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Research Article

THE MYCOBIOTA OF SAMANLI MOUNTAINS IN TURKEY

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Abstract: The Mycobiota of Samanlı Mountains were investigated in this study. Specimens were collected during 3 years between November 2012 and November 2015. 510 macrofungal taxa belonging to 197 genera within 84 families were recorded with field and laboratory studies. Of these, 37 genera and 57 taxa belong to Ascomycota, while 160 genera and 453 taxa belong to Basidiomycota. Nine species were found for the first time in Turkey from *Basidiomycota*. These taxa are *Amanita subnudipes* (Romagn.) Tulloss, *Hebeloma quercetorum* Quadr., *Hygrocybe obrussea* (Fr.) Wunsche, *Lactarius mediterraneensis* Llistosella & Bellù, *Lactifluus glaucescens* (Crossl.) Verbeken, *Russula lilacea* Quél., *R. rubra* (Lam.) Fr., *Stereopsis reidii* Losi & A. Gennari and *Tricholoma roseoacerbum* A. Riva. The *Stereopsidaceae* family and the genus *Stereopsis* D.A. Reid was found for the first time in Turkey.
The richest families in terms of the number of taxa are *Russulacea* with 58 taxa (11.3%), *Agaricaceae* with 46 taxa (8.9%), *Tricholomataceae* with 43 taxa (8.4%), *Boletaceae* with 32 taxa (6.2%), *Polyporaceae* with 23 taxa (4.5%) and the most crowded genera are *Russula* Pers. with 41 taxa (8%), *Tricholoma* (Fr.) Staude with 26 taxa (5%), *Amanita* Dill. ex Boehm. with 19 taxa (3.7%), *Lactarius* Pers. with 16 taxa (3.1%) and *Inocybe* (Fr.) Fr. with 14 taxa (2.7%). The ecological status of the species is as follows; 245 (48%) are saprobe, 226 (45%) are mycorrhizal, 20 (3.7%) are lignicolous, 18 (2.9%) are parasite, and one is entomopathogenic. Habitat distribution in the research area is as follows: 300 species in *Abies nordmanniana* (Stev.) Spach. subsp. *bornmuelleriana* (Mattf.) Coode & Cullen forest, 295 species in *Fagus orientalis* Lipsky forest, 125 species in *Quercus* spp. forest, 88 species in *Pinus nigra* J.F.Arnold forest, 56 species in *Castanea sativa* Mill. forest, 53 species in *Pinus sylvestris* L. forest, 49 species in *Carpinus orientalis* Mill. forest and 24 species in *Pinus maritima* Lam. forest.

Özet: Bu çalışmada Samanlı dağlarının mikobiotası araştırılmıştır. Örnekler Kasım 2012 ve Kasım 2015 arasında 3 yıl boyunca toplanmıştır. 84 familya ve 197 cinse ait 510 makromantar taksonu belirlenmiştir. Bunlardan, 37 cins ve 57 takson Ascomycota'ya aitken 160 cins ve 453 takson ise Basidiomycota'ya aittir. *Basidiomycota*'dan 9 tür Türkiye'de ilk kez bulunmuştur. Bu taksonlar *Amanita subnudipes* (Romagn.) Tulloss, *Hebeloma quercetorum* Quadr., *Hygrocybe obrussea* (Fr.) Wunsche, *Lactarius mediterraneensis* Llistosella & Bellù, *Lactifluus glaucescens* (Crossl.) Verbeken, *Russula lilacea* Quél., *R. rubra* (Lam.) Fr., *Stereopsis reidii* Losi & A. Gennari ve *Tricholoma roseoacerbum* A. Riva.'dur. *Stereopsidaceae* familyası ve *Stereopsis* D.A. Reid cinsi Türkiye'de ilk kez belirlenmiştir.
Tür sayısı bakımından en zengin familyalar *Russulaceae*'den 58 takson (%11,3), *Agaricaceae*'den 46 takson (%8,9), *Tricholomataceae*'den 43 takson (%8,4), *Boletaceae*'den 32 takson (%6,2), *Polyporaceae*'den 23 takson (%4,5) dur. En zengin cinsler ise *Russula* Pers. 41 takson (%8), *Tricholoma* (Fr.) Staude 26 takson (%5), *Amanita* Dill. ex Boehm. 19 takson (%3,7), *Lactarius* Pers. 16 takson (%3,1) ve *Inocybe* (Fr.) Fr. 14 takson (%2,7)'dur. Türlerin ekolojik durumları şu şekildedir; 245 (%48) saprop, 226 (%45) mikorizal, 20 (%3,7) lignikolar, 18 (%2,9) parazit, ve bir tür entomopatojeniktir. Araştırma alanındaki habitat dağılımı aşağıdaki gibidir; 300 takson *Abies nordmanniana* (Stev.) Spach.subsp. *bornmuelleriana* (Mattf.) Coode & Cullen ormanında, 295 takson *Fagus orientalis* Lipsky ormanında, 125 takson *Quercus* spp. ormanında, 88 takson *Pinus nigra* J.F.Arnold ormanında; 56 takson *Castanea sativa* Mill. ormanında; 53 takson *Pinus sylvestris* L. ormanında, 49 takson *Carpinus orientalis* Mill. ormanında ve 24 takson *Pinus maritima* Lam. ormanındadır.

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Introduction

Fungal species play important roles in ecosystems. For instance, they decompose organic materials and occupy diverse niches in forest ecosystems. In order to learn their ecological roles, it is necessary to determine their distribution areas, species diversity and the habitat types habitats they occupy. In this way, we can get useful information about common and widely distributed, rare, poisonous or edible species, or species that are important in terms of the ecological cycle. Such a knowledge helps mycologists to understand the macrofungal diversity of an area, region or even a country and allows to make a comparison with the macrofungal data of other studied places. In addition, it is also possible to reveal new or rare species in this way. During field studies, it is important to learn the knowledge of local people about mushrooms and to determine their ways to use them ethnomicologically.

Many studies on macrofungal diversity were carried out and yet many are still ongoing both in Turkey and in world. As a result of these studies, significant contributions have been made to the macrofungal diversity of Turkey. A checklist of the fungi of Turkey was published in 2020 with broad cooperation of Turkish mycologists (Sesli *et al.* 2020). According to this checklist, a total of 5865 fungal taxa, including 2782 Basidiomycota, 2728 Ascomycota 282 Myxomycota, 2 Chytridiomycota, 33 Oomycota and 38 Zygomycota species identified in Turkey have been listed so far. Regarding the ecology and habitat choices of these taxa, the majority are found in coniferous and broadleaved (latifolius) forest ecosystems. Other environments in which fungal species can be found were reported as meadows, waterfronts, humid areas and similar different habitats. When the relevant literature was reviewed, no study was found on fungal diversity of Samanlı Mountains. Samanlı Mountains has different kind of the forest types formed by various trees such as *Abies* sp., *Carpinus* sp., *Fagus* sp., *Pinus* sp. and *Quercus* sp. The climatic conditions of the mountain provide optimum growth of mushrooms. We therefore chose it as the study area to determine the macrofungal diversity present and contribute to the Turkish mycobiota.

Materials and Methods

Description of the area

Samanlı Mountains are located in the southeast of the Marmara Region in Turkey (Fig. 1). The range stretches between Bozburun at the edge of Armutlu Peninsula in the west, and Geyve Strait formed by Sakarya River in the east. A close look at the natural vegetation of the study area highlights kermes oak (*Quercus coccifera* L.), holly oak (*Quercus ilex* L.), and bay laurel (*Laurus nobilis* L.) as the main shrubs and ligneous plants in the maquis formation up to 500-600m. Hawthorn (*Crataegus oxyacantha* L.) and a Black Sea enclave, boxwood (*Buxus sempervirens* L.), are seen in patches among maquis elements. The main ligneous plants in the forest cover of the area are pedunculate oak (*Quercus pedunculata* Ehrh.), oriental beech (*Fagus orientalis* Lipsky), Uludağ fir (*Abies nordmanniana* subsp. *bornmuelleriana* (Mattf.) Coode & Cullen), chestnut (*Castanea sativa* Mill.), black pine (*Pinus nigra* subsp. *caramanica* (Loudon) Businský), stone pine (*Pinus pinea* L.), Turkish pine (*Pinus brutia* Ten.), common hornbeam (*Carpinus betulus* L.) and Scots pine (*Pinus sylvestri*s Lour.). Groups of oriental planes (*Platanus orientalis* L.), maple (*Acer platanoides* L.), and white poplar (*Populus alba* L.) can also be seen in patches. The area is in the Mediterranean climatic zone in terms of macroclimatic type, and the annual rainfall varies between 400 mm and 1200 mm.

Collection and identification of the species

The macrofungi specimens were collected from 148 localities in Bursa, Kocaeli, Sakarya and Yalova provinces during the years 2012-2015 (Fig. 1, Table 1). The localities are listed alphabetically, and coordinates, heights, habitats and collecting time were given in Table 1. Partition numbers refer to the numbers given to forest areas by the forest management directorates in Table 1. Important macroscopical features and ecological information of the specimens were noted in the field and digital images were taken in their habitat. Collected specimens were dried in dehydrators after each study day and the dried materials were put into plastic bags to bring them to the fungarium in good condition for further analysis. Micromorphological characters were examined using a Leica DM3000 light microscope and photographed digitally. Specimen tissues were examined with some chemical reagents (Melzer; KOH in 10%, 5%, 3%, or 2% solutions; cotton blue; IKI; etc.) for macroscopic and microscopic studies. The measurements of at least 20 spores per specimen were taken. The specimens were identified according to Eriksson & Ryvarden (1973,1976), Eriksson *et al.* (1978, 1984), Moser (1983), Breitenbach & Kränzlin (1984, 1986, 1991, 1995, 2000), Hjortstam *et al.* (1987, 1988), Candusso & Lanzoni (1990), Ryvarden & Gilbertson (1993, 1994), Candusso (1997), Basso (1999), Riva (2003a, 2003b), Galli (2003a, 2003b, 2004, 2006, 2007a, 2007b), Neville & Poumarat (2004), Bernicchia (2005), Horak (2005), Muñoz (2005), Kränzlin (2005), Medardi (2006), Robich (2007), Parra (2008), Michael *et. al* (2014), Knudsen & Vesterholt (2008) and Christensen & Heilmann-Clausen (2013). New records were checked according to Sesli *et al.* (2020). Taxa, family, and author citations are quoted according to Cannon & Kirk (2007), Kirk *et al.* (2008), Index Fungorum (http://www.indexfungorum.org/Names/Names.asp) and MycoBank (http://www.mycobank.org). The specimens are kept in the Fungarium of Mushroom Application and Research Centre, Selçuk University, Konya, Turkey.

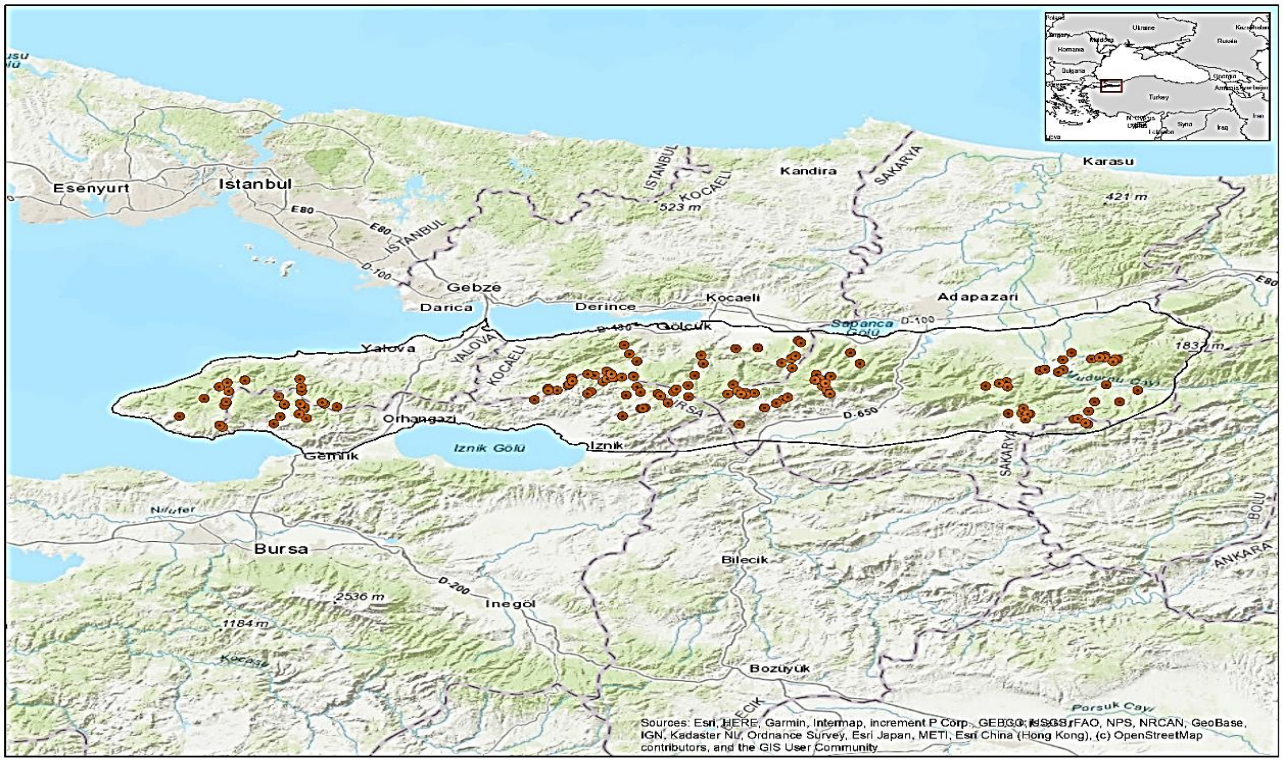

Fig. 1. Map showing the study area. The black line shows the borders of Samanlı Mountains and solid coloured circles correspond the different localities where the specimens were collected.

Locality List

Table 1. The locality names, coordinates, altitudes, habitat types and collection date details.

Loc.No	Localities	Coordinates	Height	Habitats	Date
L1	Bursa, Gemlik, Fevziye Vill., Karagöl district	40°21'04"N, 29°18'26"E	776 m	*F. orientalis, P. nigra, Quercus* sp. forest	10.X.2014
L2	Bursa, Gemlik, Gemlik-Sarıkaya road, Soğanlıtarla district	40°32'25"N, 29°11'50"E	660 m	*Quercus* sp. forest	07.VI.2013
L3	Bursa, Gemlik, Haydariye Vill., Çeşme district	40°30'19"N, 29°07'07"E	420 m	*F. orientalis, C. orientalis* forest	02.VI.2014
L4	Bursa, Gemlik, Haydariye Vill., Dereiçi district	40°32'27"N, 29°08'59"E	470 m	*F. orientalis, C. orientalis*	02.VI.2014
L5	Bursa, Gemlik, Haydariye Vill., Dörtyol cross	40°30'59"N, 29°08'49"E	605 m	*Quercus* sp. forest	23.X.2013
L6	Bursa, Gemlik, Haydariye Vill., Tokat district	40°32'22"N, 29°07'09"E	425 m	*F. orientalis, C. orientalis, Quercus* sp., *R. ponticum forest*	03.VI.2013
L7	Bursa, Gemlik, Haydariye Vill., upper parts of a gezintiyolu district	40°30'37"N, 29°06'37"E	605 m	*P. nigra, A. unedo* forest	23.X.2013
L8	Bursa, Gemlik, Haydariye Vill., Yeşilbaştepe gezintiyolu district	40°30'12"N, 29°06'53"E	405 m	*Quercus* sp. forest	02.VI.2014
L9	Bursa, Gemlik, Küçükkum, upward of Gendarme station	40°27'48"N, 29°07'47"E	300 m	*P. nigra* forest	20.XI.2013
L10	Bursa, Gemlik, Narlı Vill.	40°29'26"N, 28°59'27"E	450 m	*Quercus* sp. forest	02.VI.2014
L11	Bursa, Gemlik, opposite to partition no: 250 of Haydariye Vill.	40°30'27"N, 29°09'44"E	740 m	*F. orientalis, C. orientalis, Quercus* sp., *R. ponticum* forest	03.VI.2013
L12	Bursa, Gemlik, partition no 44,	40°34'14"N, 29°09'10"E	557 m	*F. orientalis* forest	26.X.2013
L13	Bursa, Gemlik, upward of Haydariye Vill.	40°31'02"N, 29°08'51"E	40 m	*F. orientalis, C. orientalis, Quercus* sp., *R. ponticum* forest	03.VI.2013
L14	Bursa, Gemlik, upward of Narlı Vill.	40°29'01"N, 28°59'31"E	480 m	*P. pinea* forest	20.XI.2013

Table 1 Continued.

