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Macrofungal diversity of the Gireniz Valley (Denizli, Turkey)

Oğuzhan Kaygusuz* & Kutret Gezer

Pamukkale University, Faculty of Science and Arts, Department of Biology, 20020 Denizli, Turkey
* corresponding author (e-mail: okaygusuz03@gmail.com)

Abstract. This study was conducted to determine the macrofungal diversity of the Gireniz Valley. From 2010 to 2013, 674 samples of macrofungi were collected during field surveys conducted periodically in appropriate ecological conditions. As a result of macroscopic and microscopic studies, a total of 114 macrofungal taxa from the classes Pezizomycetes, Agaricomycetes and Tremellomycetes, distributed in 12 orders and 39 families, were determined. Five families, 10 genera and 20 taxa belonging to one order of Pezizomycetes class, 33 families, 57 genera and 93 taxa belonging to 10 orders of Agaricomycetes class and one family, one genus and one taxon belonging to one order of the class Tremellomycetes were identified. It was determined that among 114 macrofungal taxa identified in the study area, 45 were edible, 60 inedible, and nine were poisonous.

Key words: fungal diversity, taxonomy, ecology, consumption value

1. Introduction

It has been observed that plants grow intensively in areas that are suitable in terms of ecological, climatic, topographic and geological factors, and, in parallel to this, the number and types of macrofungi in these areas are plentiful. Turkey is rich in both macrofungi and plants (Gezer *et al.* 2014). Even though we may not be aware of it or be able to identify them, fungi are all around us, in the soil, in water and even in the air (Gezer & Kaygusuz 2015). Between 80 000 and 120 000 species of macrofungi have been identified worldwide, but the total number is estimated to be 1.5 million (Hawksworth 2001; Kirk *et al.* 2008)

The study area, the Gireniz Valley, which occupies an area of approximately 18,000 ha, is located in the west of Turkey in the south-west of Denizli province and is surrounded by mountains. The Dalaman River flows along the valley for 80 km within the borders of Denizli province. The area has the characteristics of Mediterranean and Iran-Turan phytogeographic regions, and contains a great variety of microclimatic areas along the length of the valley. Average annual precipitation for the area is 520.9 mm and daily maximum precipitation is 65.1 mm. Average relative humidity is 59.4%, and the average annual number of foggy days is 1.5. The average annual temperature is 17.0ºC. The plant cover of the area consists of *Pinus brutia* Ten., *P. nigra* J. F. Arnold, *Platanus orientalis* L., *Juniperus excelsa* Bieb., *Acer montana* Torr., *Quercus ilex* L., *Q. coccifera* L., *Phillyrea media* L., *Populus tremula* L., *Salix alba* L., *S. caprea* L., *Tamarix gallica* L. and *Cedrus libani* A. Rich.

A large number of studies have been conducted recently on the macrofungi of Turkey, and approximately 2500 taxa have been identified (Sesli & Denchev 2008; Solak *et al.* 2015). The aim of the present study was to determine the macrofungal taxa growing in the Gireniz Valley in the Denizli province, to identify edible, inedible and poisonous taxa and to make a contribution to the study of the mycobiota of Turkey. This is the first study conducted in this location.

2. Material and methods

The macrofungal samples were collected from different localities within the district of the Gireniz Valley (Denizli, Turkey) between 2010 and 2013. Some species of macrofungi were collected during field studies conducted especially in autumn and spring, which is when the appropriate ecological conditions occur. During the field studies, the morphological and ecological

characteristics of the macrofungi were recorded and photographed. Next, the measurements of macroscopic and microscopic structures of collected samples were made in the laboratory. Microscopic investigations were conducted using distilled water, Melzer's reagent, 5% KOH, 3% NaOH and Congo red. Identification of specimens and their edibility status was based on the following literature: Watling and Gregory (1977, 1987, 1989); Orton and Watling (1979); Singer (1986); Orton (1986); Spooner (1996); Evenson (1997); Laessøe (1998); Pace (1998); Pegler (1999); Breitenbach and Kränzlin (1984, 1986, 1991, 1995, 2000); Kränzlin

Table 1. The number of macrofungal species occurring in the Gireniz Valley by family

