepe Yaylası	41°10'32N 32°15'47E	812m	A	1
			B	197, 207
16. Fındık Altı	41°07'40N 32°17'11E	334m	A	2, 5, 6, 6, 7, 9, 11, 13, 19, 23, 28, 29, 30, 32
			B	42, 47, 52, 52, 53, 55, 58, 66, 66, 67, 72, 83, 84, 92, 111, 118, 121, 122, 137, 137, 138, 140, 147, 148, 148, 149, 149, 151, 151, 163, 169, 172, 174, 179, 195, 196, 197, 197, 198, 206, 207, 207, 207
17. Mollu Ömer	41°06'43N 32°16'38E	375m	A	7, 7, 19,
			B	41, 47, 48, 72, 83, 84, 88, 92, 95, 111, 113, 116, 118, 121, 124, 127, 144, 148, 149, 160, 169, 169, 189, 192, 197, 205, 206, 207,
18. Gelen Dere	41°04'59N 32°09'05E	634m	A	3
			B	42
19. İncebacaklar Köyü	41°10'58N 32°20'57E	562m	A	4
			B	101, 129, 130, 131, 208, 104, 115

20. Doksan Deposu	41°06'07N 32°15'39E	442m	A	6, 8, 12, 14, 21, 22, 23, 30
			B	38, 83, 96, 109, 116, 132, 168, 173, 174, 174, 195, 203
21. Akçam Makası	41°05'37N 32°13'34E	481m	A	
			B	42, 47, 83, 93, 95, 106, 163, 174, 174, 179, 195, 206, 207
22. Han Deresi	41°03'14N 32°10'50E	695m	A	
			B	61, 81, 84, 125, 148, 149, 151, 163, 164, 172, 174, 174, 198, 201, 207, 207
23. Kuru Çeşme	41°02'27N 32°19'14E	946m	A	32
			B	111, 162
24. Eğri Ova Göleti	41°01'35N 32°22'11E	1450m	A	
			B	82, 82, 102, 124, 162
25. Somunlu	41°02'04N 32°24'06E	1247m	A	
			B	88
26. Şeker Meşe	41°03'43N 32°24'18E	804m	A	14, 14,
			B	137, 157, 162, 168, 1168, 172, 173, 198
27. Gölet	41°05'02N 32°25'48E	1348m	A	30
			B	
28. Belen Yaylası	41°06'13N 32°29'11E	1093m	A	3
			B	40, 58, 82, 178
29. Sipahiler Köyü	41°06'25N 32°30'19E	979m	A	16, 30
			B	96, 140, 215
30. Darı Yazısı	41°06'37N 32°22'34E	532m	A	
			B	46, 111, 164, 196
31. Kanyon Girişi	41°08'16N 32°21'51E	456m	A	10, 12, 14, 18, 19, 19, 24, 26, 30, 31
			B	37, 47, 51, 55, 55, 62, 68, 69, 70, 74, 97, 103, 118, 120, 128, 139, 153, 156, 161, 163, 165, 166, 172, 172, 174, 174, 175, 177, 190, 191, 192, 193, 195, 195, 198, 202, 207
32. Bataklık	41°15'33N 32°13'33E	466m	A	13,
			B	36, 39, 121, 122, 148, 165, 170, 181, 187, 188, 178, 195, 196, 200
33. Kaya Arkası	41°14'49N 32°14'24E	430m	A	
			B	162, 195
34. Yolun Sonu	41°15'39N 32°16'46E	875m	A	
			B	196
35. Boletus Yeri	41°15'18N 32°15'50E	915m	A	
			B	60, 162
36. Yağ Basan	41°15'08N 32°16'54E	626m	A	7, 15
			B	36, 43, 52, 103, 116, 117, 156, 162, 164, 173, 196, 201, 207
37. Kanyon Tesisleri	41°11'53N 32°21'59E	165m	A	17, 20
			B	80, 102, 114, 159

ASCOMYCOTA (T.N.: Keseli mantarlar)

DIATRYPACEAE (T.N.: Kabukyarasıgiller)

1. *Diatrype disciformis* (Hoffm.) Fr. (T.N.: Gürgenyarası)

DISCINACEAE (T.N.: Dibiburuşukgiller)

2. *Gyromitra esculenta* (Pers.) Fr. (T.N.: Kuzugöbeğiebesi)

3. *Gyromitra infula* (Schaeff.) Quél. (T.N.: Taraklıgöbekebesi)

GELATINODISCACEAE

4. *Ascocoryne cylichnium* (Tul.) Korf (T.N.: Mordamak)

HELOTIACEAE (T.N.: Mıhmantarıgiller)

5. *Hymenoscyphus calyculus* (Fr.) W. Phillips (T.N.: Sarımıh)

HELVELLACEAE (T.N.: Semermantarıgiller)

6. *Dissingia leucomelaena* (Pers.) K. Hansen & XH Wang (T.N.: Çukur semermantarı)

7. *Helvella acetabulum* (L.) Quél. (T.N.: Kuzukulağımantarı)

8. *Helvella crispa* (Scop.) Fr. (T.N.: Delikli semermantarı)

9. *Helvella elastica* Bull. (T.N.: Esnek semermantarı)