L15	Bursa, Haydariye Vill., Kolaçandere district	40°31'59"N, 29°09'29"E	544 m	*F. orientalis* forest	23.X.2013
L16	Bursa, İznik, Aybaşı district, forest	40°36'39"N, 29°42'57"E	950 m	*Quercus* sp.	24.X.2013
L17	Bursa, İznik, Çandarlı series, partition no 20	40°34'13"N, 29°53'06"E	955 m	*F. orientalis* forest	05.VI.2013
L18	Bursa, İznik, Çandarlı Vill.	40°31'45"N, 29°49'13"E	858 m	*P. sylvestris, Quercus* sp. *forest*	25.X.2013
L19	Bursa, İznik, Çandarlı, Sarıçam district	40°31'49"N, 29°49'25"E	934 m	*P. sylvestris* forest	05.XI.2015
L20	Bursa, İznik, Çandarlı, Subatım district	40°34'32"N, 29°53'25"E	990 m	*F. orientalis* forest	05.VI.2013
L21	Bursa, İznik, downward of Mecidiye Vill., Boğazdere district	40°34'42"N, 29°44'52"E	623 m	*Quercus* sp. forest	24.X.2013
L22	Bursa, İznik, Elmalı Vill., upward of the Paşa neighbourhood	40°32'34"N, 29°52'25"E	860 m	*F. orientalis* forest	05.VI.2013
L23	Bursa, İznik, Hakkıdüzlüğü district	40°33'41"N, 29°47'31"E	850 m	*P. nigra, Quercus* sp. forest	25.X.2013
L24	Bursa, İznik, İznik-Gölcük border	40°36'23"N, 29°45'26"E	921 m	*F. orientalis* forest	11.X.2014
L25	Bursa, İznik, Kırıntı	40°33'33"N, 29°51'34"E	886 m	*P. sylvestris, Quercus* sp., *C. orientalis* forest	11.X.2014
L26	Bursa, İznik, Merkeztepe district, partition no 27	40°33'29"N, 29°54'50"E	940 m	*F. orientalis* forest	05.VI.2013
L27	Bursa, İznik, next to a mine	40°36'05"N, 29°46'01"E	950 m	*P. nigra, Quercus* sp. forest	25.X.2013
L28	Bursa, İznik, Pilavtepe district	40°35'04"N, 29°40'38"E	730 m	*Quercus* sp. forest	04.VI.2013
L29	Bursa, İznik, Pilavtepe district	40°36'46"N, 29°42'48"E	710 m	*Quercus* forest	24.X.2013
L30	Bursa, İznik, upward of Hacıosman Vill.	40°36'22"N, 29°48'20"E	839 m	*Quercus* sp., *F. orientalis, P. sylvestris* forest	11.X.2014
L31	Bursa, İznik, upward of Kahraman neighbourhood	40°35'59"N, 29°45'14"E	740 m	*P. nigra, Quercus* sp. forest	25.X.2013
L32	Bursa, Mahmudiye, Hacıosman meadow-Kutluca crossroads	40°34'04"N, 29°49'11"E	995 m	*F. orientalis, Quercus* sp. forest	04.VI.2014
L33	Bursa, Mahmudiye, Kutluca Vill.	40°33'51"N, 29°51'13"E	850 m	*F. orientalis, P. sylvestris* forest	04.VI.2014
L34	Bursa, Mahmudiye, Taşlıtarla district	40°36'09"N, 29°46'04"E	947 m	*F. orientalis, C. orientalis forest*	04.VI.2013
L35	Bursa, Mahmudiye, Yapraklıdere district	39°55'07"N, 29°43'41"E	919 m	*F. orientalis, C. orientalis* forest	04.VI.2013
L36	Bursa, Mahmudiye, Yoncalık district	40°34'55"N, 29°48'49"E	1005 m	*F. orientalis, C. orientalis forest*	04.VI.2013
L37	Kocaeli, Gölcük, Başkiraz Plateau	40°36'05"N, 29°41'02"E	780 m	*Quercus* sp. forest	31.V.2014
L38	Kocaeli, Gölcük, downward of Cansuyu district	40°36'22"N, 29°48'20"E	865 m	*F. orientalis* forest	26.X.2014
L39	Kocaeli: Gölcük, İhsaniye Vill., Kurtlarvadisi district	40°38'25"N, 29°48'46"E	250 m	*F. orientalis, Quercus* sp. forest	26.X.2014
L40	Kocaeli, Gölcük, İhsaniye, Ayvazpınarı district, picnic area	40°36'55"N, 29°44'56"E	830 m	*F. orientalis* forest	31.V.2014
L41	Kocaeli, Gölcük, İhsaniye, Ayvazpınarı district, downward of picnic area	40°37'02"N, 29°45'11"E	780 m	*F. orientalis, C. orientalis, C. sativa, C. avellana* forest	26.X.2014
L42	Kocaeli, Gölcük, Mecidiye Vill.	40°35'13"N, 29°44'56"E	760 m	*Quercus* sp. forest	31.V.2014
L43	Kocaeli, Gölcük, Menekşe Plateau	40°35'01"N, 29°54'48"E	890 m	*F. orientalis* forest	05.VI.2013
L44	Kocaeli, Gölcük, next to İnci taşocağı district	40°36'06"N, 29°46'50"E	922 m	*F. orientalis* forest	31.V.2014
L45	Kocaeli, Gölcük, on the way of Ayvazpınarı district	40°36'50"N, 29°45'26"E	840 m	*F. orientalis, C. orientalis, Quercus* sp. forest	01.X.2014
L46	Kocaeli, Gölcük, on the way of Eriklitepe district	40°36'08"N, 29°45'55"E	970 m	*F. orientalis* forest	31.V.2014

Table 1 Continued.

L47	Kocaeli, Gölcük, on the way of İnci taşocağı district to Gölcük, 1. km down of Şelale district	40°36'22"N, 29°48'20"E	850 m	*C. orientalis* forest	01.X.2014
L48	Kocaeli, Gölcük, Pilavtepe crossroad	40°35'38"N, 29°41'08"E	760 m	*P. nigra, Quercus* sp. forest	01.X.2014
L49	Kocaeli, Gölcük, upward of Mecidiye Vill., Kestanelik district	40°39'27"N, 29°47'52"E	560 m	*C. sativa, Quercus* sp. forest	01.X.2014
L50	Kocaeli, Karamürsel, exit of Tahtalı Vill.	40°34'21"N, 29°39'20"E	730 m	*Quercus* sp. forest	01.VI.2014
L51	Kocaeli, Karamürsel, Fulacık crossroad	40°34'37"N, 29°38'16"E	685 m	meadow area	01.X.2014
L52	Kocaeli, Karamürsel, Fulacık, exit from Tahtalı Vill., next to the fountain	40°34'18"N, 29°38'16"E	670 m	*F. orientalis, C. sativa, C. orientalis* forest	01.X.2014
L53	Kocaeli, Karamürsel, Fulacık Vill.,	40°36'06"N, 29°46'50"E	922 m	*Quercus* sp. forest	01.VI.2014
L54	Kocaeli, Karamürsel, Mahmudiye Vill., Tahtalı roadside	40°31'17"N, 29°38'15"E	690 m	*F. orientalis, P. nigra* forest	24.X.2013
L55	Kocaeli, Maşukiye, across Sislivadi district	40°39'14"N, 30°07'45"E	1200 m	*A. nordmanniana* subsp. *bornmuelleriana, F. orientalis forest*	25.X.2014
L56	Kocaeli, Maşukiye, entrance of Kuzuyayla Nature Park	40°38'50"N, 30°06'53"E	1400 m	*A. nordmanniana* subsp. *bornmuelleriana, F. orientalis forest*	25.X.2014
L57	Kocaeli, Maşukiye, Kartepe road, gezintiyolu district	40°41'00"N, 30°08'59"E	460 m	*F. orientalis, P. nigra* forest	28.IX.2014
L58	Kocaeli, Maşukiye, Kartepe, Altıoluk Plateau	40°37'28"N, 30°06'59"E	1310 m	*F. orientalis* forest	25.X.2014
L59	Kocaeli: Suadiye, Altıoluk Plateau, the back of the transmitter	40°38'12"N, 30°05'52"E	1360 m	*F. orientalis* forest	27.V.2014
L60	Kocaeli, Suadiye, Hafızıntarlası district,	40°40'16"N, 30°00'27"E	400 m	*Quercus* sp., *F. orientalis, C. orientalis, C. avelleana* forest	27.XI.2012
L61	Kocaeli, Suadiye, on Kartepe road, left side	40°40'20"N, 30°03'04"E	540 m	*P. sylvestris* forest	27.XI.2012
L62	Kocaeli, Yuvacık, across Servetiye, Dikkulak district	40°39'18"N, 29°56'22"E	460 m	*F. orientalis, C. orientalis, C. sativa* forest	17.IV.2013
L63	Kocaeli, Yuvacık, Aytepe district	40°36'30"N, 29°55'36"E	960 m	*F. orientalis, C. sativa, C. orientalis* forest	28.XI.2012
L64	Kocaeli, Yuvacık, entrance of İnönü Plateau	40°35'09"N, 30°00'06"E	1240 m	*P. sylvestris, A. nordmanniana subsp. bornmuelleriana, F. orientalis* forest	28.XI.2012
L65	Kocaeli, Yuvacık, İnönü Plateau	40°33'52"N, 29°59'30"E	1240 m	*A. nordmanniana* subsp. *bornmuelleriana, P. nigra, F. orientalis, C. orientalis, R. ponticum* forest	29.IV.2014
L66	Kocaeli, Yuvacık, İnönü Plateau, Şehitlik district road	40°33'58"N, 30°01'34"E	1160 m	*F. orientalis, P. sylvestris, forest*	09.VI.2013
L67	Kocaeli, Yuvacık, İnönü Plateau, Şehitlik district	40°33'58"N, 30°02'39"E	1150 m	*F. orientalis* forest	09.VI.2013
L68	Kocaeli, Yuvacık, Servetiye mosque, roadside	40°38'09"N, 29°56'37"E	450 m	*F. orientalis, C. sativa, C. orientalis, R. ponticum* forest	17.IV.2013
L69	Sakarya, Akyazı, Avcıçimeni district	40°31'05"N, 30°34'16"E	1260 m	*A. nordmanniana* subsp. *bornmuelleriana, F. orientalis, Quercus* sp. forest	01.XI.2013
L70	Sakarya, Akyazı, between Avcıçimeni and Yılanlıkaya district	40°31'02"N, 30°34'28"E	1253 m	*A. nordmanniana* subsp. *bornmuelleriana, F. orientalis* forest	30.IX.2014
L71	Sakarya, Akyazı, Çiğdem Plateau,	40°38'56"N, 30°52'13"E	1460 m	*A. nordmanniana* subsp. *bornmuelleriana* forest	24.V.2014
L72	Sakarya, Akyazı, Dokumacı district,	40°33'08"N, 30°34'13"E	1185 m	*A. nordmanniana* subsp. *bornmuelleriana, C. orientalis, Pteridium* sp. forest	02.XI.2012
L73	Sakarya, Akyazı, Dokurcun, down part of Dikmentepe district	40°39'03"N, 30°53'28"E	1350 m	*A. nordmanniana* subsp. *bornmuelleriana* forest	24.V.2014
L74	Sakarya, Akyazı, Dokurcun, Güldürüksu district	40°38'41"N, 30°53'47"E	1390 m	*A. nordmanniana* subsp. *bornmuelleriana* forest	24.V.2014

Table 1 Continued.

L75	Sakarya, Akyazı, Dokurcun, Kındıra Plateau	40°38'01"N, 30°49'12"E	1390 m	*A. nordmanniana* subsp. *bornmuelleriana, F. orientalis* forest	24.V.2014
L76	Sakarya, Akyazı, Dokurcun, upward of Güldürüksu district	40°37'58"N, 30°52'13"E	1510 m	*A. nordmanniana* subsp. *bornmuelleriana* forest	24.V.2014
L77	Sakarya, Akyazı, down part of Hardamalık, Durmuşlar district	40°34'88"N, 30°44'78"E	203 m	*A. nordmanniana* subsp. *bornmuelleriana* forest	22.V.2014
L78	Sakarya, Akyazı, Göktepe, Ahmediye Vill., Kestanedüzü district	40°35'37"N, 30°32'26"E	961 m	*C. orientalis* forest	02.XI.2012
L79	Sakarya, Akyazı, Isırganlık district	40°39'11"N, 30°44'04"E	1200 m	*A. nordmanniana* subsp. *bornmuelleriana* forest	02.XI.2013
L80	Sakarya, Akyazı, Kayabaşı, Kiremitlik district	40°32'43"N, 30°42'51"E	960 m	*A. nordmanniana* subsp. *bornmuelleriana, F. orientalis* forest	29.X.2014
L81	Sakarya, Akyazı, Keremali Pateau	40°38'46"N, 30°45'34"E	1100 m	*A. nordmanniana* subsp. *bornmuelleriana, P. sylvestris, R. ponticum* forest	03.XI.2012
L82	Sakarya, Akyazı, Keremali Plateau, behind the Mosque	40°37'46"N, 30°45'35E	1100 m	*A. nordmanniana* subsp. *bornmuelleriana* forest	22.V.2014
L83	Sakarya, Akyazı, Kuzuluk Nature Park	40°37'19"N, 30°39'10"E	370 m	*F. orientalis, C. orientalis, Quercus* sp. forest	18.IV.2013
L84	Sakarya, Akyazı, Kuzuluk, on the way to Yeniköy from the centre	40°38'55"N, 30°39'12"E	260 m	*Quercus* sp. forest	18.IV.2013
L85	Sakarya, Akyazı, Mansurlar planting area,	40°34'42"N, 30°43'24"E	280 m	*P. nigra* forest	03.XI.2013
L86	Sakarya, Akyazı, Özdemirler Plateau	40°30'12"N, 30°40'49"E	1260 m	*A. nordmanniana* subsp. *bornmuelleriana* forest	04.XI.2012
L87	Sakarya, Akyazı, Pine planting area on the Güzlek road	40°39'42"N, 30°40'07"E	225 m	*P. sylvestris* forest	18.IV.2013
L88	Sakarya, Akyazı, Salihiye	40°37'09"N, 30°36'20"E	160 m	*Quercus* sp. forest	29.X.2014
L89	Sakarya, Akyazı, Soğuksu forest building	40°39'06"N, 30°43'37"E	930 m	*A. nordmanniana* subsp. *bornmuelleriana* forest	02.XI.2013
L90	Sakarya, Akyazı, upper part of Kuruçay Plateau	40°31'25"N, 30°42'07"E	1282 m	*A. nordmanniana* subsp. *bornmuelleriana, F. orientalis* forest	23.V.2014
L91	Sakarya, Akyazı, upper part of Özdemirler P Plateau	40°30'21"N, 30°40'51"E	1300 m	*A. nordmanniana* subsp. *bornmuelleriana* forest	23.V.2014
L92	Sakarya, Akyazı, Yazlık neighbourhood	40°37'12"N, 30°36'21"E	155 m	*Quercus* sp., *C. monogyna, R. caesius* forest	18.IV.2013
L93	Sakarya, Akyazı, Yenikoy, Keremali, side of the forest building	40°38'47"N, 30°42'30"E	942 m	*A. nordmanniana* subsp. *bornmuelleriana, P. sylvestris, F. orientalis, R. ponticum* forest	03.XI.2012
L94	Sakarya, Akyazı, Yeniköy, Keremali, Kestanelik district	40°38'58"N, 30°43'33"E	882 m	*C. orientalis, R. caesius* forest	03.XI.2012
L95	Sakarya, Akyazı, Yeniköy, the side of the Keremali forest building, going to Yeniköy, with 500m remaining	40°39'10"N, 30°43'38"E	972 m	*A. nordmanniana* subsp. *bornmuelleriana, F. orientalis forest*	03.XI.2012
L96	Sakarya, Akyazı, Yılanlıkaya turnoff, towards Avcıçimeni	40°30'59"N, 30°35'12"E,	1260 m	*A. nordmanniana* subsp. *bornmuelleriana, F. orientalis, Quercus* sp. forest	01.XI.2013
L97	Sakarya, Akyazı, Yörükyeri Vill., between Civci and Güney neighbourhood, roadside	40°32'49"N, 30°45'49"E	827 m	*C. orientalis, F. orientalis, Trifolium* sp., *D. laciniatus forest*	04.XI.2012
L98	Sakarya, Akyazı, Yörükyeri Vill.	40°31'09"N, 30°46'17"E	1245 m	*F. orientalis* forest	04.XI.2012
L99	Sakarya, Akyazı, Zincirlibaba tomb road separation	40°34'17"N, 30°37'57"E	941 m	*F. orientalis* forest	30.IX.2014
L100	Sakarya, Akyazı, Zirvedağı	40°38'54"N, 30°43'59"E	1050 m	*A. nordmanniana* subsp. *bornmuelleriana* forest	02.XI.2013
L101	Sakarya, Geyve, Acıelma 2 district	40°35'47"N, 30°09'48"E	1100 m	*A. nordmanniana* subsp. *bornmuelleriana, P. nigra, F. orientalis, C. orientalis, R. ponticum* forest	31.X.2013

Table 1 Continued.