Class	Family	Number of taxa	% of the total studied flora
Pezizomycetes	Discinaceae	1	0.88
	Helvellaceae	5	4.39
	Morchellaceae	9	7.89
	Pezizaceae	2	1.75
	Pyronemataceae	3	2.63
Agaricomycetes	Agaricaceae	18	15.79
	Amanitaceae	2	1.75
	Auriculariaceae	1	0.88
	Bankeraceae	1	0.88
	Bolbitiaceae	2	1.75
	Cortinariaceae	1	0.88
	Diplocystidiaceae	1	0.88
	Entolomataceae	1	0.88
	Fomitopsidaceae	1	0.88
	Ganodermataceae	1	0.88
	Geastraceae	3	2.63
	Gloeophyllaceae	2	1.75
	Gomphaceae	1	0.88
	Gomphidiaceae	1	0.88
	Hygrophoraceae	2	1.75
	Hymenochaetaceae	2	1.75
	Inocybaceae	3	2.63
	Marasmiaceae	2	1.75
	Mycenaceae	4	3.51
	Physalacriaceae	1	0.88
	Pleurotaceae	2	1.75
	Pluteaceae	2	1.75
	Polyporaceae	2	1.75
	Psathyrellaceae	5	4.39
	Rhizopogonaceae	2	1.75
	Russulaceae	9	7.89
	Schizophyllaceae	1	0.88
	Sclerodermataceae	1	0.88
	Stereaceae	1	0.88
	Strophariaceae	4	3.51
	Suillaceae	3	2.63
	Thelephoraceae	1	0.88
	Tricholomataceae	10	8.77
Tremellomycetes	Tremellaceae	1	0.88

(2005); Knudsen and Vesterholt (2008). All identified specimens are now deposited in the fungarium of the Mushroom Research and Application Center of Pamukkale University.

The names of taxa follow Kirk *et al.* (2008). Author citations and fungal names were abbreviated according to the Index Fungorum (www.speciesfungorum.org; accessed 10 November 2015).

3. Results

Within the boundaries of Gireniz Valley, 114 macrofungal taxa, belonging to 39 families, 12 orders and 3 classes, were determined. They included 20 taxa from the class Pezizomycetes (17.5% of the total studied mycobiota), 93 from Agaricomycetes (81.5%), and 1 species representing Tremellomycetes (0.8%) (Table 1). All species were listed alphabetically along with their localities, habitats, collection dates, and fungarium accession numbers (Appendices 1-2).

It was found in the study, that the families with most taxa in the research area were Agaricaceae (18), Tricholomataceae (10), Russulaceae (9) and Morchellaceae (9). The reason why these families are found widely in the research area is that the Dalaman River, which flows through the Gireniz Valley, provides the area with a climate that is humid at all seasons. Also, vegetation extends from the edges of the river to the peaks of the mountains and consists of herbaceous plant communities, brush and forests dominated by *Quercus ilex* L., *Q. coccifera* L., *Populus tremula* L., *Salix alba* L., *S. caprea* L., *Pinus brutia* Ten., *P. nigra* J. F. Arnold, *Juniperus excelsa* Bieb. and *Cedrus libani* A. Rich. Thus, the area is particularly rich in the organic material needed by fungi. This richness contributes to the great numbers and variety of the fungi found in the area.

Table 2. Edible, inedible and poisonous macrofungal species occurring in the Gireniz Valley

Edible spp.	Inedible spp.		Poisonous spp.
Agaricus bisporus	*Agaricus comtulus*	*Infundibulicybe geotropa*	*Amanita phalloides*
Agaricus campestris	*Agrocybe parasitica*	*Lepiota cristata*	*Entoloma sericeum*
Agaricus langei	*Anthracobia melaloma*	*Lepiota ignivolvata*	*Gyromitra esculenta*
Lactarius deliciosus	*Armillaria mellea*	*Lycoperdon lividum*	*Helvella leucomelaena*
Lactarius deterrimus	*Astraeus hygrometricus*	*Lycoperdon nigrescens*	*Inocybe amethystina*
Lactarius salmonicolor	*Clitocybe costata*	*Melanoleuca polioleuca*	*Inocybe flocculoca*
Macrolepiota procera	*Clitocybe vermicularis*	*Mycena adramsii*	*Inocybe rimosa*
Morchella angusticeps	*Conocybe apala*	*Mycena maculata*	*Panaeolus papilionaceus*
Morchella conica	*Coprinellus disseminatus*	*Mycena renati*	*Sarcosphaera coronaria*
Morchella costata	*Coprinellus micaceus*	*Mycena strobilicola*	
Morchella deliciosa	*Coprinopsis pseudoradiata*	*Parasola plicatilis*	
Morchella elatovelutipes	*Cortinarius trivialis*	*Peziza depressa*	
Morchella esculenta	*Cyathus olla*	*Phellinus nigricans*	
Morchella vulgaris var. *alba*	*Cystoderma amiantinum*	*Phellinus torulosus*	
Pleurotus eryngii	*Cystodermella granulosa*	*Phellodon melaleucus*	
Pleurotus ostreatus	*Discina perlata*	*Pholiota tuberculosa*	
Russula delica	*Exida recisa*	*Pisolithus arhizus*	
	Fomes fomentarius	*Psathyrella leucotephra*	
	Ganoderma applanatum	*Ramaria flaccida*	
	Geastrum fimbriatum	*Russula queletii*	
	Geastrum rufescens	*Russula rhodopus*	
	Geastrum triplex	*Russula torulosa*	
	Geopora sumneriana	*Russula turci*	
	Gloeophyllum abietinum	*Schizophyllum commune*	
	Gloeophyllum sepiarium	*Stereum hirsutum*	
	Gymnopus androsaceus	*Thelephora mesenterica*	
	Hebeloma sarcophyllum	*Thelephora terrestris*	
	Helvella lactea	*Trametes versicolor*	
	Helvella lacunosa	*Tricholoma batschii*	
	Hygrocybe conica	*Tulostoma brumale*	