10. *Helvella lacunosa* Afzel. (T.N.: Bet semermantarı)

11. *Helvella latispora* Boud (T.N.: Kertik semermantarı)

12. *Helvella pezizoides* Afzel. (T.N.: Çanak semermantarı)

HYPOXYLACEAE

13. *Jackrogersella multiformis* (Fr.) L. Wendt, Kuhnert & M. Stadler (T.N.: Çok dalbeni)

14. *Hypoxylon fragiforme* (Pers.) J. Kickx f. (T.N.: Pasdamla)

15. *Hypoxylon fuscum* (Pers.) Fr. (T.N.: Pütürdamla)

LACHNACEAE (T.N.: Akçanakgiller)

16. *Lachnellula subtilissima* (Cooke) Dennis (T.N.: Kıllıtas)

17. *Lachnum virgineum* (Batsch) P. Karst. (T.N.: Akçanak)

18. *Neodasyscypha cerina* (Pers.) Spooner (T.N.: Kayınkadehi)

MOLLISIACEAE

19. *Mollisia cinerea* (Batsch) P. Karst. (T.N.: Boztepsi)

20. *Tapesia fusca* (Pers.) Fuckel (T.N.: Alakulp)

MORCHELLACEAE (T.N.: Kuzugöbeğigiller)

21. *Morchella semilibera* DC., Lamarck & de Candolle (T.N.: Hacıtakkesi)

22. *Morchella elata* Fr. (T.N.: Siyah göbek)

23. *Morchella esculenta* (L.) Pers. (T.N.: Kuzugöbeği)

PEZIZELLACEAE

24. *Calycina citrina* (Hedw.) Gray (T.N.: Sarıdamla)

PYRONEMATACEAE (T.N.: Külörtengiller)

25. *Humaria hemisphaerica* (F.H. Wigg.) Fuckel (T.N.: Sarı tüylüfincan)

26. *Otidea alutacea* (Pers.) Massee (T.N.: Yerkulağı)

27. *Scutellinia scutellata* (L.) Lambotte (T.N.: Dikenlitabak)

SARCOSCYPHACEAE (T.N.: Alçanakgiller)

28. *Sarcoscypha coccinea* (Gray) Boud. (T.N.: Alçanak)

TARZETTACEAE

29. *Tarzetta catinus* (Holmsk.) Korf & J.K. Rogers (T.N.: Ak dişlitas)

XYLARIACEAE (T.N.: Ölüparmağıgiller)

30. *Xylaria hypoxylon* (L.) Grev. (T.N.: Güdük ölüparmak)

31. *Xylaria longipes* Nitschke (T.N.: Uzun ölüparmak

32. *Xylaria polymorpha* (Pers.) Grev. (T.N.: Çok ölüparmak)

BASIDIOMYCOTA (T.N.: Topuzlu mantarlar)

AGARICACEAE (T.N.: İçikızılgiller)

33. *Agaricus bisporus* (J.E. Lange) Imbach (T.N.: Kültürmantarı)

34. *Agaricus macrocarpus* F.H. Møller (T.N.: Çayır mantarı)

35. *Agaricus xanthodermus* Genev. (T.N.: Ağulu kızıl)

36. *Coprinus comatus* (O.F. Müll.) Pers. (T.N.: Söbelen)

37. *Lepiota wasseri* Bon (T.N.: Yarık pullu)

38. *Macrolepiota fuliginosa* (Barla) Bon (T.N.: Dedebörtü)

39. *Macrolepiota mastoidea* (Fr.) Singer (T.N.: Turnabacağı)

40. *Macrolepiota procera* (Scop.) Singer (T.N.: Kartalayağı)

AMANITACEAE (T.N.: Keselimantargiller)

41. *Amanita citrina* Pers. (T.N.: Patateskesesi)

42. *Amanita muscaria* (L.) Lam. (T.N.: Gelin mantarı)

43. *Amanita pantherina* (DC.) Krombh. (T.N.: Panter mantarı)

ATHELIACEAE (T.N.: Havlımantargiller)

44. *Byssocorticium pulchrum* (S. Lundell) M.P. Christ. (T.N.: Has göktozu)

AURICULARIACEAE (T.N.: Kulakmantarıgiller)

45. *Auricularia auricula-judae* (Bull.) Quel. (T.N.: Kulakmantarı)

46. *Auricularia mesenterica* (Dicks.) Pers. (T.N.: Boz kulakmantarı)

47. *Exidia glandulosa* (Bull.) Fr. (T.N.: Kıvrık karabeyin)

48. *Exidia recisa* (Ditmar) Fr. (T.N.: Şeker karabeyin)

BOLETACEAE (T.N.: Boletgiller)

49. *Boletus edulis* Bull. (T.N.: Çörek mantarı)

50. *Boletus reticulatus* Schaeff. (T.N.: Ayı mantarı)

51. *Butyriboletus regius* (Krombh.) Arora & J.L. Frank (T.N.: Süslübolet)

52. *Leccinellum pseudoscabrum* (Kallenb.) Mikšík (T.N.: Gürgenmantarı)

53. *Leccinum scabrum* (Bull.) Gray (T.N.: Pullu örgübacak)

54. *Neoboletus erythropus* (Pers.) C. Hahn (T.N.: Kuzumantarı)