L102	Sakarya, Geyve, Acıelma district, Gümüşdere chiefdom	40°35'56"N, 30°10'23"E	1115 m	*A. nordmanniana* subsp. *Bornmuelleriana, P. nigra, F. orientalis, C. orientalis, R. ponticum* forest	30.X.2013
L103	Sakarya, Geyve, Acıelma district	40°35'49"N, 30°10'60"E	1060 m	*A. nordmanniana* subsp. *bornmuelleriana, F. orientalis* forest	31.X.2013
L104	Sakarya, Geyve, Eskiyayla Vill.	40°32'32"N, 30°05'12"E	935 m	*P. nigra* forest	31.X.2013
L105	Sakarya, Geyve, Gümüşdere, Kazimiye Vill.	40°34'00"N, 30°11'21"E	900 m	*P. nigra, Quercus* sp. forest	30.XI.2012
L106	Sakarya, Geyve, Gümüşdere district	40°33'55"N, 30°11'37"E	917 m	*P. nigra, Quercus* sp. forest	30.XI.2012
L107	Sakarya, Geyve, Kaymakam suyu district	40°35'03"N, 30°10'40"E	970 m	*A. nordmanniana* subsp. *bornmuelleriana, P. nigra, F. orientalis* forest	30.XI.2012
L108	Sakarya, Geyve, Taraklı, Mahdumlar Vill., Karagöl Plateau	40°30'17"N, 30°34'39"E	1150 m	*A. nordmanniana* subsp. *bornmuelleriana, F. orientalis, C. orientalis, B. sempervirens* forest	28.V.2014
L109	Sakarya, Geyve, Taraklı, Şimşirlikboğazı district	40°30'55"N, 30°33'54"E	1250 m	*A. nordmannina* subsp. *bornmuelleriana, B. sempervirens* forest	28.V.2014
L110	Sakarya, Geyve, Taraklı, upper part of Dışdedeler Plateau	40°31'05"N, 30°32'38"E	1315 m	*A. nordmannina* subsp. *bornmuelleriana, B. sempervirens* forest	28.V.2014
L111	Sakarya, Göktepe, the place of Pala district	40°34'53"N, 30°32'34"E	926 m	*C. sativa, F. orientalis, C. orientalis, R. ponticum, R. sanctus* forest	02.XI.2012
L112	Sakarya, Karapürçek district	40°34'55"N, 30°29'56"E	1160 m	*A. nordmanniana* subsp. *bornmuelleriana, F. orientalis forest*	28.X.2014
L113	Sakarya, Karapürçek, Uludere district	40°36'07"N, 30°30'36"E	570 m	*F. orientalis, C. sativa, C. orientalis* forest	28.X.2014
L114	Sakarya, Pamukova, Atalanı district	40°33'08"N, 30°06'04"E	870 m	*A. nordmanniana* subsp. *bornmuelleriana, P. nigra, Quercus* sp. forest	29.XI.2012
L115	Sakarya, Pamukova, Bakacak Vill.	40°33'05"N, 30°06'01"E	910 m	*P. nigra, Quercus* sp. forest	31.X.2013
L116	Sakarya, Pamukova, Katırözü, forest warehouse	40°31'58"N, 30°03'51"E	800 m	*A. nordmanniana* subsp. *bornmuelleriana, P. nigra, F. orientalis* forest	29.XI.2012
L117	Sakarya, Pamukova, Şehitlik district, forest camp	40°31'00"N, 29°59'30"E	1105 m	*A. nordmanniana* subsp. *bornmuelleriana, F. orientalis* forest	29.IX.2014
L118	Sakarya, Pamukova, Soğucak way, under the transmitter	40°33'18"N, 30°11'02"E	1000 m	*F. orientalis, P. nigra, Quercus* sp. forest	27.X.2014
L119	Sakarya, Pamukova, the upper part of Ahiler Vill.	40°29'38"N, 30°00'52"E	631 m	*P. nigra, P. brutia, R. sanctus forest*	29.XI.2012
L120	Sakarya, Pamukova, upper part of Kazımiye Vill.	40°33'53"N, 30°11'33"E	930 m	*P. nigra, Quercus* sp. forest	27.X.2014
L121	Sakarya, Sapanca, Çakılocağı district	40°37'10"N, 30°14'25"E	970 m	*A. nordmanniana* subsp. *bornmuelleriana, Salix* sp., *C. sativa, C. orientalis* forest	26.XI.2012
L122	Sakarya, Sapanca, Geyve entrance from Soğucak Plateau	40°36'20"N, 30°11'34"E	1115 m	*F. orientalis* forest	30.X.2013
L123	Sakarya, Sapanca, Memnuniye Vill.	40°38'10"N, 30°15'09"E	850 m	*A. nordmanniana* subsp. *bornmuelleriana, Salix* sp., *C. sativa, C. orientalis* forest	26.XI.2012
L124	Sakarya, Sapanca, Soğucak Plateau entrance	40°36'55"N, 30°10'52"E	1200 m	*A. nordmanniana* subsp. *bornmuelleriana, P. nigra, P. sylvestris* forest	27.IX.2014
L125	Sakarya, Sapanca, Soğucak Plateau road, Chestnut area	40°39'34"N, 30°13'57"E	477 m	*C. sativa, F. orientalis, C. orientalis, P. nigra* forest	27.IX.2014

Table 1 Continued.

L126	Sakarya, Sapanca, Soğucak Plateau	40°34'35"N, 30°09'59"E	1100 m	*A. nordmanniana* subsp. *bornmuelleriana*, *F. orientalis* forest	14.VI.2012
L127	Sakarya, Sapanca, Soğucak Plateau, on the Geyve dam road	40°36'20"N, 30°11'41"E	1190 m	*C. orientalis* forest	25.V.2014.
L128	Sakarya, Sapanca, upper part of Memnuniye Vill.	40°38'49"N, 30°15'17"E	760 m	*Quercus* sp., *F. orientalis*, *C. orientalis* forest	15.IV.2013
L129	Sakarya, Suadiye, Kuzuyayla district	40°38'52"N, 30°07'02"E	1400 m	*F. orientalis*, *C. sativa*, *C. orientalis* forest	16.IV.2013
L130	Sakarya, Suadiye, Taşkonak villas, upward of Motali	40°41'24"N, 30°08'00"E	280 m	*P. nigra*, *Quercus* sp. forest	16.IV.2013
L131	Yalova, Armutlu, partition no 149	40°32'01"N, 28°59'97"E	760 m	*P. nigra* forest	06.VI.2013
L132	Yalova, Armutlu to Karapinar, partition no 64	40°33'21"N, 28°57'61"E	587 m	*F. orientalis* forest	06.VI.2013
L133	Yalova, Armutlu, Delmece Plateau	40°32'44"N, 29°00'15"E	765 m	*F. orientalis*, *C. orientalis* forest	06.VI.2013
L134	Yalova, Armutlu, Mecidiye Vill.	40°30'42"N, 28°54'42"E	495 m	*P. maritima* forest	10.X.2014
L135	Yalova, Armutlu, partition no 151	40°32'37"N, 29°00'16"E	780 m	*F. orientalis*, *P. nigra* forest	06.VI.2013
L136	Yalova, Beşpınar Plateau	40°32'03"N, 29°13'18"E	720 m	*F. orientalis*, *C. orientalis*, *Tilia* sp. forest	07.VI.2013
L137	Yalova, Çanakpınar Plateau	40°32'40"N, 29°11'34"E	700 m	*F. orientalis* forest	07.VI.2013
L138	Yalova, Çınarcık, Delmece Plateau entrance	40°32'47"N, 29°00'20"E	800 m	*F. orientalis*, *P. sylvestris*, forest	03.VI.2014
L139	Yalova, Çınarcık, Delmece Plateau	40°32'44"N, 29°00'15"E	765 m	*F. orientalis*, *C. orientalis* forest	03.VI.2014
L140	Yalova, Çınarcık, Karlık Plateau, partition no 197, 242	40°34'86"N, 28°59'38"E	840 m	*F. orientalis*, young forest	06.VI.2013
L141	Yalova, Çınarcık, Teşvikiye, Dipsizgöller district	40°37'25"N, 29°05'21"E	595 m	*F. orientalis*, *Quercus* sp. forest	03.VI.2014
L142	Yalova, Çınarcık, Teşvikiye Vill., partition no 15	40°35'25"N, 29°00'21"E	600 m	*P. maritima* forest	11.XI.2014
L143	Yalova, Çınarcık, Teşvikiye Vill., partition no 161	40°36'39"N, 26°05'41"E	500 m	*F. orientalis*, *C. sativa* forest	11.XI.2014
L144	Yalova, Çınarcık, Teşvikiye Vill., partition no 200	40°37'30"N, 29°08'42"E	200 m	*P. maritima* forest	11.XI.2014
L145	Yalova, Çınarcık, Urban forest	40°35'46"N, 29°02'29"E	475 m	*F. orientalis*, *Quercus* sp. forest	03.VI.2014
L146	Yalova, Haydariye Vill., partition no 35	40°33'28"N, 29°06'27"E	550 m	*F. orientalis* forest	26.X.2013
L147	Yalova, Termal, on the way of Haydariye Vill.	40°34'47"N, 29°09'08"E	210 m	*F. orientalis*, *C. sativa* forest	03.VI.2014
L148	Yalova, Termal, Suyolu district	40°34'54"N, 29°10'40"E	200 m	*F. orientalis*, *C. sativa* forest	03.VI.2014

Abbreviations; (E): edible, (F): used as food, (I): inedible, (M): used for medical purposes, (P): poisonous, (U): unknown, (?): suspicious, (L): locality.

Results

Division ASCOMYCOTA

Order Coronophorales

Family *Bertiaceae*

Bertia moriformis (Tode) De Not.: (I), L127, saprobe on herbaceous and woody tissue.

Order Helotiales

Family *Helotiaceae*

Hymenoscyphus calyculus (Fr.) W. Phillips: (I), L70, L86, saprobe.

Hymenoscyphus serotinus (Pers.) W. Phillips: (I), L60, L67, L68, L103, L122, L146, saprobe.

Family *Lachnaceae*

Dasyscyphella nivea (R. Hedw.) Raitv.: (I), L46, saprobe.

Lachnellula calyciformis (Batsch) Dharne: (I), L79, saprobe.

Lachnellula occidentalis (G.G. Hahn & Ayers) Dharne: (I), L95, saprobe.

Lachnellula subtilissima (Cooke) Dennis: (I), L126, saprobe.

Lachnum virgineum (Batsch) P. Karst.: (I), L11, L20, L36, L83, L124, saprobe.

Family *Pezizellaceae*

Calycina citrina (Hedw.) Gray: (I), L24, L41, L588, L63, L65, L70, L78, L95, L102, L119, L122, saprobe.

Calycina parilis (P. Karst.) Kuntze: (I), L63, saprobe.

Family *Rutstroemiaceae*

Rutstroemia firma (Pers.) P. Karst.: (I), L63, saprobe.

Family *Sclerotiniaceae*

Ciboria amentacea (Balb.) Fuckel: (I), L49, saprobe.

Order Hypocreales
Family *Cordycipitaceae*

Ophiocordyceps gracilis (Grev.) G.H. Sung, J.M. Sung, Hywel-Jones & Spatafora: (M), L57, on caterpillar, entomopathogenic.

Family *Nectriaceae*

Nectria cinnabarina (Tode) Fr.: (I), L126, saprobe.

Order Leotiacae
Family *Leotiaceae*

Leotia lubrica (Scop.) Pers.: (I), L3, L65, L126, L146, saprobe.

Order Pezizales
Family *Caloscyphaceae*

Caloscypha fulgens (Pers.) Boud.: (I), L66, parasite on the seeds of conifers.

Family *Helvellaceae*

Dissingia leucomelaena (Pers.) K. Hansen & X.H. Wang: (E, or ?), L75, mycorrhizal.

Helvella acetabulum (L.) Quél.: (E, or ?), L73, mycorrhizal.

Helvella atra J. König: (I), L144, mycorrhizal.

Helvella crispa (Scop.) Fr.: (E, or ?), L93, L112, L125, mycorrhizal.

Helvella elastica Bull.: (E), L3, L41, L112, L147, mycorrhizal.

Helvella fibrosa (Wallr.) Korf: (I), L79, mycorrhizal.

Helvella lacunosa Afzel.: (E, or ?), L5, L58, L71, L83, mycorrhizal.

Helvella leucophaea (Battarra) Pers.: (I), L85, mycorrhizal.

Family *Morchellaceae*

Morchella esculenta (L.) Pers.: (E), L130, mycorrhizal.

Family *Pezizaceae*

Legaliana badia (Pers.) Van Vooren: (I), L3, L133, mycorrhizal.

Pachyella celtica (Boud.) Häffne: (I), L47, L79, saprobe.

Paragalactinia succosa (Berk.) Van Vooren: (I), L49, saprobe.

Peziza arvernensis Roze & Boud.: (I), L70, L75, saprobe.

Peziza depressa Pers.: (I), L112, saprobe.

Peziza micropus Pers.: (I), L83, saprobe.

Sarcosphaera coronaria (Jacq.) J. Schröt.: (E, or ?), L73, L74, saprobe.

Family *Pyronemataceae*

Aleuria aurantia (Pers.) Fuckel: (I), L38, L60, L70, L101, saprobe.

Aleuria splendens (Quél.) Gillet: (I), L64, L111, saprobe.

Geopora sumneriana (Cooke ex W. Phillips) M. Torre: (I), L766, saprobe.

Humaria hemisphaerica (F.H. Wigg.) Fuckel: (I), L52, L70, saprobe.

Otidea alutacea (Pers.) Massee: (I), L103, L10, L126, saprobe.

Tarzetta catinus (Holmsk.) Korf & J.K. Rogers: (I), L58, L68, L70, L71, L73, saprobe.

Tarzetta cupularis (L.) Lambotte: (I), L70, saprobe.

Family *Sarcoscyphaceae*

Sarcoscypha coccinea (Gray) Boud.: (I), L5, L143, saprobe.

Order Xylariales
Family *Diatrypaceae*

Diatrype disciformis (Hoffm.) Fr.: (I), L5, L11, L16, L17, L21, L29, L30, L35, L58, L59, L65, L66, L67, L78, L83, L98, L103, L107, L126, L127, L132, L133, L135, L136, L137, L139, saprobe.

Diatrype stigma (Hoffm.) Fr.: (I), L63, L68, L137, saprobe.

Eutypa acharii Tul. & C. Tul.: (I), L102, saprobe.

Family *Graphostromataceae*

Biscogniauxia nummularia (Bull.) Kuntze: (I), L62, endophytic.

Family *Hypoxylaceae*

Daldinia concentrica (Bolton) Ces. & De Not.: (M), L60, saprobe.

Hypoxylon fragiforme (Pers.) J. Kickx f.: (I), L36, L52, L81, L88, L128, L136, saprobe.

Hypoxylon macrosporum P. Karst.: (I), L78, saprobe.

Hypoxylon rutilum Tul. & C. Tul.: (I), L6, saprobe.

Jackrogersella cohaerens (Pers.) L. Wendt, Kuhnert & M. Stadler: (I), L94, saprobe.

Jackrogersella multiformis (Fr.) L. Wendt, Kuhnert & M. Stadler: (I), L46, L63, L78, L127, L126, L127, L132, L137, saprobe.

Family *Melogrammataceae*

Melogramma campylosporum Fr.: (I), L81, saprobe.

Melogramma spiniferum (Wallr.) De Not.: (I), L58, saprobe.

Family *Xylariaceae*

Kretzschmaria deusta (Hoffm.) P.M.D. Martin: (I), L126, saprobe.

Rosellinia mammiformis (Pers.) Ces. & De Not.: (I), L60, L83, L88, saprobe.

Xylaria hypoxylon (L.) Grev.: (I), L111, saprobe.

Xylaria longipes Nitschke: (I), L125, saprobe.

Xylaria polymorpha (Pers.) Grev.: (M), L46, L56, L57, L63, L70, L86, L126, saprobe.

Division BASIDIOMYCOTA
Order Agaricales
Family *Agaricaceae*

Agaricus arvensis Schaeff.: (E), L108, saprobe.

Agaricus bisporus (J.E. Lange) Imbach: (E), L70, saprobe.

Agaricus bresadolanus Bohus: (P), L90, saprobe.

Agaricus campestris L.: (F), L72, saprobe.

Agaricus comtulus Fr.: (E), L7, saprobe.

Agaricus cupreobrunneus (Jul.Schäff. & Steer) Pilát: (E), L115, saprobe.

Agaricus essettei Bon: (E), L18, L65, saprobe.

Agaricus langei (F.H. Møller) F.H. Møller: (E), L65, saprobe.

Agaricus moelleri Wasser: (P), L52, saprobe.

Agaricus pampeanus Speg.: (E), L18, L126, saprobe.

Agaricus sylvicola (Vittad.) Peck: (E), L30, saprobe.