Table 3. Similarity percentages of macrofungal diversity between the Gireniz Valley and other valleys studied

Valleys	Number of identical taxa	Total taxa	Similarity percentage (%)	Altitude (m)	Annual rainfall (mm)	Distance from study area (km)	Study periods	References
Ihlara Valley	10	31	32.3	1.220	357	620	2000-2001	Türkoğlu *et al.* 2007
Hatila Valley	20	126	15.9	1.710	661	1.565	2006-2007	Demirel *et al.* 2010
Cocakdere Valley	33	186	17.7	1.000	594	770	2002-2005	Doğan *et al.* 2012

45 of 114 taxa found in the Gireniz Valley are edible (Table 2), but only 17 of them are collected and consumed in the region by local people: *Morchella angusticeps, M. conica, M. costata, M. deliciosa, M. esculenta, M. elatovelutipes, M. vulgaris* var. *alba, Agaricus bisporus, A. campestris, A. langei, Macrolepiota procera, Pleurotus eryngii, P. ostreatus, Lactarius deliciosus, L. deterrimus, L. salmonicolor,* and *Russula delica*. Among the consumed taxa, ten most popular are: *Morchella angusticeps, M. conica, M. costata, M. deliciosa, M. esculenta, M. elatovelutipes, M. vulgaris* var. *alba, Lactarius deliciosus, L. deterrimus* and *L. salmonicolor*. Only *A. bisporus* and *P. ostreatus* are cultivated in the region.

60 of 144 taxa occurring in the the Gireniz Valley are inedible and 9 are poisonous (Table 2). Even though so many poisonous mushrooms share the same habitats as the edible ones, no incidents have been officially recorded in the research area.

The taxa determined in the district were compared to those found in the studies conducted in other Turkish valleys. The data showed a high species similarity. Location, precipitation, the distance between the research area and these valleys and their similarity percentages are given in Table 3.

4. Discussion

In the present study of Gireniz Valley (Denizli province), 114 macrofungal taxa, representing 39 families, 12 orders and 3 families, were found. In turn, in the study of Ihlara Valley (Aksaray province) on the Melendiz river, a total of 31 macrofungal taxa were identified, with 32.3% similarity (10 taxa) to our study (Türkoğlu *et al.* 2007). In the Hatila Valley (Artvin province), crossed by the Hatila stream, 126 macrofungal taxa were identified with 15.9% similarity (20 taxa) to the present study (Demirel *et al.* 2010). In the Cocakdere Valley (Mersin province), whose streams feed the Cehennem Valley, 186 macrofungal taxa were identified, and 17.7% similarity (33 taxa) was shown compared to the present study (Doğan *et al.* 2012). It is presumed that these similarities arise from the fact that all these valleys have similar climates and vegetation, and that their streams contribute to the year-round humidity. It is thought that the differences in the variety of macrofungi found in our study and in other studies result from the differences in the altitude at which each valley is located and the annual precipitation they receive.

It was also found that the macrofungi identified in the study area showed similarities to the macrofungal taxa reported from the nearby areas in the Denizli province, such as: Bekilli, Tavas and Çameli areas, and Honaz, Karcı and Babadağ mountains (Table 4). These similarities to our area of study may result from similar plant cover, topographical structure and ecological factors. The present study contributes to the knowledge of Turkish mycobiota.