55. *Rubroboletus satanas* f. *satanas* (Lenz) Kuan Zhao & Zhu L. Yang (T.N.: Şeytanbolet)

56. *Xerocomellus chrysenteron* (Bull.) Šutara (T.N.: Pöslen)

CLAVARIACEAE (T.N.: Çomakmantarıgiller)

57. *Clavaria acuta* Sowerby (T.N.: Sivriçomak)

58. *Ramariopsis subtilis* (Pers.) R.H. Petersen (T.N.: Cadısaçağı)

CLAVARIADELPHACEAE (T.N.: Topuzmantarıgiller)

59. *Clavariadelphus truncatus* Donk (T.N.: Topuzmantarı)

CREPIDOTACEAE

60. *Crepidotus cesatii* (Rabenh.) Sacc. (T.N.: Oymalı ayaksız)

61. *Crepidotus mollis* (Schaeff.) Staude (T.N.: Acur ayaksız)

DACRYMYCETACEAE (T.N.: Altınpeltegiller)

62. *Calocera cornea* (Batsch) Fr. (T.N.: Sarıboynuz)

63. *Calocera viscosa* (Pers.) Fr. (T.N.: Yaş sarıboynuz)

64. *Dacrymyces stillatus* Nees (T.N.: Süslü altınpelte)

65. *Dacrymyces variisporus* McNabb (T.N.: Alaca altınpelte)

DIPLOCYSTIDIACEAE (T.N.: Dişliyıldızgiller)

66. *Astraeus hygrometricus* (Pers.) Morgan (T.N.: Dişliyıldız)

ENTOLOMATACEAE (T.N.: Kıvrıkbaşgiller)

67. *Clitopilus prunulus* (Scop.) P. Kumm. (T.N.: Armut unmantarı)

FOMITOPSIDACEAE (T.N.: Kızılağlayangiller)

68. *Daedalea quercina* (L.) Pers. (T.N.: Kenetlabirent)

69. *Fomitopsis pinicola* (Sw.) P. Karst. (T.N.: Çam kızılağlayanı)

70. *Rhodofomes roseus* (Alb. & Schwein.) Vlasák (T.N.: Göknarkavı)

GEASTRACEAE (T.N.: Yeryıldızıgiller)

71. *Geastrum pectinatum* Pers. (T.N.: Alımlı yeryıldızı)

72. *Geastrum rufescens* Pers. (T.N.: Kızıl yeryıldızı)

GLOEOPHYLLACEAE (T.N.: Kütüktereğigiller)

73. *Gloeophyllum abietinum* (Bull.) P. Karst. (T.N.: Göknartereği)

GOMPHACEAE (T.N.: Mortopaçgiller)

74. *Ramaria aurea* (Schaeff.) Quél. (T.N.: Gelintellicesi)

75. *Ramaria flava* (Schaeff.) Quél. (T.N.: Tellice)

76. *Ramaria lutea* Schild (T.N.: Sarıtellice)

GOMPHIDIACEAE (T.N.: Gabaramantarıgiller)

77. *Chroogomphus rutilus* (Schaeff.) O.K. Mill. (T.N.: Geyikmantarı)

HERICIACEAE (T.N.: Dedesakalımantarıgiller)

78. *Hericium coralloides* (Scop.) Pers. (T.N.: Dedesakalı mantarı)

79. *Hericium erinaceus* (Bull.) Pers. (T.N.: Tülübüzük)

HYDNACEAE (T.N.: Sığırdilimantarıgiller)

80. *Cantharellus cibarius* Fr. (T.N.: Sarıkızmantarı)

81. *Cantharellus cinereus* (Pers.) Fr. (T.N.: Gümüşkızmantarı)

82. *Cantharellus friesii* Quél. (T.N.: Cücekızmantarı)

83. *Clavulina cinerea* (Bull.) J. Schröt. (T.N.: Gümüş tepelimercan)

84. *Clavulina rugosa* (Bull.) J. Schröt. (T.N.: Kaba tepelimercan)

85. *Craterellus cornucopioides* (L.) Pers. (T.N.: Borazanmantarı)

86. *Craterellus tubaeformis* (Fr.) Quél. (T.N.: Civcivayağı)

87. *Hydnum repandum* L. (T.N.: Sığırdilimantarı)

HYDNANGIACEAE (T.N.: Düzenbazgiller)

88. *Laccaria laccata* (Scop) Cooke (T.N.: Düzenbaz)

HYGROPHORACEAE (T.N.: Gaypaşukgiller)

89. *Arrhenia oniscus* (Fr.) Redhead, Lutzoni Moncalvo & Vilgalys (T.N.: Çukur yosunmantarı)

90. *Hygrocybe conica* (Schaeff.) P. Kumm. (T.N.: Alaca mummantarı)

91. *Hygrocybe substrangulata* (P.D. Orton) P.D. Orton & Watling (T.N.: Altboğumlu mummantarı)

It is new record for Turkey (Figure 3). Detailed information on the taxon is available in Candusso, (1997).

Seyir tepesi, 41°09'40N, 32°21'22E, 470m, 24.11.2013.