Agaricus xanthoderma Genev.: (P), L65, L69, L126, saprobe.

Chlorophyllum brunneum (Farl. & Burt) Vellinga: (E, or ?), L78, saprobe.

Chlorophyllum rhacodes (Vittad.) Vellinga: (E), L104, saprobe.

Coprinus comatus (O.F. Müll.) Pers.: (F), L86, L97, saprobe.

Crucibulum laeve (Huds.) Kambly: (I), L41, L70, L79, L93, L119, saprobe.

Cyathus olla (Batsch) Pers.: (I), L99, saprobe.

Cystoderma amianthinum (Scop.) Fayod: (I), L65, L118, saprobe.

Cystoderma carcharias (Pers.) Fayod: (I), L65, saprobe.

Cystodermella granulosa (Batsch) Harmaja: (I), L81, L120, saprobe.

Lepiota clypeolaria (Bull.) P. Kumm.: (P), L09, L108, L120, saprobe.

Lepiota cristata (Bolton) P. Kumm.: (P), L15, L57, saprobe.

Lepiota ignivolvata Bousset & Joss. ex Joss: (P), L18, L30, saprobe.

Lepiota kuehneri Huijsman: (P), L85, saprobe.

Lepiota oreadiformis Velen.: (P), L49, L137, saprobe.

Leucoagaricus leucothites (Vittad.) Wasser: (E), L48, L51, saprobe.

Macrolepiota excoriata (Schaeff.) Wasser: (E), L70, L1012, L126, saprobe.

Macrolepiota heimii (Locq.) Bon: (E), L51, saprobe.

Macrolepiota mastoidea (Fr.) Singer: (E), L10, L18, L60, L65, L66, L86, L103, L116, L126, saprobe.

Macrolepiota procera (Scop.) Singer: (F), L18, L21, L23, L30, L34, L45, L48, L54, L57, L64, L65, L66, L70, L84, L85, L106, L107, L114, L120, L126, L139, saprobe.

Mycenastrum corium (Guers.) Desv.: (E), L15, saprobe.

Family *Amanitaceae*

Amanita battarrae (Boud.) Bon: (U), L39, mycorrhizal.

Amanita caesarea (Scop.) Pers.: (F), L10, L18, L112, mycorrhizal.

Amanita citrina Pers.: (P), L18, L30, L44, L478, L63, L65, L66, L102, L103, L107, L117, L120, L126, L139, mycorrhizal.

Amanita echinocephala (Vittad.) Quél.: (I), L26, L133, mycorrhizal.

Amanita excelsa (Fr.) Bertill.: (E), L17, L20, L34, L64, L100, L124, L137, L141, L146, mycorrhizal.

Amanita franchetii (Boud.) Fayod: (I), L113, L138, mycorrhizal.

Amanita gemmata (Fr.) Bertill.: (P), L3, L8, L33, L35, L43, L44, L46, L58, L62, L65, L66, L69, L77, L81, L82, L108, L124, L126, L127, L132, L136, L138, L139 L140, L141, L143, L145, mycorrhizal.

Amanita mairei Foley: (I), L5, L10, L58, L88, L30, mycorrhizal.

Amanita muscaria (L.) Lam.: (P), L18, L55, L64, L65, L70, L79, L89, L95, L96, L100, L102, L107, L124, L126, mycorrhizal.

Amanita nivalis Grev.: (U), L8, mycorrhizal.

Amanita pantherina (DC.) Krombh.: (P), L8, L10, L52, L60, L63, L93, L95, L118, L139, mycorrhizal.

Amanita phalloides (Vaill. ex Fr.) Link: (P), L17, L34, L38, L81, L125, L135, L139, L140, L141, mycorrhizal.

Amanita rubescens Pers.: (E), L4, L8, L11, L17, L18, L20, L26, L32, L33, L34, L35, L36, L40, L60, L6, L64, L65, L66, L67, L95, L97, L124, L133, L135, L136, L137, L138, L139, L140, L141, L147, L148, mycorrhizal.

Amanita solitaria (Bull.) Mérat: (P), L4, mycorrhizal.

Amanita submembranacea (Bon) Gröger: (U), L4, L9, L11, L36, mycorrhizal.

Amanita subnudipes (Romagn.) Tulloss: (E), (New record for Turkey)

Pileus 30-80 mm wide, conic at first, then convex, mat, with a striate margin, pale pure orange or with a more yellow tint (Fig. 2a). Flesh white, orange-ocherish under the cuticle, thin, almost odourless, taste mild. Lamellae free, subcrowded, and whitish, short lamellae are infrequent. Stipe 110-140 × 12-20 mm, cylindrical, white, or very pale, fragile, exannulate, hollow. The sac-like volva is white, membranous, thin, tall, and persistent. Spores (5-)7.5-10(-13) × (6-)9-12(-18) µm, subglobose to broadly ellipsoid (rarely globose or ellipsoid or narrower) and inamyloid (Fig. 2b). Basidia 10-12 × 50-55 µm, cylindrical to subclavate, 4-spored (Fig. 2c).

Distribution: L11, under *Quercus* sp., mycorrhizal.

Remarks: While this species was previously described as *Amanita crocea* var. *subnudipes* Romagn., it was raised to the species level by Tullos (2000). It is easily separated from *Amanita crocea* with its pure orange or with a more yellow tint pileus, white or very pale and lacking contrasting fibrillose decoration stipe.

Amanita vaginata (Bull.) Lam.: (E), L4, L5, L9, L11, L18, L21, L27, L34, L37, L38, L40, L67, L68, L81, L108, L127, L137, L138, L146, L147, L148, mycorrhizal.

Amanita verna (Bull.) Lam.: (P), L35, L141, L142, mycorrhizal.

Amanita virosa Bertill.: (P), L47, L137, L140, mycorrhizal.

Zhuliangomyces illinitus (Fr.) Redhead: (E), L40, saprobe.

Family *Cortinariaceae*

Cortinarius aureofulvus M.M. Moser: (I), L108, mycorrhizal.

Cortinarius elegantissimus Rob. Henry: (I), L40, mycorrhizal.

Cortinarius humicola (Quél.) Maire: (P), L66, L144, mycorrhizal.

Cortinarius melanotus Kalchbr.: (I), L2, mycorrhizal.

Cortinarius orellanus Fr.: (P), L2, mycorrhizal.

Family *Crepidotaceae*

Crepidotus luteolus Sacc.: (I), L85, L91, mycorrhizal.

Crepidotus variabilis (Pers.) P. Kumm.: (I), L7, L85, saprobe.

Family *Entolomataceae*

Clitopilus prunulus (Scop.) P. Kumm.: (E), L87, L25, saprobe.

Entoloma lividoalbum (Kühner & Romagn.) Kubička: (I), L40, saprobe.

Entoloma rhodopolium (Fr.) P. Kumm.: (P), L6, L108, saprobe.

Entoloma sinuatum (Bull. ex Pers.) P. Kumm.: (P), L11, saprobe.

Family *Fistulinaceae*

Fistulina hepatica (Schaeff.) With.: (E), L50, L84, saprobe, or weakly parasite, causes a brown rot.

Family *Hydnangiaceae*

Laccaria amethystina Cooke: (E), L4, L48, L53, L66, L79, L80, L94, L108, L109, L118, L125, L127, L145, L147, mycorrhizal.

Laccaria laccata (Scop.) Cooke: (E), L4, L42, L47, L48, L53, L62, L64, L66, L94, L96, L109, L108, L112, L127, L22, mycorrhizal.

Laccaria proxima (Boud.) Pat.: (E), L95, mycorrhizal.

Family *Hygrophoraceae*

Ampulloclitocybe clavipes (Pers.) Redhead, Lutzoni, Moncalvo & Vilgalys: (E), L84, L118, saprobe.

Cantharellula umbonata (J.F. Gmel.) Singer: (E), L66, mycorrhizal.

Chrysomphalina chrysophylla (Fr.) Clémençon: (U), L53, L66, saprobe.

Hygrocybe conica (Schaeff.) P. Kumm.: (I), L89, L119, L127, saprobe.

Hygrocybe obrussea (Fr.) Wunsche: (E), (New record for Turkey)

Pileus 15-30(70) mm across, campanulate, obtusely conic at first, later conic-campanulate to plane, often with an obtuse umbo, surface somewhat butyraceous when moist, satiny, dull when dry, orange to yellow-orange or reddish-orange when young, later fading to grey or olive-yellow or olive-brownish, margin acute, somewhat cleft, barely striate (Fig. 3a). Flesh lemon to orange-yellow coloured, thin, odour like *Lactarius quietus*, taste mild, somewhat unpleasant. Lamellae broad, yellow to yellow-orange, broadly adnexed and sometimes decurrent as a tooth, edges yellowish, smooth.

Stipe 4-10 × 25-60 mm, cylindric, somewhat flexuous, at times somewhat compressed, surface smooth, longitudinally fibrillose, dry, with translucent cross-bands, yellow-orange to orange, base sometimes whitish, hollow, elastic. Spores 3.5-5 × 7-9.5 µm, elliptic-cylindric, usually constricted, smooth, hyaline, with drops (Fig. 3b). Basidia 40-50 × 7-8.5 µm, clavate, with 4-sterigmata and basal clamp (Fig. 3b).

Distribution: L40, under *Quercus* sp., saprobe.

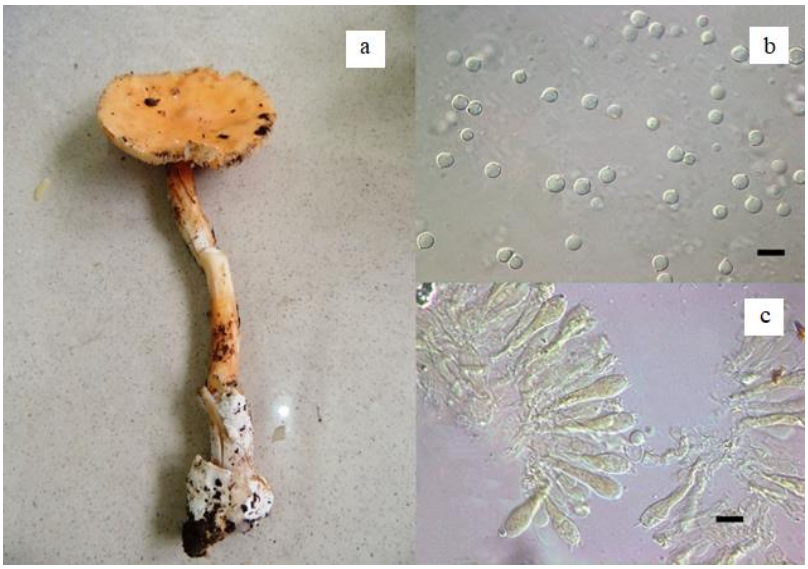

Fig. 2. *Amanita subnudipes*. a) Macroscopic view, b) basidiospores, c) basidia. Scales 15 µm.

Fig. 3. *Hygrocybe obrussea*. a) Macroscopic view, b) basidiospores and basidia, Scale 15 µm.

Remarks: In addition to the dry stipe, the characteristic features of this species are the +/broadly adnexed lamellae (never free), the typical odour like *Lactarius quietus*, and the constricted spores. The epithet *H. obrussea* is interpreted very variously in the lit. Arnolds (1986) clarified this problem and showed that *H. quieta* is a synonym of the Friesian species *Agaricus obrusseus*, and he proposed a neotypification. *Hygrophorus obrusseus* ss. Kuhn. is a different species with free lamellae, without a special odour, with non-constricted spores, and with cheilocystidia. This species was newly described by Arnolds (op.cit.) under the name *Hygrocybe cystidiata* (Breitenbach & Kränzlin, 1991).

Hygrophorus agathosmus (Fr.) Fr.: (E), L101, mycorrhizal.

Hygrophorus chrysodon (Batsch) Fr.: (E), L97, mycorrhizal.

Hygrophorus eburneus (Bull.) Fr.: (E), L2, mycorrhizal.

Hygrophorus hedrychii (Velen.) K. Kult: (U), L144, mycorrhizal.

Hygrophorus penarius Fr.: (E), L4, L31, L121, mycorrhizal.

Hygrophorus poetarum R. Heim: (E), L13, mycorrhizal.

Hygrophorus pudorinus (Fr.) Fr.: (E), L66, L97, L15, L119, mycorrhizal.

Family *Hygrophoropsidaceae*

Hygrophoropsis aurantiaca (Wulfen) Maire: (P), L86, L118, saprobe.

Family *Hymenogastraceae*

Galerina badipes (Pers.) Kühner: (P), L66, saprobe.

Gymnopilus sapineus (Fr.) Murrill: (P), L66, saprobe.

Hebeloma leucosarx P.D. Orton: (U), L2, mycorrhizal.

Hebeloma quercetorum Quadr.: (I), (New record for Turkey)

Fig. 4. *Hebeloma quercetorum*. a) Macroscopic view, b) basidiospores, c) basidia, d) cheilocystidia. Scales 15 µm.

Pileus 20-50 mm, convex at first, expanded with age, margin decurved for a long time, viscid to slimy, somewhat hygrophanous or not, dark pinkish buff to clay-buff or yellowish-brown (Fig. 4a). Flesh elastic and firm, hollow with a hanging string in the stem, white or whitish, with a greyish brown zone over the lamellae. Lamellae deeply emarginate, medium broad to rather broad, fairly crowded, at first pale pinkish buff, then through dark pinkish buff to clay-buff, without droplets. Smell and taste radish-like. Stipe 6-13 × 28-80 mm, cylindrical or with the base widened to 2 mm, whitish, discolouring to brown from the base, finely pruinose, especially in the upper part. Cortina absent, universal veil not observed. Spore deposit umber. Spores 6-8.5 × 10-14 µm, amygdaloid to broadly citriform, ornamentation distinct to rather strong, dextrinoid (Fig. 4b). Basidia 8-12 × 25-32 µm, cylindrical to subclavate, with 4-sterigmata (Fig. 4c). Cheilocystidia 6-8 × 30-55 µm, ventricose with a swollen basal part, less often cylindrical or subclavate (Fig. 4d).

Distribution: L11, under *Quercus* sp., mycorrhizal.

Remarks: *H. quercetorum* has a mixture of differently shaped cheilocystidia. It has ventricose or lageniform cheilocystidia that are mixed with cylindrical below. There are also usually a few intermediates that are clavate-lageniform, i.e. swollen both at the apex and in the basal part. Within Hebeloma. sect. Sinapizantia, and with a large number of ventricose cheilocystidia, can be confused with *H. sinapizans*. However, it is easily separated from *H. sinapizans* macroscopically by the occasional presence of tears, the lower number of lamellae and the less robust appearance, and microscopically by the presence of occasional gently clavate and clavate-lageniform cheilocystidia.

Hebeloma sinapizans (Paulet) Gillet: (P), L90, L120, L121, mycorrhizal.

Family *Inocybaceae*

Inocybe acuta Boud.: (P), L36, mycorrhizal.

Inocybe asterospora Quél.: (P), L9, mycorrhizal.

Inocybe catalaunica Singer: (P), L91, L92, L111, mycorrhizal.

Inocybe fuscidula Velen.: (P), L66, L92, mycorrhizal.

Inocybe godeyi Gillet: (P), L73, mycorrhizal.

Inocybe grammopodia Malençon: (P), L73, mycorrhizal.

Inocybe lacera (Fr.) P. Kumm.: (P), L87, mycorrhizal.

Inocybe phaeodisca Kühner var. *geophylloides*: (P), L66, mycorrhizal.

Inocybe posterula (Britzelm.) Sacc.: (P), L66, L78, L87, L92, L111, mycorrhizal.

Inocybe pseudodestricta Stangl & J. Veselský: (P), L1, L91, mycorrhizal.

Inocybe queletii Konrad: (P), L127, mycorrhizal.

Inocybe sambucina (Fr.) Quél.: (P), L1, mycorrhizal.

Inocybe splendens R. Heim: (P), L74, L104, mycorrhizal.

Inosperma bongardii (Weinm.) Matheny & Esteve-Rav.: (P), L1, mycorrhizal.

Inosperma bongardii (Weinm.) Matheny & Esteve-Rav.: (P), L73, L74, mycorrhizal.

Inosperma erubescens (A. Blytt) Matheny & Esteve-Rav.: (P), L73, mycorrhizal.

Family *Lycoperdaceae*

Bovista plumbea Pers.: (E), L52, L59, L66, L72, L109, L127, saprobe.

Calvatia gigantea (Batsch) Lloyd: (E), L52, L87, saprobe.

Calvatia utriformis (Bull.) Jaap: (E), L66, L72, L95, L118, saprobe.

Lycoperdon atropurpureum Vittad.: (E), L147, saprobe.

Lycoperdon caudatum J. Schröt.: (E), L66, saprobe.

Lycoperdon echinatum Pers.: (E), L19, L31, L50, L53, L66, saprobe.

Lycoperdon excipuliforme (Scop.) Pers.: (E), L96, saprobe.

Lycoperdon lividum Pers.: (E), L82, L87, L135, saprobe.

Lycoperdon mammiforme Pers.: (E), L50, saprobe.

Lycoperdon molle Pers.: (E), L31, L53, L66, L70, L71, L104, L108, L112, L127, saprobe.

Lycoperdon nigrescens Wahlenb.: (E), L74, saprobe.

Lycoperdon perlatum Pers.: (E), L6, L11, L19, L31, L46, L49, L53, L58, L65, L66, L71, L74, L82, L86, L87, L97, L98, L103, L107, L108, L109, L115, L120, L121, L124, L125, L126, L127, saprobe.

Lycoperdon pratense Pers.: (E), L52, L109, saprobe.

Lycoperdon pyriforme Schaeff.: (E), L35, L59, L66, L67, L87, L108, L127, L129, saprobe.

Lycoperdon umbrinum Pers.: (E), L53, saprobe.

Family *Lyophyllaceae*

Lyophyllum fumosum (Pers.) P.D. Orton: (E), L98, saprobe.

Lyophyllum transforme (Sacc.) Singer: (E), L104, saprobe.

Family *Marasmiaceae*

Marasmius bulliardii Quél.: (I), L126, saprobe.

Marasmius cohaerens (Pers.) Cooke & Quél.: (I), L46, saprobe.

Marasmius oreades (Bolton) Fr.: (E), L66, saprobe.

Marasmius torquescens Quél.: (I), L79, L118, saprobe.

Megacollybia platyphylla (Pers.) Kotl. & Pouzar: (I), L12, L18, L21, L27, L34, L36, L44, L45, L51, L59, L65, L66, L82, L84, L104, L108, L125, saprobe.

Family *Mycenaceae*

Mycena crocata (Schrad.) P. Kumm.: (I), L42, L46, L53, L55, L59, L64, L66, L71, L87, L99, L118, L123, L127, L128, saprobe.

Mycena galericulata (Scop.) Gray: (I), L1, saprobe.

Mycena galopus (Pers.) P. Kumm.: (I), L128, saprobe.

Mycena haematopus (Pers.) P. Kumm.: (I), L7, L79, saprobe.

Mycena laevigata (Lasch) Gillet: (I), L127, saprobe.

Mycena latifolia (Peck) A.H. Sm.: (I), L125, saprobe.

Mycena leptocephala (Pers.) Gillet: (I), L60, saprobe.

Mycena pelianthina (Fr.) Quél.: (P), L128, saprobe.

Mycena pura (Pers.) P. Kumm.: (P), L16, L19, L22, L31, L42, L50, L59, L66, L67, L70, L72, L76, L82, L86, L87, L91, L108, L109, L111, L127, saprobe.

Mycena renati Quél.: (I), L60, saprobe.

Mycena rosea Gramberg: (P), L11, L67, L77, L87, L108, L115, L118, L127, L140, saprobe.

Mycena stipata Maas Geest. & Schwöbel: (I), L67, saprobe.

Panellus mitis (Pers.) Singer: (I), L115, saprobe.

Family *Omphalotaceae*

Collybiopsis confluens (Pers.) R.H. Petersen: (I), L71, saprobe.

Gymnopus dryophilus (Bull.) Murrill: (E), L11, L14, L33, L88, L91, L109, L111, L127, L141, saprobe.

Gymnopus foetidus (Sowerby) P.M. Kirk: (I), L40, saprobe.

Gymnopus fusipes (Bull.) Gray: (I), L84, saprobe.

Gymnopus oreadoides (Pass.) Antonín & Noordel.: (I), L84, saprobe.

Mycetinis alliaceus (Jacq.) Earle: (I), L1, L16, L17, L42, L57, L59, L60, L64, L65, L66, L71, L74, L76, L79, L87, L91, L92, L97, L108, L109, L113, L114, L115, L127, L128, saprobe.

Omphalotus olearius (DC.) Singer: (P), L11, L15, saprobe.

Rhodocollybia butyracea (Bull.) Lennox: (E), L4, L66, L71, L96, L120, L147, saprobe.

Family *Physalacriaceae*

Armillaria cepistipes Velen.: (E), L39, parasite, causes rotten root.

Armillaria gallica Marxm. & Romagn.: (E), L55, saprobe or weak pathogen.

Armillaria mellea (Vahl) P. Kumm.: (F), L6, L19, L24, L30, L42, L48, L57, L66, L106, L108, L115, L127, L140, parasite, causes rotten root.

Armillaria solidipes Peck: (U), L22, L66, L145, parasite, causes rotten root.

Hymenopellis radicata (Relhan) R.H. Petersen: (E), L6, L11, L16, L18, L21, L22, L30, L33, L34, L35, L36, L37, L38, L41, L42, L44, L46, L47, L50, L53, L64, L65, L66, L67, L70, L71, L72, L74, L78, L82, L84, L85, L91, L92, L104, L108, L109, L118, L119, L123, L125, L126,

L127, L128, L137, L138, L140, L141, L144, L146, L148, saprobe.

Mucidula mucida (Schrad.) Pat.: (E), L66, L87, L103, L108, L115, L128, L144, saprobe.

Oudemansiella melanotricha (Dörfelt) M.M. Moser: (E), L66, L109, L115, saprobe.

Family *Pleurotaceae*

Pleurotus eryngii (DC.) Quél.var. *eryngii*: (E), L65, mycorrhizal.

Pleurotus ostreatus (Jacq.) P. Kumm.: (F), L87, L90, L147, lignicolous.

Pleurotus pulmonarius (Fr.) Quél.: (E), L32, lignicolous.

Family *Pluteaceae*

Pluteus cervinus (Schaeff.) P. Kumm.: (E), L36, saprobe.

Pluteus petasatus (Fr.) Gillet: (I), L27, L31, L36, L50, L140, L144, saprobe.

Pluteus salicinus (Pers.) P. Kumm.: (I), L46, L82, L127, L138, L141, saprobe.

Volvariella bombycina (Schaeff.) Singer: (E), L137, saprobe.

Family *Psathyrellaceae*

Britzelmayria multipedata (Peck) D. Wächt. & A. Melzer: (I), L70, saprobe.

Coprinellus micaceus (Bull.) Vilgalys, Hopple & Jacq. Johnson: (I), L1, L34, L37, L45, L46, L47, L65, L66, L71, L72, L74, L84, L87, L102, L104, L108, L109, L112, L125, L128, saprobe.

Coprinellus silvaticus (Peck) Gminder: (I), L127, saprobe.

Coprinellus xanthothrix (Romagn.) Vilgalys, Hopple & Jacq. Johnson: (I), L16, L128, saprobe.

Coprinopsis atramentaria (Bull.) Redhead, Vilgalys & Moncalvo: (E, or P), L59, L109, saprobe.

Coprinopsis cinerea (Schaeff.) Redhead, Vilgalys & Moncalvo: (I), L73, saprobe.

Coprinopsis insignis (Peck) Redhead, Vilgalys & Moncalvo: (I), L9, L11, saprobe.

Coprinopsis lagopus (Fr.) Redhead, Vilgalys & Moncalvo: (I), L13, saprobe.

Coprinopsis picacea (Bull.) Redhead, Vilgalys & Moncalvo: (I), L6, L22, L24, L31, L55, L98, L108, L140, saprobe.

Lacrymaria lacrymabunda (Bull.) Pat.: (I), L53, L71, L103, L109, L134, saprobe.

Panaeolus acuminatus (Schaeff.) Quél.: (I), L16, saprobe.

Panaeolus cinctulus (Bolton) Sacc.: (P), : (I), L118, saprobe.

Psathyrella candolleana (Fr.) Maire: (I), L53, saprobe.

Psathyrella cotonea (Quél.) Konrad & Maubl.: (I), L28, saprobe.

Psathyrella murcida (Fr.) Kits van Wav.: (I), L67, saprobe.

Psathyrella phegophila Romagn.: (I), L148, saprobe.

Psathyrella piluliformis (Bull.) P.D. Orton: (I), L31, saprobe.

Psathyrella tephrophylla (Romagn.) Bon: (I), L13, saprobe.

Family *Schizophyllaceae*

Schizophyllum commune Fr.: (M), L34, L60, L69, L82, L87, L95, L112, L113, L138, lignicolous.

Family *Strophariaceae*

Agrocybe dura (Bolton) Singer: (E), L91, L104, saprobe.

Agrocybe paludosa (J.E. Lange) Kühner & Romagn. ex Bon: (I), L104, L109, L134, saprobe.

Agrocybe pediades (Fr.) Fayod: (I), L108, saprobe.

Agrocybe praecox (Pers.) Fayod: (E), L1, L21, L59, L60, L82, saprobe.

Hypholoma capnoides (Fr.) P. Kumm.: (I), L2, saprobe.

Hypholoma fasciculare (Huds.) P. Kumm.: (P), L1, L5, L16, L18, L19, L34, L44, L45, L53, L59, L60, L62, L66, L67, L70, L95, L96, L104, L108, L112, L127, L142, L144, saprobe.

Hypholoma lateritium (Schaeff.) P. Kumm: (P), L67, saprobe.

Leratiomyces squamosus (Pers.) Bridge & Spooner: (I), L53, L66, L87, L118, saprobe.

Pholiota astragalina (Fr.) Singer: (I), L64, saprobe.

Pholiota conissans (Fr.) Kuyper & Tjall.-Beuk.: (I), L77, saprobe.

Pholiota gummosa (Lasch) Singer: (I), L67, saprobe.

Pholiota lenta (Pers.) Singer: (I), L66, saprobe.

Pholiota mixta (Fr.) Kuyper & Tjall.-Beuk.: (I), L112, saprobe.

Protostropharia semiglobata (Batsch) Redhead, Moncalvo & Vilgalys: (E), L109, L118, saprobe.

Stropharia aeruginosa (Curtis) Quél.: (I), L16, L19, L30, saprobe.

Stropharia caerulea Kreisel: (I), L47, L62, L66, L67, L82, L104, L108, L115, L144, saprobe.

Family *Tricholomataceae*

Aspropaxillus candidus (Bres.) M.M. Moser: (E), L2, L66, saprobe.

Atractosporocybe inornata (Sowerby) P. Alvarado, G. Moreno & Vizzini: (I), L66, saprobe.

Clitocybe costata Kühner & Romagn.: (I), L45, L73, saprobe.

Clitocybe nebularis (Batsch) P. Kumm.: (F), L47, L61, L64, L66, L96, L97, L104, saprobe.

Clitocybe odora (Bull.) P. Kumm: (E), L50, L65, L66, L96, L109, saprobe.

Clitocybe phaeophthalma (Pers.) Kuyper: (P), L66, saprobe.

Clitocybe phyllophila (Pers.) P. Kumm.: (P), L118, saprobe.

Infundibulicybe geotropa (Bull.) Harmaja: (F), L86, L87, saprobe.

Infundibulicybe gibba (Pers.) Harmaja: (E), L66, L82, L84, L118, saprobe.

Lepista densifolia (J. Favre) Singer & Clémençon: (E), L73, saprobe.

Lepista nuda (Bull.) Cooke: (E), L19, L66, L67, L78, L123, saprobe.

Melanoleuca exscissa (Fr.) Singer: (E), L145, saprobe.

Paralepista flaccida (Sowerby) Vizzini: (E), L25, L45, saprobe.

Tricholoma acerbum (Bull.) Quél.: (P), L26, mycorrhizal.

Tricholoma albobrunneum (Pers.) P. Kumm.: (P), L19, L62, mycorrhizal.

Tricholoma atrosquamosum var. *squarrulosum* (Bres.) Mort. Chr. & Noordel.: (E), L108, mycorrhizal.

Tricholoma aurantium (Schaeff.) Ricken: (P), L66, L96, L119, mycorrhizal.

Tricholoma basirubens (Bon) A. Riva & Bon: (U), L121, mycorrhizal.

Tricholoma cf. *venenatum* G.F. Atk.: (U), L77, L96, mycorrhizal.

Tricholoma cingulatum (Almfelt ex Fr.) Jacobashch: (U), L122, mycorrhizal.

Tricholoma equestre (L.) P. Kumm.: (E or P), L108, mycorrhizal.

Tricholoma focale (Fr.) Ricken: (I), L124, mycorrhizal.

Tricholoma fulvum (DC.) Bigeard & H. Guill.: (E or ?), L57, L108, L125, mycorrhizal.

Tricholoma imbricatum (Fr.) P. Kumm.: (I), L65, L66, mycorrhizal.

Tricholoma joachimii Bon & A. Riva: (P), L89, mycorrhizal.

Tricholoma populinum J.E. Lange: (E), L20, L61, mycorrhizal.

Tricholoma portentosum (Fr.) Quél.: (E), L39, L62, L121, L124, mycorrhizal.

Tricholoma quercetorum Contu: (U), L40, mycorrhizal.

Tricholoma roseoacerbum A. Riva: (U), (New record for Turkey)

Pileus 50-120 mm, convex with an involute, often ribbed margin, somewhat expanding with age, but margin remaining deflexed or even involute for a very long time, smooth or minutely granulate, slightly viscid in moist weather, almost without radial structure, in the central part pinkish buff to brick or pale vinaceous, somewhat marbled, towards margin whitish to salmon, sometimes with pale yellowish flushes (Fig. 5a). Flesh firm, white to cream; smell weak; taste farinaceous to slightly bitterish. Lamellae emarginate, crowded to very crowded, whitish chrome to cream or straw yellow, often with brown spots when old or damaged. Stipe 15-30 × 20-40 (-60) mm, cylindrical to slightly clavate, often somewhat rooting with attenuated base, white or whitish, often pinkish to ochre flushed in the lower part, smooth or slightly punctate floccose. Spores 3-5 × 4.5-7 μm, average, predominantly ellipsoid (Fig. 5b). Basidia 5.0-7.5 × 20-30 μm, clavate, with 4-sterigmata (Fig. 5c).

Distribution: L66, under *A. nordmanniana* subsp. *bornmuelleriana*, mycorrhizal, L114, L20, under *F. orientalis*, mycorrhizal.

Remarks: *Tricholoma roseoacerbum* is closely related to *T. acerbum*, but differs by the faintly viscid, pinkish buff to the brick cap, and by a less distinctly ribbed cap margin. Another possibility of confusion is *T. stans*, but this species tends to have more well-spaced gills, darker brick cap colours, and a soon expanding cap margin.

Tricholoma saponaceum var. *saponaceum* (Fr.) P. Kumm.: (U), L71, L108, L127, L4, L144, L119, mycorrhizal.

Tricholoma scalpturatum (Fr.) Quél.: (U), L40, mycorrhizal.

Tricholoma sciodes (Pers.) C. Martín: (U), L114, L144, mycorrhizal.

Tricholoma sejunctum (Sowerby) Quél.: (U), L71, L89, mycorrhizal.

Tricholoma stans (Fr.) Sacc.: (U), L96, mycorrhizal.

Tricholoma subannulatum (Peck) Zeller: (I), L117, L121, L135, mycorrhizal.

Tricholoma sulphureum (Bull.) P. Kumm.: (P), L25, mycorrhizal.

Tricholoma terreum (Schaeff.) P. Kumm.: (E), L19, L65, L66, L67, L86, L97, L115, L117, L121, mycorrhizal.

Tricholoma triste (Scop.) Quél.: (E), L40, mycorrhizal.

Tricholoma ustaloides Romagn.: (P), L89, L125, mycorrhizal.

Tricholomopsis rutilans (Schaeff.) Singer: (P), L66, L71, L86, L103, L125, L127, saprobe.

Family *Tubariaceae*

Phaeomarasmius erinaceus (Fr.) Scherff. ex Romagn.: (I), L9, L148, saprobe.

Family *Typhulaceae*

Typhula fistulosa (Holmsk.) Olariaga: (I), L40, saprobe.

Order Auriculariales
Family *Auriculariaceae*

Auricularia auricula-judae (Bull.) Quél.: (E), L63, saprobe.

Family *Exidiaceae*

Exidia truncata Fr.: (E), L9, L54, L93, L63, L84, saprobe.

Pseudohydnum gelatinosum (Scop.) P. Karst.: (I), L66, L71, L109, saprobe.

Order Boletales
Family *Boletaceae*

Boletus aereus Bull.: (F), L11, L19, mycorrhizal.

Boletus aestivalis (Paulet) Fr.: (F), L103, L127, L139, mycorrhizal.

Boletus edulis Bull.: (F), L11, L18, L23, L27, L34, L35, L36, L37, L48, L66, L96, L102, L125, L127, L134, L140, L141, mycorrhizal.

Boletus pinophilus Pilát & Dermek: (F), L11, L65, mycorrhizal.

Boletus reticulatus Schaeff.: (F), L5, L18, L27, L34, L37, L108, L127, mycorrhizal.

Butyriboletus fechtneri (Velen.) D. Arora & J.L. Frank: (E), L27, L35, L109, L127, mycorrhizal.