Figure 3. *Hygrocybe substrangulata* basidiocarps
Şekil 3. Hygrocybe substrangulata bazidiyokarpları

92. *Hygrophorus atramentosus* (Alb. & Schwein.) H. Haas & R. Haller Aar. ex Bon (T.N.: Mürekkep gaypaşuk)

It is new record for Turkey (Figure 4). Detailed information on the taxon is available in Ludwig, (2012).

Şen köy, Taşlıoğlu Mah., 41°14'47N, 32°23'38E, 698m, 08.11.2014.

93. *Hygrophorus chrysodon* (Batsch) Fr. (T.N.: Sarı gaypaşuk)

94. *Hygrophorus eburneus* (Bull.) Fr. (T.N.: Ak gaypaşuk)

95. *Hygrophorus marzuolus* (Fr.) Bres. (T.N.: Yanık gaypaşuk)

Figure 4. *Hygrophorus atramentosus* basidiocarps
Şekil 4. Hygrophorus atramentosus bazidiyokarpları

HYMENOCHAETACEAE (T.N.: Daltarçınıgiller)

96. *Fomitiporia robusta* (P. Karst.) Fiasson & Niemelä (T.N.: Kalın terekmantarı)

97. *Hymenochaete fuliginosa* (Pers.) Lév. (T.N.: Kahve daltarçını)

98. *Hymenochaete rubiginosa* (Dicks.) Lev. (T.N.: Kızıl daltarçını)

99. *Phellinus hartigii* (Allesch. & Schnabl) Pat. (T.N.: Göknartoynağı)

HYMENOGASTRACEAE (T.N.: Papazküregiller)

100. *Galerina marginata* (Batsch) Kühner (T.N.: Kenar galerina)

INOCYBACEAE (T.N.: Kümbetmantarıgiller)

101. *Inocybe splendens* R. Heim (T.N.: Haskümbet)

102. *Pseudosperma rimosum* (Bull.) Matheny & Esteve-Rav. (T.N.: Uysalkümbet)

INCERTAE SEDIS

103. *Clitocybe bresadolana* Singer (T.N.: El hunimantarı)

104. *Clitocybe dealbata* (Sowerby) P. Kumm. (T.N.: Ağulu hunimantar)

105. *Clitocybe odora* (Bull.) P. Kumm. (T.N.: Rakılı hunimantar)

106. *Cyathus striatus* (Huds.) Willd. (T.N.: Diken çizgiliyuva)

107. *Cystodermella granulosa* (Batsch) Harmaja (T.N.: Topuzluderi)

108. *Fistulina hepatica* (Schaeff.) With. (T.N.: Biftekmantarı)

109. *Infundibulicybe gibba* (Pers.) Harmaja (T.N.: Koca hunimantar)

110. *Laeticutis cristata* (Schaeff.) Audet (T.N.: Semerderi)

111. *Lepista nuda* (Bull.) Cooke (T.N.: Mavi cincile)

112. *Lepista personata* (Fr.) Cooke (T.N.: Diken mantarı)

113. *Melanoleuca brevipes* (Bull.) Pat. (T.N.: Kısa yılanmantarı)

114. *Melanoleuca exscissa* (Fr.) Singer (T.N.: Boz yılanmantarı)

115. *Melanoleuca stridula* (Fr.) Singer (T.N.: Ağu yılanmantarı)

116. *Panaeolus fimicola* (Pers.) Gillet (T.N.: Yoz tersçanı)

117. *Panaeolus papilionaceus* (Bull.) Quél. (T.N.: Süslü tersçanı)

118. *Pleurocybella porrigens* (Pers.) Singer (T.N.: Mermermantarı)

119. *Trichaptum abietinum* (Dicks.) Ryvarden (T.N.: Göknar morkeneti)

120. *Trichaptum fuscoviolaceum* (Ehrenb.) Ryvarden (T.N.: Morkenet)

LYOPHYLLACEAE (T.N.: Karadönekgiller)

121. *Calocybe gambosa* (Fr.) Donk (T.N.: Gugule)

LYCOPERDACEAE

122. *Bovista plumbea* Pers. (T.N.: Pufmantarı)

123. *Bovistella utriformis* (Bull.) Demoulin & Rebriev (T.N.: Yan poslak)

124. *Lycoperdon excipuliforme* (Scop.) Pers. (T.N.: Çakalosuruğu)

125. *Lycoperdon lividum* Pers. (T.N.: Efosliyen)

126. *Lycoperdon mammiforme* Pers. (T.N.: Pelte poslak)

127. *Lycoperdon molle* Pers. (T.N.: Zayıf poslak)

128. *Lycoperdon perlatum* Pers. (T.N.: Fıssakuri)

129. *Lycoperdon pyriforme* Schaeff. (T.N.: Fosmantarı)

MARASMIACEAE (T.N.: Paraşütmantarıgiller)

130. *Marasmius bulliardii* Quél. (T.N.: El paraşütü)

131. *Marasmius rotula* (Scop.) Fr. (T.N.: Paraşütmantarı)

132. *Marasmius oreades* (Bolton) Fr. (T.N.: Mıhbaşı)

MERIPILACEAE (T.N.: Karakıçmantarıgiller)

133. *Meripilus giganteus* (Pers.) P. Karst. (T.N.: Karakıçmantarı)

MYCENACEAE (T.N.: Kukulcukgiller)