Butyriboletus pseudoregius (Heinr. Huber) D. Arora & J.L. Frank: (E), L11, L89, mycorrhizal.

Butyriboletus regius (Krombh.) D. Arora & J.L. Frank: (E), L27, mycorrhizal.

Butyriboletus subappendiculatus (Dermek, Lazebn. & J. Veselský) D. Arora & J.L. Frank: (E), L5, L19, L66, L67, mycorrhizal.

Caloboletus calopus (Pers.) Vizzini: (I), L57, L66, L125, mycorrhizal.

Chalciporus piperatus (Bull.) Bataille: (E), L126, mycorrhizal.

Cyanoboletus pulverulentus (Opat.) Gelardi, Vizzini & Simonini: (E), L95, mycorrhizal.

Imperator rhodopurpureus (Smotl.) Assyov, Bellanger, Bertéa, Courtec., Koller,

Loizides, G. Marques, J.A. Muñoz, Oppicelli, D. Puddu, F. Rich. & P.-A. Moreau: (I), L11, mycorrhizal.

Leccinum aurantiacum (Bull.) Gray: (E), L23, mycorrhizal.

Leccinum duriusculum (Schulzer ex Kalchbr.) Singer: (E), L134, L138, mycorrhizal.

Leccinum pseudoscabrum (Kallenb.) Šutara: (E), L138, mycorrhizal.

Leccinum quercinum (Pilát) E.E. Green & Watling: (E), L18, mycorrhizal.

Neoboletus erythropus (Pers.) C. Hahn: (E), L11, L59, L66, L70, L71, L72, L74, L78, L91, L92, L125, L127, L141, mycorrhizal.

Neoboletus luridiformis (Rostk.) Gelardi, Simonini & Vizzini: (E), L125, mycorrhizal.

Neoboletus xanthopus (Klofac & A. Urb.) Klofac & A. Urb.: (I), L118, mycorrhizal.

Rubroboletus dupainii (Boud.) Kuan Zhao & Zhu L. Yang: (P), L65, mycorrhizal.

Rubroboletus rhodoxanthus (Krombh.) Kuan Zhao & Zhu L. Yang: (U), L11, L66, mycorrhizal.

Rubroboletus satanas (Lenz) Kuan Zhao & Zhu L. Yan: (P), L11, L125, mycorrhizal.

Strobilomyces strobilaceus (Scop.) Berk.: (I), L46, L127, mycorrhizal.

Suillellus queletii (Schulzer) Vizzini, Simonini & Gelardi: (E), L11, L70, mycorrhizal.

Suillellus rubrosanguineus (Cheype) Blanco-Dios: (U), L125, mycorrhizal.

Xerocomellus chrysenteron (Bull.) Šutara: (E), L9, L11, L19, L22, L34, L36, L64, L65, L66, L67, L68, L70, L86, L87, L103, L104, L118, L127, L128, L133, L140, L145, mycorrhizal.

Xerocomus depilatus (Redeuilh) Manfr. Binder & Besl: (E), L29, mycorrhizal.

Xerocomus porosporus (Imler ex G. Moreno & Bon) Contu: (U), L66, L75, mycorrhizal.

Xerocomus rubellus (Krombh.) Quél.: (E), L66, mycorrhizal.

Xerocomus subtomentosus (L.) Quél.: (E), L12, mycorrhizal.

Family *Diplocystidiaceae*

Astraeus hygrometricus (Pers.) Morgan: (I), L39, L42, L48, L61, L94, L95, L113, saprobe.

Fig. 5. *Tricholoma roseoacerbum*. a) Macroscopic view, b) basidiospores, c) basidia. Scales 15 µm.

Family *Gomphidiaceae*

Chroogomphus rutilus (Schaeff.) O.K. Mill.: (E), L19, L31, L38, L49, L58, L62, L66, L82, L86, L94, L103, L107, L109, L121, L127, mycorrhizal.

Family *Gyroporaceae*

Gyroporus *castaneus* (Bull.) Quél.: (E), L53, mycorrhizal.

Family *Paxillaceae*

Paxillus involutus (Batsch) Fr.: (P), L4, L5, L17, L47, L62, L96, L109, L112, mycorrhizal.

Family *Rhizopogonaceae*

Rhizopogon abietis A.H. Sm.: (I), L96, mycorrhizal.

Rhizopogon luteolus Kromb.: (E), L17, L107, L140, mycorrhizal.

Rhizopogon roseolus (Corda) Th. Fr.: (E), L19, L94, L124, mycorrhizal.

Family *Sclerodermataceae*

Pisolithus arhizus (Scop.) Rauschert: (M), L145, mycorrhizal.

Scleroderma areolatum Ehrenb.: (I), L95, L144, mycorrhizal.

Scleroderma cepa Pers.: (I), L24, mycorrhizal.

Scleroderma polyrhizum (J.F. Gmel.) Pers.: (I), L144, mycorrhizal.

Scleroderma verrucosum (Bull.) Pers.: (I), L22, L61, mycorrhizal.

Family *Suillaceae*

Suillus bovinus (L.) Roussel: (E), L56, L58, mycorrhizal.

Suillus collinitus (Fr.) Kuntze: (E), L15, L117, mycorrhizal.

Suillus granulatus (L.) Roussel: (E), L31, L82, L107, L108, L124, mycorrhizal.

Suillus luteus (L.) Roussel: (E), L17, L19, L24, L66, L96, L104, L124, L127, mycorrhizal.

Family *Tapinellaceae*

Tapinella atrotomentosa (Batsch) Šutara: (I), L135, saprobe.

Tapinella panuoides (Fr.) E.-J. Gilbert: (I), L82, saprobe.

Order Cantharellales
Family *Hydnaceae*

Cantharellus cibarius Fr.: (F), L4, L5, L34, L43, L50, L58, L66, L118, L135, mycorrhizal.

Clavulina cinerea (Bull.) J. Schröt.: (E), L25, L48, L66, L71, L103, L108, L126, L147, mycorrhizal.

Clavulina coralloides (L.) J. Schröt.: (E), L73, mycorrhizal.

Clavulina cristata (Holmsk.) J. Schröt.: (E), L11, L58, L61, L64, L66, L87, L94, L109, L126, mycorrhizal.

Clavulina rugosa (Bull.) J. Schröt.: (E), L48, L59, L66, L87, L97, L109, L118, L122, L126, L127, mycorrhizal.

Craterellus cornucopioides (L.) Pers.: (F), L4, L42, L47, L48, L50, L59, L66, L71, L89, L104, L108, L109, L114, L118, L126, L144, saprobe.

Craterellus lutescens (Fr.) Fr: (E), L57, L66, L127, mycorrhizal.

Craterellus tubaeformis (Fr.) Quél.: (E), L57, mycorrhizal.

Hydnum repandum L.: (F), L4, L19, L31, L39, L47, L50, L53, L57, L59, L66, L81, L89, L97, L103, L108, L109, L114, L124, L127, L145, mycorrhizal.

Pseudocraterellus undulatus (Pers.) Rauschert: (E), L48, L50, L58, L71, L108, L126, saprobe.

Order Dacrymycetales
Family *Dacrymycetaceae*

Calocera viscosa (Pers.) Fr.: (I), L66, L71, L87, L123, L127, saprobe, causes a white-rot.

Ditiola radicata (Alb. & Schwein.) Fr.: (I), L19, L34, L66, L133, saprobe.

Order Geastrales
Family *Geastraceae*

Geastrum berkeleyi Massee: (I), L115, saprobe.

Geastrum coronatum Pers.: (I), L24, saprobe.

Geastrum fimbriatum Fr.: (I), L58, saprobe.

Geastrum minimum Schwein.: (I), L109, saprobe.

Geastrum triplex Jungh.: (I), L53, under *F. orientalis*, saprobe. L87, saprobe.

Order Gomphales
Family *Clavariadelphaceae*

Clavariadelphus pistillaris (L.) Donk: (E), L40, L55, L118, saprobe.

Clavariadelphus truncatus (Quél.) Donk: (E), L14, L53, L70, L71, L109, saprobe.

Family *Gomphaceae*

Ramaria aurea (Schaeff.) Quél.: (E), L72, L104, L109, L136, mycorrhizal.

Ramaria flava (Schaeff.) Quél.: (E), L66, mycorrhizal.

Ramaria flavescens Schaeff. ex R.H. Petersen: (E), L31, L66, L70, L127, mycorrhizal.

Ramaria flavobrunnescens (G.F. Atk.) Corner: (E), L34, L109, mycorrhizal.

Ramaria formosa (Pers.) Quél.: (P), L71, , mycorrhizal.

Ramaria lutea Schild: (E), L34, L46, L50, L53, L66, L71, L109, mycorrhizal.

Ramaria pallida (Schaeff.) Ricken: (P), L19, L66, L71, L109, mycorrhizal.

Ramaria rubella (Schaeff.) R.H. Petersen: (U), L63, mycorrhizal.

Ramaria stricta (Pers.) Quél.: (E), L46, L140, mycorrhizal.

Family *Lentariaceae*

Lentaria afflata (Lagger) Corner: (I), L104, saprobe.

Order Hymenochaetales
Family *Hymenochaetaceae*

Coltricia perennis (L.) Murrill: (I), L112, mycorrhizal.

Hymenochaete rubiginosa (Dicks.) Lév.: (I), L112, saprobe.

Inonotus nodulosus (Fr.) P. Karst.: (I), L47, saprobe, causes a soft white-rot.

Inonotus radiatus (Sowerby) P. Karst.: (I), L28, saprobe.

Phellinus hartigii (Allesch. & Schnabl) Pat.: (I), L109, L115, parasite.

Phellinus lundellii Niemelä: (I), L131, L141, parasite.

Family *Tubulicrinaceae*

Hyphodontia quercina (Pers.) J. Erikss.: (I), L69, L93, saprobe.

Order Hysterangiales
Family *Phallogastraceae*

Phallogaster saccatus Morgan: (I), L75, saprobe.

Order Phallales
Family *Phallaceae*

Clathrus ruber P. Micheli ex Pers.: (I), L143, saprobe.

Mutinus caninus (Huds.) Fr.: (I), L45, L139, L140, L142, L146, saprobe.

Phallus impudicus L.: (E), L4, L5, L12, L18, L19, L21, L27, L33, L34, L35, L36, L37, L41, L42, L45, L57, L66, L71, L77, L109, L113, L114, L125, L127, L133, L137, L138, L140, L141, L146, saprobe.

Order Polyporales
Family *Fomitopsidaceae*

Antrodia ramentacea (Berk. & Broome) Donk: (I), L129, saprobe.

Daedalea quercina (L.) Pers.: (I), L67, L129, L131, lignicolous.

Fomitopsis pinicola (Sw.) P. Karst.: (M), L1, L5, L67, L70, L71, L74, L75, L97, L104, L108, parasite, causes brown rot.

Neolentiporus squamosellus (Bernicchia & Ryvarden) Bernicchia & Ryvarden: (I), L128, saprobe or weakly parasite, causes a brown rot.

Family *Grifolaceae*

Grifola frondosa (Dicks.) Gray: (E), L13, saprobe or also weakly parasite, causes a white-rot and butt rot of trees.

Family *Irpicaceae*

Ceriporia reticulata (Hoffm.) Domański: (I), L18, L34, L35, saprobe.

Family *Meripilaceae*

Meripilus giganteus (Pers.) P. Karst.: (E), L45, saprobe.

Family *Meruliaceae*

Abortiporus biennis (Bull.) Singer: (I), L10, saprobe.

Bjerkandera adusta (Willd.) P. Karst.: (I), L18, L19, L61, L63, L79, L85, L109, L112, L127, saprobe, causes a white-rot.

Family *Phanerochaetaceae*

Junghuhnia nitida (Pers.) Ryvarden: (I), L63, L69, saprobe.

Phanerochaete caucasica (Parmasto) Burds: (I), L79, saprobe.

Terana coerulea (Lam.) Kuntze: (I), L61, saprobe.

Family *Polyporaceae*

Cerrena unicolor (Bull.) Murrill: (I), L148, parasite, causes canker rot.

Cyanosporus subcaesius (A. David) B.K. Cui, L.L. Shen & Y.C. Dai: (I), L14, lignicolous, causes a brown rot.

Daedaleopsis confragosa (Bolton) J. Schröt.: (I), L6, lignicolous, causes a white-rot.

Faerberia carbonaria (Alb. & Schwein.) Pouzar: (E), L4, L112, saprobe.

Fomes fomentarius (L.) Fr.: (M), L1, L18, L34, L35, L53, L60, L63, L66, L67, L84, L87, L98, L99, L113, L130, L138, saprobe or parasite, causes a white-rot.

Ganoderma australe (Fr.) Pat.: (I), L115, saprobe or parasite, causes a white-rot.

Ganoderma carnosum Pat.: (I), L14, L53, saprobe or parasite, causes a white-rot.

Ganoderma lucidum (Curtis) P. Karst.: (M), L9, L24, L43, L58, L71, L148, saprobe or parasite, causes a white-rot.

Ganoderma resinaceum Boud.: (I), L108, saprobe or parasite, causes a white-rot.

Lenzites betulinus (L.) Fr.: (I), L64, L112, saprobe.

Neofavolus alveolaris (DC.) Sotome & T. Hatt.: (M), L36, L148, L51, saprobe.

Picipes badius (Pers.) Zmitr. & Kovalenko: (E), L1, L16, L18, L21, L34, L37, L45, L59, L66, L68, L76,. L128, L138, L140, saprobe.

Picipes melanopus (Pers.) Zmitr. & Kovalenko: (I), L12, L27, L60, L67, L108, L139, lignicolous.

Polyporus arcularius (Batsch) Fr.: (E), L4, L11, L47, L57, L84, L102, L129, L133, L138, L141, L148, saprobe.

Polyporus brumalis (Pers.) Fr.: (E), L12, L70, L87, L96, L118, L123, saprobe.

Polyporus ciliatus Fr.: (E), L9, L18, L38, L65, L84, L108, L115, L146, saprobe.

Polyporus meridionalis (A. David) H. Jahn: (E), L36, saprobe.

Polyporus squamosus (Huds.) Fr.: (E), L110, lignicolous.

Polyporus tuberaster (Jacq. ex Pers.) Fr.: (M), L1, L37, saprobe.

Polyporus varius (Pers.) Fr.: (E), L5, L18, L21, L34, L37, L59, L66, L79, L96, L102, L104, L127, L133, L146, saprobe.

Pycnoporus cinnabarinus (Jacq.) P. Karst.: (M), L57, lignicolous.

Trametes gibbosa (Pers.) Fr.: (I), L1, L27, L34, L35, L60, L71, L85, L112, L114, L123, L127, lignicolous.

Trametes hirsuta (Wulfen) Lloyd: (I), L1, L12, L16, L17, L34, L42, L53, L59, L60, L61, L69, L82, L84, L87, L92, L93, L94, L99, L108, L129, L133, L137, lignicolous.

Trametes ochracea (Pers.) Gilb. & Ryvarden: (I), L12, L16, L21, L67, L87, L108, L138, lignicolous.

Trametes pubescens (Schumach.) Pilát: (I), L6, L108, lignicolous.

Trametes suaveolens (L.) Fr.: (I), L26, lignicolous.

Trametes versicolor (L.) Lloyd: (M), L14, L35, L36, L45, L47, L55, L59, L64, L82, L84, L85, L88, L94, L95, L96, L108, L112, L114, L118, L119, L126, L128, L137, L133, L141, lignicolous.

Trichaptum abietinum (Pers. ex J.F. Gmel.) Ryvarden: (I), L1, L12, L18, L57, L66, L77, L87, L88, L104, L109, saprobe.

Family *Sparassidaceae*

Sparassis crispa (Wulfen) Fr.: (F), L103, parasite or saprobe on the roots of coniferous trees.

Order Russulales
Family *Albatrellaceae*

Albatrellus cristatus (Schaeff.) Kotl. & Pouzar: (I), L16, L48, L55, L66, L71, L94, L118, L122, mycorrhizal.

Albatrellus pes-caprae (Pers.) Pouzar: (I), L59, L125, mycorrhizal.

Family *Amylostereaceae*

Amylostereum areolatum (Chaillet ex Fr.) Boidin: (I), L65, lignicolous, causes a white-rot.

Amylostereum laevigatum (Fr.) Boidin: (I), L96, lignicolous, causes a white-rot.

Family *Auriscalpiaceae*

Auriscalpium vulgare Gray: (I), L19, L49, L66, L82, L94, L96, L108, L120, L124, saprobe, on the cones of conifers.

Lentinellus cochleatus (Pers.) P. Karst.: (I), L87, saprobe.

Lentinellus micheneri (Berk. & M.A. Curtis) Pegler: (I), L4, L34, L45, L111, saprobe.

Lentinellus ursinus (Fr.) Kühner: (I), L146, saprobe.

Family *Hericiaceae*

Hericium cirrhatum (Pers.) Nikol.: (E), L18, L21, L27, saprobe or/ and parasite.

Hericium coralloides (Scop.) Pers.: (E), L118, saprobe or/ and parasite.