134. *Mycena crocata* (Schrad.) P. Kumm. (T.N.: Şiş kukulcuk)

135. *Mycena epipterygia* (Scop.) Gray (T.N.: Yel kukulcuk)

136. *Mycena pura* (Pers.) P. Kumm. (T.N.: Mor kukulcuk)

137. *Panellus mitis* (Pers.) Singer (T.N.: Cüceyelpaze)

138. *Panellus stipticus* (Bull.) P. Karst. (T.N.: Ser yüceyelpaze)

139. *Xeromphalina campanella* (Batsch) Kühner & Maire (T.N.: Göbekliçan)

140. *Xeromphalina cauticinalis* (With.) Kühner & Maire (T.N.: Sarı göbekliçan)

OMPHALOTACEAE (T.N.: Ağulumantargiller)

141. *Gymnopus dryophilus* (Bull.) Murrill (T.N.: Sarı çırpıbacak)

142. *Mycetinis alliaceus* (Jacq.) Earle ex A.W. Wilson & Desjardin (T.N.: Kokar boynukara)

143. *Rhodocollybia butyracea* (Bull.) Lennox (T.N.: Gövertek)

PHANEROCHAETACEAE (T.N.: Dalceketigiller)

144. *Bjerkandera adusta* (Willd.) P. Karst. (T.N.: Kandermantarı)

PHYSALACRIACEAE (T.N.: Balmantarıgiller)

145. *Armillaria mellea* (Vahl) P. Kumm. (T.N.: Balmantarı)

146. *Armillaria ostoyae* (Romagn.) Herink (T.N.: Külahlı balmantarı)

147. *Hymenopellis radicata* (Relhan) R.H. Petersen (T.N.: Boz zarderi)

148. *Mucidula mucida* (Schrad.) Pat. (T.N.: Odun perisi)

149. *Strobilurus stephanocystis* (Kühner & Romagn. ex Hora) Singer (T.N.: El kozalakebesi)

150. *Strobilurus tenacellus* (Pers.) Singer (T.N.: Kozalakebesi)

151. *Xerula pudens* (Pers.) Singer (T.N.: Cıvıksert)

PLEUROTACEAE (T.N.: İstiridyemantarıgiller)

152. *Pleurotus eryngii* (DC.) Quél. (T.N.: Çakşırmantarı)

153. *Pleurotus ostreatus* (Jacq.) P. Kumm. (T.N.: İstiridyemantarı)

PLUTEACEAE (T.N.: Çıtkırdıgiller)

154. *Volvopluteus gloiocephalus* (DC.) Vizzini, Contu & Justo (T.N.: Kakilvik)

155. *Pluteus phlebophorus* (Ditmar) P. Kumm. (T.N.: Fukara çıtkırdı)

156. *Pluteus salicinus* (Pers.) P. Kumm. (T.N.: Söğüt çıtkırdı)

POLYPORACEAE (T.N.: Bindelikmantarıgiller)

157. *Cerioporus squamosus* (Huds.) Quél. (T.N.: Görkemli)

158. *Daedaleopsis nitida* (Durieu & Mont.) Zmitr. & Malysheva (T.N.: Çıplak sarıkenet)

159. *Fomes fomentarius* (L.) Fr. (T.N.: Kavmantarı)

160. *Ganoderma applanatum* (Pers.) Pat. (T.N.: Terek reyşi)

161. *Ganoderma lucidum* (Curtis) P. Karst. (T.N.: Reyşi)

162. *Lentinus arcularius* (Batsch) Zmitr. (T.N.: Delikli kaplanmantarı)

163. *Lentinus brumalis* (Pers.) Zmitr. (T.N.: Küt kaplanmantarı)

164. *Lentinus tigrinus* (Bull.) Fr. (T.N.: Kaplanmantarı)

165. *Lenzites betulinus* (L.) Fr.

166. *Neofavolus alveolaris* (DC.) Sotome & T. Hatt. (T.N.: Tüylüyanak)

167. *Picipes melanopus* (Pers.) Zmitr. & Kovalenko (T.N.: Koyu ağaçdeliklisi)

168. *Pycnoporus cinnabarinus* (Jacq.) P. Karst. (T.N.: Kızılkenet)

169. *Trametes gibbosa* (Pers.) Fr. (T.N.: Boz hindikuyruğu)

170. *Trametes hirsuta* (Wulfen) Lloyd (T.N.: Kırçıllı hindikuyruğu)

171. *Trametes pubescens* (Schumach.) Pilát (T.N.: Tüylü hindikuyruğu)

172. *Trametes versicolor* (L.) Lloyd (T.N.: Hindikuyruğu)

PANACEAE

173. *Panus neostrigosus* Drechsler-Santos & Wartchow (T.N.: Yivli panus)

PSATHYRELLACEAE (T.N.: Pulcuklugiller)

174. *Coprinellus micaceus* (Bull.) Vilgalys, Hopple & Jacq. Johnson (T.N.: Pullumürekkep)

175. *Coprinopsis atramentaria* (Bull.) Redhead, Vilgalys & Moncalvo (T.N.: Kütük döbeleni)

176. *Coprinopsis picacea* (Bull.) Redhead, Vilgalys & Moncalvo (T.N.: Billur döbelen)

177. *Psathyrella candolleana* (Fr.) Maire (T.N.: Güzel pulcuklu)

177. *Psathyrella tephrophylla* (Romagn.) M.M. Moser (T.N.: Zarif sevelen)

PSEUDOCLITOCYBACEAE

179. *Pseudoclitocybe cyathiformis* (Bull.) Singer (T.N.: Peslivan)

RHIZOPOGONACEAE (T.N.: Tavşanböbreğigiller)

180. *Rhizopogon ochraceorubens* A.H. Sm. (T.N.: Sarı tavşanböbreği)

181. *Rhizopogon roseolus* (Corda) Th. Fr. (T.N.: Al tavşanböbreği)

RUSSULACEAE (T.N.: Kirmitgiller)

182. *Lactarius aurantiacus* (Pers.) Gray (T.N.: Alsütlüce)

183. *Lactarius blennius* (Fr.) Fr. (T.N.: Bozsütlüce)

184. *Lactarius deliciosus* (L.) Gray (T.N.: Kanlıca mantarı)

185. *Lactarius fulvissimus* Romagn. (T.N.: Günsütlüsü)

186. *Lactarius scrobiculatus* (Scop.) Fr. (T.N.: Beneklimelki)

187. *Lactarius vellereus* (Fr.) Fr. (T.N.: Biberlice)

188. *Lactifluus bertillonii* (Neuhoff ex Z. Schaef.) Verbeken (T.N.: Aksütlüce)

189. *Russula amoenolens* Romagn (T.N.: Cemre kirmit)

190. *Russula aurea* Pers. (T.N.: Elikmantarı)

191. *Russula cyanoxantha* var. *cyanoxantha* (Schaeff.) Fr. (T.N.: Kıvrık kirmit)

192. *Russula delica* Fr. (T.N.: Akçıntar)

193. *Russula emetica* (Schaeff.) Pers. (T.N.: Ağulu kirmit)

194. *Russula ochroleuca* Fr. (T.N.: Oyalı kirmit)

SCHIZOPHYLLACEAE (T.N.: Kımukgiller)

195. *Schizophyllum commune* Fr. (T.N.: Kımuk)

STEREACEAE (T.N.: Katmantarıgiller)

196. *Stereum hirsutum* (Willd.) Pers. (T.N.: Kıllı katmantarı)

197. *Stereum ochraceoflavum* (Schwein.) Sacc. (T.N.: Sarı katmantarı)

198. *Stereum subtomentosum* Pouzar (T.N.: Tüylü katmantarı)

STROPHARIACEAE (T.N.: Çayırcücülesigiller)

199. *Agrocybe dura* (Bolton) Singer (T.N.: Yaz meteliği)

200. *Agrocybe praecox* (Pers.) Fayod (T.N.: Bahar meteliği)

201. *Deconica coprophila* (Bull.) P. Karst. (T.N.: Tez kefgarik)

202. *Hypholoma fasciculare* (Huds.) P. Kumm. (T.N.: Ağulu sarıpapak)

203. *Hypholoma marginatum* J. Schröt. (T.N.: Dalgalı sarıpapak)

204. *Pholiota adiposa* (Batsch) P. Kumm. (T.N.: Kıvrık pulbaş)

205. *Pholiota limonella* (Peck) Sacc. (T.N.: Saman pulbaş)

206. *Stropharia aeruginosa* (Curtis) Quél. (T.N.: Mavi cücüle)

207. *Stropharia caerulea* Kreisel (T.N.: Yer cücülesi)

TREMELLACEAE (T.N.: Sarıpeltegiller)

208. *Tremella mesenterica* Retz. (T.N.: Sarıpelte)

TRICHOLOMATACEAE (T.N.: Karakızmantarıgiller)

209. *Aspropaxillus candidus* (Bres.) M.M. Moser Bres. (T.N.: Ak hunimantar)

210. *Tricholoma fracticum* (Britzelm.) Kreisel (T.N.: Vaykarakız)

211. *Tricholoma orirubens* Quél. (T.N.: Esmerkarakız)

212. *Tricholoma saponaceum* (Fr.) P. Kumm. (T.N.: Kokulukarakız)

213. *Tricholoma stiparophyllum* (N. Lund) P. Karst. (T.N.: Gelinkarakız)

214. *Tricholoma terreum* (Schaeff.) P. Kumm. (T.N.: Karakızmantarı)

215. *Tricholoma virgatum* (Fr.) P. Kumm (T.N.: Sivrikarakız)

With this study, 215 taxa were determined belonging to 2 divisions and 58 families by evaluating the samples collected as a result of field studies carried out between 2012-2014 in the vicinity of Yenice district of Karabük province, selected as a research area. While 32 of the collected taxa belong to *Ascomycota*, 183 of them belonged to *Basidiomycota* division. H*ygrocybe substrangulata* (P.D. Orton) P.D. Orton & Watling, and *Hygrophorus atramentosus* (Alb. & Schwein.) H. Haas & R. Haller Aar. ex Bon, have been identified as new records for Turkey.