Family *Peniophoraceae*

Peniophora cinerea (Pers.) Cooke: (I), L84, saprobe.

Family *Russulaceae*

Lactarius acerrimus Britzelm.: (I), L125, mycorrhizal.

Lactarius acris (Bolton) Gray: (I), L5, mycorrhizal.

Lactarius blennius (Fr.) Fr.: (I, or P), L118, L139, mycorrhizal.

Lactarius chrysorrheus Fr.: (P), L10, mycorrhizal.

Lactarius deliciosus (L.) Gray: (F), L19, L31, L37, L58, L62, L86, L118, L119, L121, L126, mycorrhizal.

Lactarius evosmus Kühner & Romagn.: (I), L10, L118, mycorrhizal.

Lactarius ilicis Sarnari: (U), L12, mycorrhizal.

Lactarius illyricus Piltaver: (U), L104, mycorrhizal.

Lactarius lacunarum Romagn. ex Hora: (U), L4, L48, mycorrhizal.

Lactarius mediterraneensis Llistosella & Bellù: (U), (New record for Turkey)

Pileus 50-100 mm, fleshy, plano-convex at first, soon depressed in the centre, funnel-shaped at the end, gibbous, lobed, margin thin, at first convoluted, then curved. Cuticle thin, elastic, viscous, from dry to shiny, concentrically scrobiculate-guttulata, creamy colour, yellow-fleshed, cream-yellowish, yellow-ocher, with mostly marginal, irregular and scrobicles concentric, darker, ocher-pink or brown-fleshed (Fig. 6a). Flesh medium, thick and firm, then soft, whitish, yellowish and then cream-pink. Faint fruity odour, acrid and bitter taste. Lamellae little spaced gills, from adnate to sub-decurrent, thin, not very elastic, with lamellule, arcuate, sometimes forked and venous-jointed to the stem, cream, cream-yellowish, cream-pale ocher, brown-ocher in the injuries. Regular, whole and concolour cutting edge. Milk (Latex) little abundant, fluid, white, yellowish either isolated that on flesh and lamellae. Acre and bitter. Macrochemical reaction: flesh + KOH = yellow-orange. Stem 15-30 × 20-40 mm, short and stocky, attenuated cylindrical at the base or truncated cone, even compressed, smooth at the apex, a little guttulated downwards; full, then pithy, fragile and finally hollow, dry, opaque and pruinose, whitish, then cream-whitish, stained with ocher in old age, not scrobiculated. Spores 9-12 × 8-10 µm, subglobose, medium size, crested-reticulated, with ridges not very thick, joined by not very thin connections that form mostly complete lattices (Fig. 6f). Basidia 7-10 × 45-55 µm, clavate, with 4-sterigmata (Fig. 6b). Macrocheilocystidia 5-7 × 30-50 µm, numerous, almost fusiform, attenuated or moniliform at the top. Macropleurocystidia similar to macrocheilocystidia (Fig. 6c).

Distribution: L29, under *Quercus* sp., mycorrhizal.

Remarks: Similar to *L. acerrimus* or *L. zonarius*. It is distinguished by the cap with irregular marginal scrobicles and by the latex which turns yellow both isolated and on flesh and gills.

Lactarius piperatus (L.) Pers.: (E), L9, L148, mycorrhizal.

Lactarius salmonicolor R. Heim & Leclair: (F), L19, L31, L67, L86, L87, L94, L96, L109, L124, L125, L127, mycorrhizal.

Lactarius semisanguifluus R. Heim & Leclair: (E), L115, L118, mycorrhizal.

Lactarius turpis (Weinm.) Fr.: (I), L94, mycorrhizal.

Lactarius volemus (Fr.) Fr.: (E), L64, L122, mycorrhizal.

Lactarius zonarius (Bull.) Fr.: (P), L4, L108, mycorrhizal.

Lactifluus bertillonii (Neuhoff ex Z. Schaef.) Verbeken: (I), L71, L146, L148, mycorrhizal.

Lactifluus glaucescens (Crossl.) Verbeken: (P), (New record for Turkey)

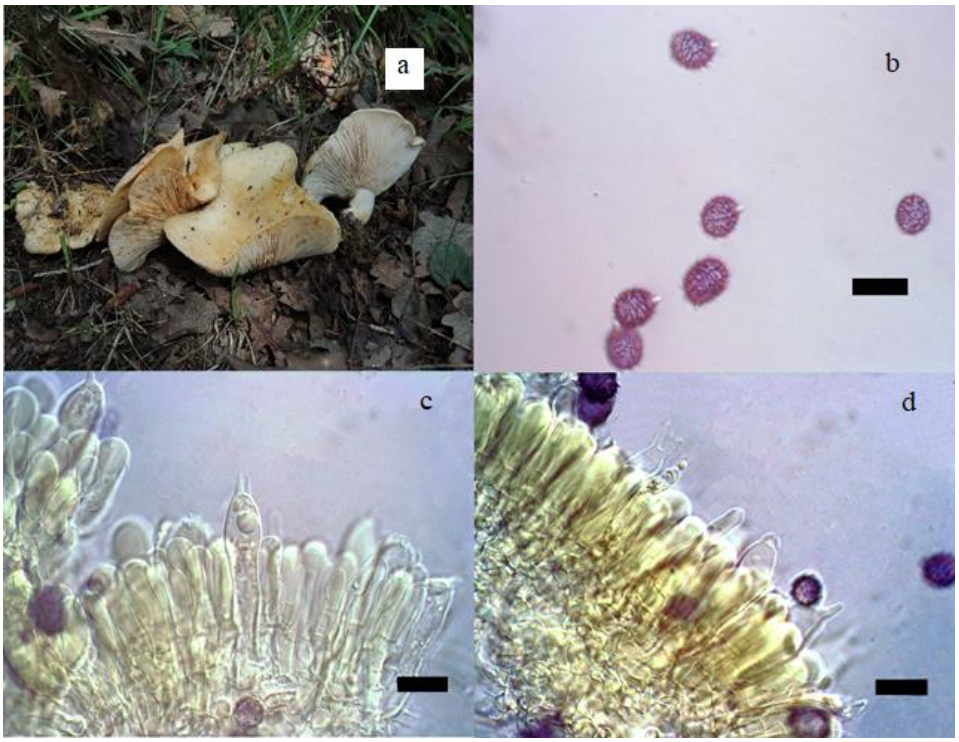

Fig. 6. *Lactarius mediterraneensis*. a) Macroscopic view, b) basidiospores, c) basidia, d) macropleurocystidia. Scales 15 µm.

Pileus 40-120 mm, fleshy, flat-convex, soon flat, flat-depressed in the centre, at the end also funnel-shaped, sometimes wavy-lobed, thick margin, long convoluted, then extended, whole, smooth, lobed. The cuticle is thin, adnate, dry, opaque, velvety, often with cracks (in which the greenish colour change of the flesh is evident). Uneven colour hazelnut cream, cream-ocher when ripe, but always lighter at the edge, from white to cream-whitish (Fig. 7a). Flesh thick and firm, compact, then spongy, white, yellowish-cream in the stem, it becomes green, grey-green and finally dark green in the air. Fruity smell, acrid taste. Lamellae thick, thin and low gills, from adnate to sub-decurrent, finally decurrent, arcuate, forked at the stem, with lamellulae, of a cream-whitish colour, then creamy flesh, grey-greenish in the lesions or when rubbed. Whole cutting edge, concolor. Milk (Latex) not abundant, creamy, white at first, then greenish on the flesh and gills, immutable if isolated. Acre. Macrochemical reactions: pileus, stem and latex flesh + KOH = yellow-orange. Stipe 10-25 × 30-60 mm, robust but not very slender, short, often eccentric or lateral, irregularly cylindrical, sometimes enlarged at the base or compressed, solid and firm, then spongy, dry, opaque, pruinose-velvety, wrinkled, with ocher and finally brown rust in old age or if injured. Spores 5.5-6 × 7-9 µm, elliptic, crested, with thin and dense crests, poorly connected, which do not form complete reticles (Fig. 7b). Basidia 7-8.5 × 35-45 µm, clavate, with 4-sterigmata (Fig. 7c). Macrocheilocystidia 5-7 × 40-60 µm, numerous and subcylindrical, obtuse at the apex. Macropleurocystidia alike to macro cheilocystidia, numerous, but larger, 7-10 × 60-90 µm (Fig. 7d).

Distribution: L9, L143, under *Quercus* sp., mycorrhizal.

Remarks: *Lactifluus glaucescens* is closely similar to *L. piperatus*, which occurs in similar habitats. *L. piperatus* has the white latex, however, does not turn greenish in the air and does not react with KOH.

Russula acrifolia Romagn.: (I), L4, mycorrhizal.

Russula albonigra (Krombh.) Fr.: (U), L4, mycorrhizal.

Russula alutacea (Pers.) Fr.: (U), L29, mycorrhizal.

Russula amethystina Quél.: (E), L37, mycorrhizal.

Russula amoena Quél.: (E), L96, mycorrhizal.

Russula atropurpurea (Krombh.) Britzelm.: (E), L2, mycorrhizal.

Russula aurea Pers.: (E), L18, L118, mycorrhizal.

Russula aurora Krombh.: (U), L94, mycorrhizal.

Russula brunneoviolacea Crawshay: (E), L73, mycorrhizal.

Russula cavipes Britzelm.: (U), L14, L81, mycorrhizal.

Russula chloroides (Krombh.) Bres.: (E), L11, mycorrhizal.

Russula clariana R. Heim ex Kuyper & Vuure: (U), L35, L37, L68, L141, mycorrhizal.

Russula cremeoavellanea Singer: (U), L119, mycorrhizal.

Russula cyanoxantha (Schaeff.) Fr.: (E), L3, L138, mycorrhizal.

Russula delica Fr.: (E), L51, L108, L119, mycorrhizal.

Russula faginea Romagn.: (U), L107, L138, mycorrhizal.

Russula foetens Pers.: (U), L19, mycorrhizal.

Russula fragilis Fr.: (U), L27, L101, mycorrhizal.

Russula gigasperma Romagn.: (U), L19, mycorrhizal.

Russula graveolens Romell: (U), L141, mycorrhizal.

Russula grisea Fr.: (E), L127, L140, mycorrhizal.

Russula insignis Quél.: (U), L12, mycorrhizal.

Russula ionochlora Romagn.: (E), L18, mycorrhizal.

Russula lilacea Quél.: (E, M), (New record for Turkey)

Pileus 30-50 mm across, convex at first, soon flat with a slight central depression, sometimes asymmetrical, obtuse, lobed, the whole then briefly grooved margin, not very fleshy and fragile. Separable cuticle up to and beyond the middle of the radius, dry, pruinose-velvety "opaque" of very variable colour; pink-lilac, reddish-purple, red-vinous, red-carmine, sometimes with brown ocher, cream or pink spots in the centre (Fig. 8a). Lamellae slightly dense, later spaced, free-rounded at the stem, forked to the same, anastomosed with some lamellula, thin, white, dark in old age. Flesh thick but fragile, white, with a slight tendency to grey, odourless and with a sweet taste. Macrochemical reactions flesh + Fe = brown-red rust, flesh + F = brown-red, flesh + SV = carmine red then reddish-brown if dried. Stipe 6-12 × 25-50 mm, initially stiff, soon fragile, cylindrical, sometimes equal at the apex or slightly enlarged towards the base, filled inside, but soon spongy or almost hollow, dry, pruinose then finely wrinkled, white, often tinged with pink or light purple-lilac. Spores 5.5-7 × 6.5-8.5 µm, subglobose-ovoid, warty-echinulate, with both high and sharp and low and obtuse warts, isolated or very rarely joined by some thin tract, amyloid (Fig. 8b). Basidia 10-12 × 40-50 µm, with 4-sterigmata (Fig. 8c). Cheilocystidia 8-10 × 60 µm, not very numerous, cylindrical-fusiform, pointed at the top. Pleurocystidia similar to Cheilocystidia (Fig. 8d).

Distribution: L112, under *C. orientalis*, mycorrhizal.

Remarks: *Russula brunneoviolacea* can occur in the same habitat, and it often has very similar pileal colors and a mild taste. However, it has septate pileocystidia and lacks primordial hyphae. *R. nitida* can also be confused with *R. lilacea*. It likewise has a red-flushed stipe and mild flesh, but it grows with *Betula* and has an ocher spore deposit. *R. turci* also has a pileus with colours very similar to *R. lilacea.* However, it is associated with conifers such as *Picea* and *Abies* and has an ocher-yellow spore deposit.

Russula mairei Singer: (P), L51, mycorrhizal.

Russula nigricans Fr.: (E), L4, L5, L11, L34, L66, mycorrhizal.

Russula odorata Romagn.: (U), L96, mycorrhizal.

Russula olivascens (Fr.) Fr.: (U), L37, mycorrhizal.

Russula pectinatoides Peck: (U), L19, mycorrhizal.

Russula queletii Fr.: (U), L19, mycorrhizal.

Fig. 7. *Lactifluus glaucescens*. a) Macroscopic view, b) basidiospores, c) basidia, d) pleurocystidia. Scales 15 µm.

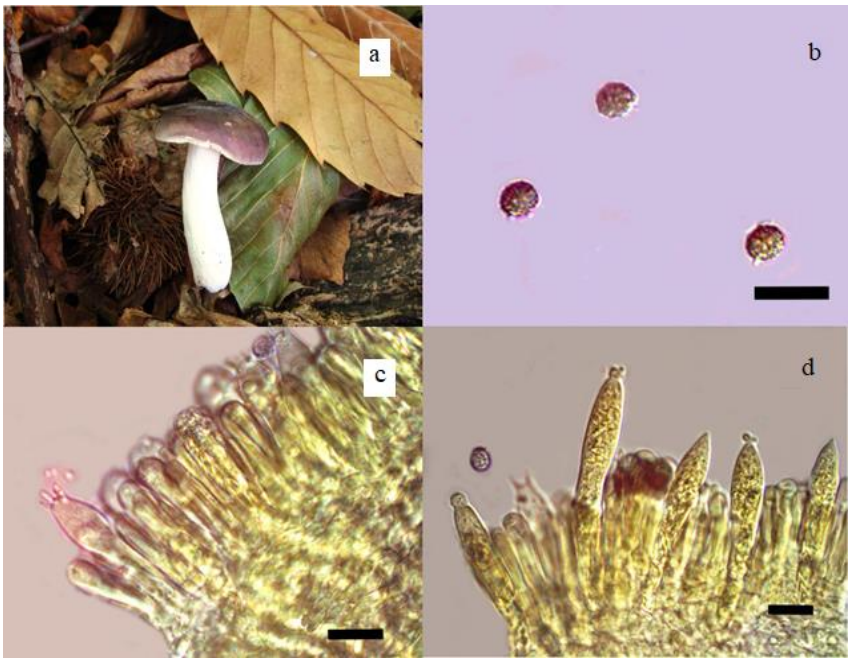

Fig. 8. *Russula lilacea*. a) Macroscopic view, b) basidiospores, c) basidia, d) pleurocystidia. Scales 15 µm.

Russula risigallina (Batsch) Sacc.: (U), L21, mycorrhizal.

Russula rubra (Lam.) Fr.: (E), (New record for Turkey).

Pileus 40-100 mm, firm, hemispherical, then convex, finally flat and slightly depressed in the centre, obtuse and regular margin, whole or slightly grooved only when ripe. Cuticle adnate, separable only at the edge, dry, finely pruinose-velvety, of a beautiful dark pink or pink-red colour, red-vermilion or carmine in the centre (Fig. 9a). Lamellae dense then more spaced, subdecurrent then adnexed and free, forked at the stem and anastomosed on the bottom, wide and thick, cream-whitish then light ocher, with whole and concolored cutting edge. Flesh firm and hard, then more tender and soft especially in the stem, white, with a tendency to grey-yellowish, red under the cuticle, with a fruity-honeyed odour and acrid taste also in the gills. Macrochemical reactions flesh + Fe = yellowish, flesh + G = deep blue-blue, care + F = brownish. Stipe 15-30 × 40-70 mm, firm and robust, cylindrical-clavate or dilated below, attenuated at the base, dry, pruinose then strongly wrinkled especially in old age, full then pithy, white, grey-yellowish at extreme maturity. Spores, 6-8 × 7-9 µm ovoid, warty-subcrested, with obtuse and hemispherical warts, cone, connected by thin short and irregular or incomplete ridges, amyloid (Fig. 9b). Basidia 9-11 × 30-42 µm, clavate to ventricose, with (1, 2) 4 sterigmata (Fig. 9c). Cheilocystidia 8-12 × 60-100 µm, spindle-shaped and slightly bellied, measuring variously appendicular to apex (Fig. 9d). Pleurocystidia are similar to C species of the genus *Cotylidia* heilocystidia (Fig. 9e).

Distribution: L132, under *P. nigra*, mycorrhizal.