The taxa that are commonly found in the study area are *Trametes versicolor, Tremella mesenterica, Stereum subtomentosum, Schizophyllum commune, Fomes fomentarius, Hypholoma fasciculare, Hypoxylon fragiforme, Xylaria hypoxylon, Ganoderma lucidum, Trametes hirsuta, Auruularia auricula-judae,Exidia glandulosa, Fomitopsis pinicola, Armillaria mellea, Lentinus arcularius, Stereum hirsutum, Stereum ochraceoflavum* respectively.

Distribution of the determined taxa to the families are given in Figure 5. As it is also indicated on the figure, the most common families in the region are *Polyporaceae* and *Russulaceae* respectively.

Considering the studies conducted in the region and its close environs, the results are given below in comparison (Fig. 6).

A study named "The Macrofungi of Karabük Province" was conducted in the region and 121 species were identified (Yağız et al., 2005). Again, 224 species were collected in a doctoral thesis named " Macrofungal diversity of Ilgaz Mountain National Park and its environs (Turkey)" in Çankırı, which is a neighbour to the region we researched (Akata, 2008).

As a result of the comparison of the studies, 21 common families were identified in three studies(Yağız et. all, 2005; Akata 2008; Kaşık et. All, 2022). Considering the number of species belonging to these families, it can be said that except for four families, the number of taxa is mostly similar and they are almost the same species. As a result of the changes in the systematic of macrofungi since the first study, many families we have identified in our study could not be detected in the other two studies(Yağız et. all, 2005; Akata 2008), especially in the first study, it was found that this number was higher. This is because in some families, the samples are not found intensely in nature or the habitats where the samples are collected are not the same. Or even if the same taxa have been found, the systematic arrangements of taxa are in different families. For

this reason, in our study, some taxa were identified in different families as a result of systematic developments. However, in general, the similarity rate of the detected taxa is higher than the rate of difference, since the study areas are close to each other.

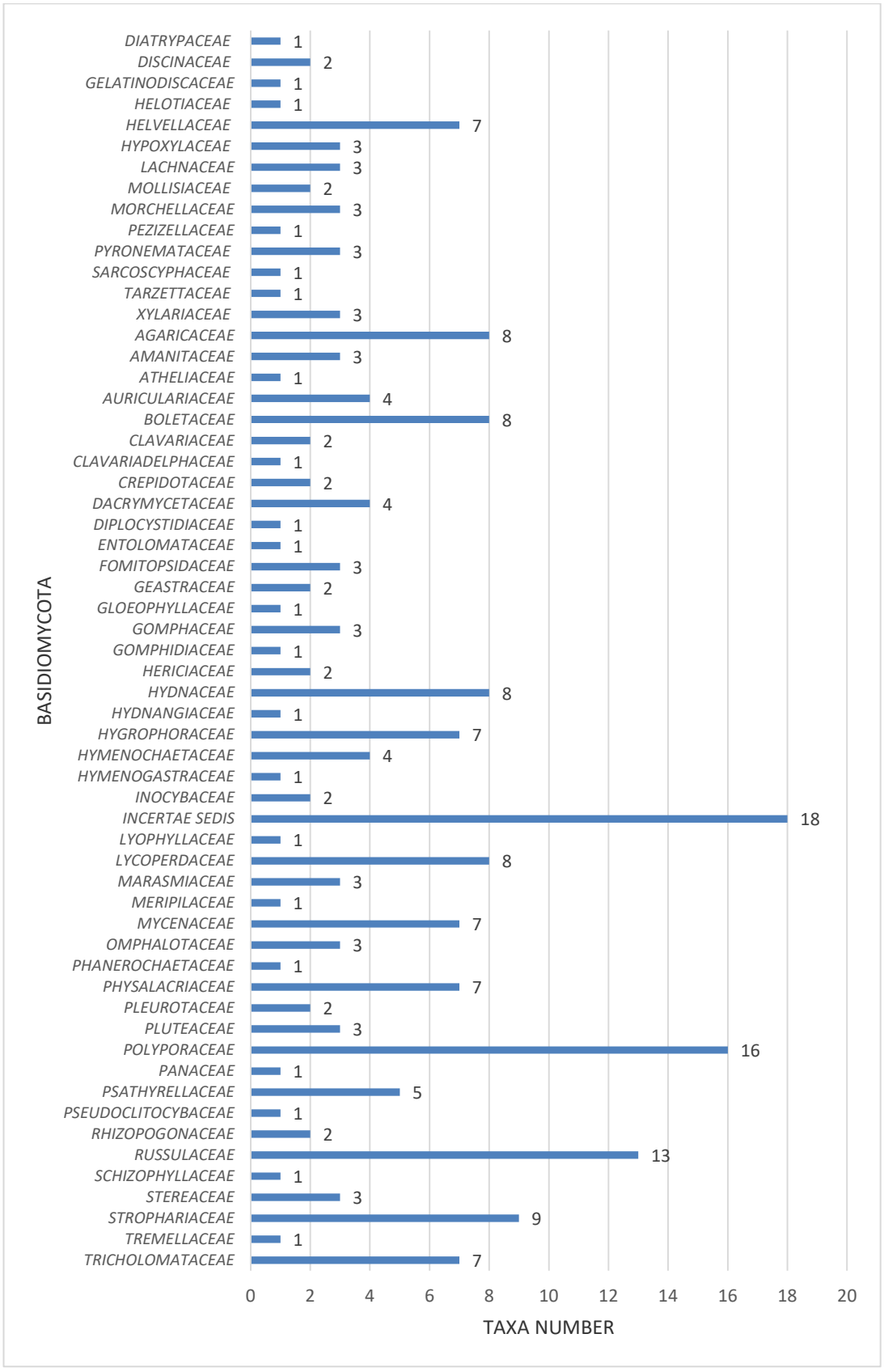

Figure 5. Taxa numbers of *Ascomycota* and *Basidiomycota* according to families
Şekil 5. Familyalara göre Ascomycota ve Basidiomycota takson sayıları

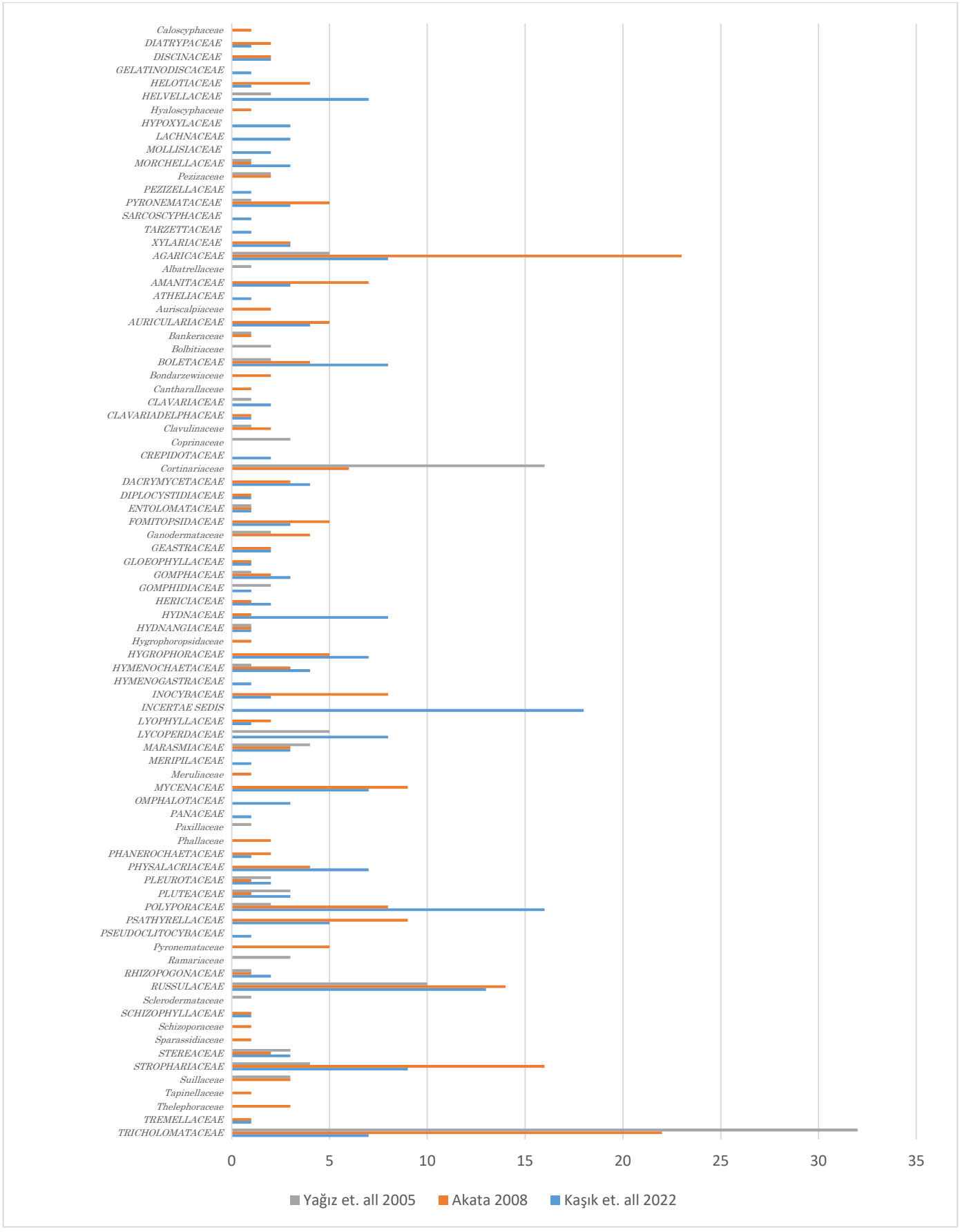

Figure 6. Comparisons of taxon numbers according to families
Şekil 6. Familyalara göre takson sayılarının karşılaştırılması

CONCLUSION

Kingdom fungi is a diverse one and contains many kinds of fungal species among which some helpful to human while some harmful or neutral. To be able to use such properties of this group of living things for the benefit of humanity, it is necessary to know the members of this kingdom.

With this study, which we carried out within the boundaries of Yenice district of Karabük province, 215 species belonging to 55 families and 2 divisions were determined. Besides, two species, which were not presented from Turkey before, are reported as new record, by contributing to the fungal list of Turkey.

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Author's Contributions

The contribution of the authors is equal.

Statement of Conflict of Interest

Authors have declared no conflict of interest.

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