Remarks: *Russula rosea* is very similar to *R. rubra*. It occurs in comparable habitats, likewise has a finely pruinose pileus, and has hard flesh. However, its flesh is mild, and it has a paler spore deposit, a generally red-flushed stipe, and reticulate spores. The two similar, mild species, *R. faginea* and *R. pseudointegra* also grow in hardwood forests. *Russula faginea* has a striking herring-like odour and taste, while *R. pseudointegra* has a dark ocher-yellow spore deposit and encrusted primordial hyphae.

Russula sardonia Fr.: (U), L86, mycorrhizal.

Russula sericatula Romagn.: (U), L44, mycorrhizal.

Russula silvestris (Singer) Reumaux: (U), L29, mycorrhizal.

Russula torulosa Bres.: (U), L62, mycorrhizal.

Russula velutipes Velen.: (U), L35, mycorrhizal.

Russula violacea Quél.: (U), L141, mycorrhizal.

Russula violeipes Quél.: (E), L12, L27, mycorrhizal.

Russula virescens (Schaeff.) Fr.: (E), L3, L4, L5, L18, L21, L27, L33, L34, L35, L37, L45, L65, L66, L140, L146, mycorrhizal.

Family *Stereaceae*

Aleurodiscus aurantius (Pers.) J. Schröt.: (I), L131, saprobe.

Stereum gausapatum (Fr.) Fr.: (I), L25, lignicolous, causes a white-rot of the heartwood.

Stereum hirsutum (Willd.) Pers.: (I), L4, L12, L14, L57, L62, L63, L66, L69, L80, L82, L84, L85, L93, L108, L112, L113, L127, L133, L136, L137, L139, lignicolous, causes a white-rot of the heartwood.

Stereum insignitum Quél.: (I), L13, causes a white-rot of the heartwood.

Stereum ochraceoflavum (Schwein.) Sacc.: (I), L84, L85, L93, L108, L131, L148, causes a white-rot of the heartwood.

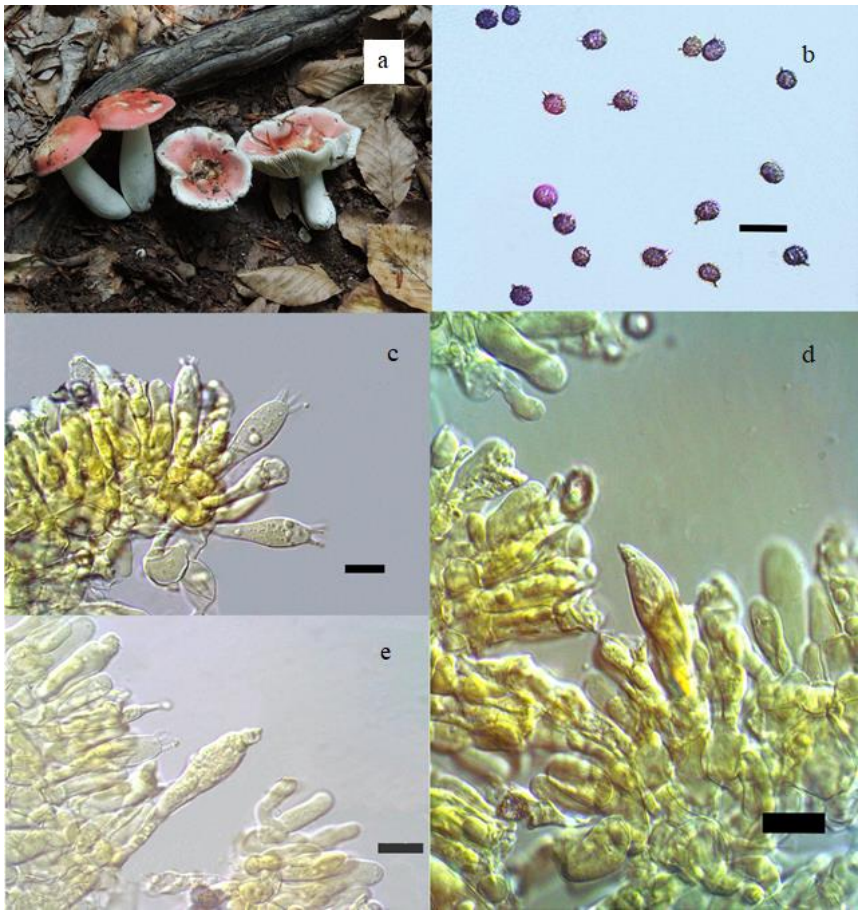

Fig. 9. *Russula rubra*. a) Macroscopic view, b) basidiospores, c) basidia, d) cheilocystidia, e) pleurocystidia. Scales 15 µm.

Fig. 10. *Stereopsis reidii*. a) Macroscopic view, b) basidiospores, c) basidia. Scales 15 µm.

Stereum sanguinolentum (Alb. & Schwein.) Fr.: (I), L56, L126, causes a white-rot of the heartwood.

Stereum subtomentosum Pouzar: (I), L69, L93, L104, causes a white-rot of the heartwood.

Order Stereopsidales
Family *Stereopsidaceae*

Stereopsis reidii Losi & A. Gennari: (I), (New Family and Genus record for Turkey)

Basidioma stipitate, stereoid, infundibuliform to spathulate, upper sterile surface whitish to minutely fibrillose, hymenophore smooth to rugose, whitish, margin undulate, finely fimbriate to laciniate (Fig. 10a). Stipe up to 1 cm long and 1-2 mm in diam, whitish. Basidiospores 3-3.5 × 4-6 µm, ellipsoid to ovoid, with a curved and pronounced apiculus, smooth, thin-walled, hyaline (Fig. 10b). Basidia 4-5 × 25-40 µm, narrowly clavate, with 4-sterigmata, and simple septate at the base (Fig. 10c). Hyphal system 2-6 µm wide, monomitic, hyphae with simple-septa, thin-walled, hyaline. Cystidia not seen.

Distribution: L80, on wood debris of *A. nordmanniana* subsp. *bornmuelleriana*, saprobe.

Remarks: Stereopsidaceae family was first described in 2014 to contain the genera *Stereopsis* by Sjökvist et al. (2014). This genus was classified in the order Polyporales, and *Clavulicium* genus or in the order *Cantharellales* until its taxonomical rank has been changed. After detailed Molecular phylogenetics analysis, it has been shown that this genus belongs to in different order. This order might belong in the subclass Phallomycetidae. The Stereopsidales contain corticoid fungi (*Clavulicium* and *Stereopsis*) and stalked, funnel-shaped fungi (*Stereopsis*). The main characteristic of the species is the shape of basidiocarp, at first narrowly ligulate, spathulate to flabelliform, then becoming confluent and forming complicated fructifications, frequently deeply divided into narrow clavarioid or broad lobes. The stipe is short and rudimental. Macroscopically it can be confused with white species of the genus *Cotylidia* P. Karst, but these have hymenial cystids. A species very similar to the one described is *Cyphellostereum pusiolum* D.A. Reid, that it has fibulae at the base of the terminal hyphae of the pileic lining and larger spores and polymorphic.

Order Thelephorales
Family *Bankeraceae*

Hydnellum caeruleum (Hornem.) P. Karst.: (I), L71, L109, mycorrhizal.

Hydnellum concrescens (Pers.) Banker: (I), L2, mycorrhizal.

Hydnellum glaucopus (Maas Geest. & Nannf.) E. Larss., K.H. Larss. & Kõljalg: (I), L11, mycorrhizal.

Hydnellum scrobiculatum (Fr.) P. Karst.: (I), L71, mycorrhizal.

Hydnellum suaveolens (Scop.) P. Karst.: (I), L120, mycorrhizal.

Phellodon confluens (Pers.) Pouzar: (I), L96, mycorrhizal.

Phellodon niger (Fr.) P. Karst.: (I), L121, L127, L50, mycorrhizal.

Sarcodon imbricatus (L.) P. Karst.: (E), L19, mycorrhizal.

Order Tremellales
Family *Tremellaceae*

Phaeotremella foliacea (Pers.) Wedin, J.C. Zamora & Millanes: (I), L34, saprobe.

Tremella mesenterica Retz.: (E), L5, L9, L11, L12, L22, L14, L34, L41, L45, L143, saprobe.

Discussion

510 macrofungal taxa belonging to 197 genera within 84 families were identified in the research area. Of these, 37 genera and 57 taxa belong to *Ascomycota*, while 160 genera and 453 taxa belong to *Basidiomycota*. Nine taxa from *Basidiomycota* were added to the Turkish Mycobiota as new records. These taxa are *Amanita subnudipes, Hebeloma quercetorum, Hygrocybe obrussea, Lactarius mediterraneensis, Lactifluus glaucescens, Russula lilacea, Russula rubra, Stereopsis reidii* and *Tricholoma roseoacerbum.* As mentioned before, there are different kinds of forest ecosystems in the study area which form mixed or pure forests. These areas are both optimal habitats for macrofungi and provide them with a variety of substrates for their growth. Among these habitats, *F. orientalis* and *A. nordmanniana* subsp. *bornmuelleriana* forests are very suitable for the growth of macrofungi. The distribution of habitat choices of the macrofungal taxa is as follows: *A. nordmanniana* subsp. *bornmuelleriana* 300 species, *F. orientalis* 295 species, *Quercus* spp. 125 species, *P. nigra* 88 species, *C. sativa* 56 species, *P. sylvestris* 53 species, *C. orientalis* 49 species and *P. maritima* 24 species. Tree species mostly form mixed forests in Samanlı Mountains. Therefore, dominant species in the mixed forest were taken into account to prepare the distribution of habitat choices. Species with high distribution in *A. nordmanniana* subsp. *bornmuelleriana* forests are *H. radicata* (32 different localities (DL), *M. alliaceus* (29 DL), *L. perlatum* (27 DL), *A. muscaria* (24 DL), *M. pura* (22 DL), *C. micaceus* (16 DL), and *H. fasciculare* (14 DL). Species with high distribution in *F. orientalis* forests are *A. rubescens* (68 DL), *H. radicata* (62 DL), *P. impudicus* (43 DL), *A. gemmata* (27 DL), *T. versicolor* (22 DL), *A. vaginata* (21 DL), *B. edulis* (21 DL), *M. procera* (20 DL), *D. disciformis* (19DL), *M. platyphila* (19 DL), *P. varius* (17 DL), *A. phalloides* (15 DL) and *F. fomentarius* (14 DL). Macrofungal diversity which was observed in administrative city borders is as follows: 339 taxa in Sakarya, 265 taxa in Bursa, 227 taxa in Kocaeli and 109 taxa in Yalova. Within these cities, the most and least

diverse districts were observed as Akyazı (Sakarya) with 217 taxa and Karapürçek (Sakarya) 24 taxa, respectively.

The forests of Akyazı region consist of pure or mixed beech, hornbeam, oak, pine and fir. These forest areas are also in a very healthy condition, providing more suitable place for the growth of macrofungi species. On the other hand, the forests in the Karapürçek region are not healthy and there are many destroyed areas. We can easily see from the available data that mushrooms develop better in parallel with the healthy forest structure.

The numbers of lignicolous and parasitic species are 20 (3.7%) and 18 (2.9%) on different trees, respectively, such as *D. quercina* on *Quercus* spp.; *S. commune*, *P. squamosus*, and *S. hirsutum* on the stump of *A. nordmanniana* subsp. *bornmuelleriana*; *P. melanopus*, *T. gibbosa* and *T. ochracea* on *F. orientalis*; *C. subcaesius*, *T. hirsuta*, *T. versicolor* on *C. orientalis*; *A. cepistipes* and *A. mellea* on roots of *F. orientalis*; and *F. fomentarius* on the stump of *A. nordmanniana* subsp. *bornmuelleriana*, *F. orientalis*, *Quercus* sp. and *C. orientalis*; *F. pinicola* on trunk of *P. nigra*, *P. sylvestris* and *F. orientalis*. Moreover, 245 (48%) species are saprobe, 226 (45%) are mycorrhizal, and 1 species is entomopathogenic (*Ophiocordyceps gracilis*). Overall graphic about ecological statuses of the species is given in Fig. 11.

According to the reviewed literature data (Boa 2004, Hall *et al.* 2016) 204 (40%) of the 510 taxa are inedible, 7 (1.37%) are edible or suspicious, 12 (12.36%) are used for medical purposes, 153 (30%) are edible, 65 (12.75%) are poisonous, 19 (3.73%) are used as food, 48 (9.4%100) are with unknown status and 2 (0.4%) are edible or poisonous. Among the edible and used as food taxa, 16 are collected and consumed in the region by Vill.rs. Members of the genus *Morchella* are known as "Kuzu göbeği", *M. procera* as "Dedebörü, şemsiye mantarı", *P. ostreatus* as "Kavak mantarı, geyik mantarı", *L. deliciosus* and *L. salmonicolor* as "Kanlıca", *A. caesarea* as "Gelincik mantarı, yumurta mantarı, sarı paça", *A. campestris* as "Çayır mantarı, içi kızıl", *C. comatus* as "Söbelen", *B. edulis* as "Ayı Mantarı, sünger mantarı",

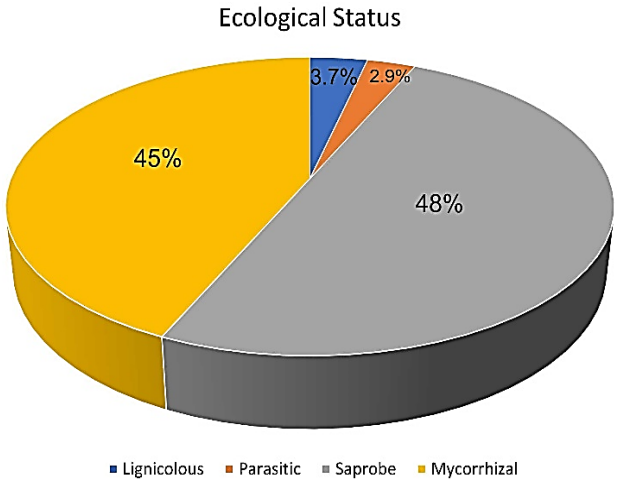

Fig. 11. Ecological status of the species.

Table 2. Similarity percentages of Samanlı Mountains with neighbouring studies in terms of macrofungal species.

Study	Number of identical taxa	Total taxa	Similarity percentage (%)
Kocaeli (Akata *et al.* 2018)	91	131	17.84
Bursa Gücin *et al.* 1995)	56	84	10.98
İznik (Allı *et al.* 2016)	58	91	11.37
Yalova (Allı *et al.* 2017)	42	78	8.23
Samanlı Mountains		510	

A. mellea as "Bal mantarı", *I. geotropa* as "Malkadın", *C. nebularis* as "Cincile", *H. repandum* as "Geyik dili", *S. crispa* as "Kıvırcık", *C. cibarius* as "Kaz ayağı, Sarı kulak", *C. cornucopioides* as "Borazan mantarı, kara borazan". Poisonous species of the area are *E. rhodopolium*, *E. sinuatum*, *A. gemmata*, *A. muscaria*, *A. pantherina*, *A. phalloides*, *A. solitaria*, *A. virosa*, *A. xanthoderma*, *P. cinctulus*, *H. fasciculare*, *I. bongardii* var. *bongardii*, *I. bongardii* var. *pisciodora*, *I. erubescens*, *I. fuscidula*, *I. lacera*, *I. leiocephala*, *I phaeodisca* var. *geophylloides*, *I. posterula*, *I. pseudodestricta*, *I. queletii*, *I. sambucina*, *I. splendens*, *I. acuta*, *I. asterospora*, *C. humicola*, *C. orellanus*, *L. acris*, *L. chrysorrheus*, *R. mairei*, *C. calopus*, *B. satanas*, *H. aurantiaca*, *P. involutus*, *C. phaeophtalma*, *C. phyllophila*, *M. pelianthina*, *M. pura*, *M. rosea*, *T. sulphureum*, *H. lacunosa*, and *H. crispa*.

There exist fungal data on some nearby regions of our study area with former studies in İznik (Allı *et al.* 2016), Yalova (Allı *et al.* 2017), Bursa (Gücin *et al.* 1995) and in Kocaeli (Akata *et al.* 2018). The comparative distribution of the species numbers identified in these studies is given in Table 2. The results of this work showed a few similarities with the findings of the studies carried out in neighbouring regions. The number of identical taxa and similarity percentages of relevant studies are given in Table 2. According to the table, the number of taxa that are common in each study was found as twelve, and these species are *A. pantherina*, *A. mellea*, *C. cibarius*, *F. fomentarius*, *H. fasciculare*, *L. betulinus*, *L. nuda*, *L. pyriforme*, *M. procera*, *P. ostreatus*, *S. commune*, *S. aeruginosa*, *T. versicolor*, and *X. hypoxylon*. The similarity rates of the studies are 17.84% for Kocaeli (Akata *et al.* 2018), 10.98% for Bursa region (Gücin *et al.* 1995), 11.37% for İznik Region (Allı *et al.* 2016), and 8.23% for Yalova region (Allı *et al.* 2017).

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