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Table 4. Similarity percentages of of macrofungal diversity between the Gireniz Valley and the neighboring areas

Districts	Number of identical taxa	Total taxa	Similarity percentage (%)	Altitude (m)	Annual rainfall (mm)	Distance from study area (km)	Study periods	References
Bekilli District	45	57	78.9	830	500	150	1998-1999	Köse *et al.* (2006)
Tavas District	40	45	88.8	940	653	71	1999-2001	Çelik *et al.* (2007)
Çameli District	46	80	57.5	1200	550	32	2000-2002	Türkoğlu *et al.* (2007)
Honaz Mountain	70	116	60.3	1300	568	77	2005-2006	Gezer *et al.* (2007)
Karcı Mountain	50	66	75.7	1100	553	90	2000-2002	Gezer *et al.* (2008)
Babadağ Mountain	92	125	73.6	820	680	119	2005-2006	Türkoğlu *et al.* (2008)

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Appendix 1. List of macrofungal species occurring in the Gireniz Valley, with their localities, habitats, collection dates, and fungarium accession numbers

Ascomycota Caval.-Sm.
Pezizomycetes O.E. Erikss. & Winka
Pezizales J. Schröt.

Discinaceae Benedix: **1.** *Discina ancilis* (Pers.) Sacc. (Fig. 1,1). Denizli-Acıpayam, Sandalcık town, 914 m, in pine forest, 28.4.2012, *O* 360; Denizli-Acıpayam, Çiftlik town, 950 m, in pine forest, 28.4.2011, *O* 361.

Helvellaceae Fr.: **2.** *Helvella acetabulum* (L.) Quél. (Fig. 1,2). Denizli-Acıpayam, Suçatı town, roadside, 992 m, under beech, 14.5.2010, *O* 298; Denizli-Acıpayam, Alcı town, 940 m, in pine forest, 4.5.2010, *O* 282; Denizli-Acıpayam, Eski town, 944 m, in pine forest, 5.5.2010, *O* 283. **3.** *Helvella lactea* Boud. (Fig. 1,3). Denizli-Acıpayam, Suçatı town, roadside, 992 m, under beech, 14.5.2010, *O 216; Denizli-Acıpayam,* Gölcük town, 940 m, near road, 11.4.2010, *O* 121. **4.** *Helvella lacunosa* Afzel. (Fig. 1,4). Denizli-Acıpayam, Alcı town, 910 m, in pine forest, 8.11.2011, *O* 110. **5.** *Helvella leucomelaena* (Pers.) Nannf. (Fig. 1,5). Denizli-Acıpayam, Gölcük town, 940 m, in pine forest, 12.4.2013, *O* 321. **6.** *Helvella leucopus* Pers. (Fig. 1,6). Denizli-Acıpayam, Suçatı town, 912 m, in pine forest, 22.4.2012, *O* 332.

Morchellaceae Rchb.: **7.** *Mitrophora semilibera* (DC.) Lév. (Fig. 1,7). Denizli-Acıpayam, Kuzören village, 916 m, poplar area, 21.4.2010, *O 126; Denizli-Acıpayam, Avşar* village, 940 m, poplar area, 21.4.2011, *O* 127. **8.** *Morchella angusticeps* Peck (Fig. 1,8). Denizli-Acıpayam, Alcı town, 945 m, pinetum, 11.3.2010, *O* 95; Denizli-Acıpayam, Benlik village, 1181 m, pinetum, 8.4.2010, *O* 101. **9.** *Morchella conica* Krombh. (Fig. 1,9). Denizli-Acıpayam, Gölcük town, 910 m, in pine forest, 11.4.2010, *O 108; Denizli-Acıpayam,* Benlik village, 981 m, in pine forest, 08.4.2010, *O* 114; Denizli-Acıpayam, Çiftlik town, 951 m, in pine forest, 08.4.2010, *O* 117; Boğazdere, 943 m, in pine forest, 8.4.2012, *O* 122. **10.** *Morchella costata* (Vent.) Pers. (Fig. 1,10). Denizli-Acıpayam, Olukbaşı town, 994 m, in pine forest, 6.4.2011, *O* 312; Denizli-Acıpayam, Kuzören village, 912 m, in pine forest, 18.5.2011, *O* 313. **11.** *Morchella deliciosa* Fr. (Fig. 1,11). Denizli-Acıpayam, Gölcük town, 948 m, in pine forest, 10.4.2011, *O* 318; Denizli-Acıpayam, Kelekçi town, 998 m, in pine forest, 10.4.2013, *O* 319. **12.** *Morchella esculenta* (L.) Pers. (Fig. 1,12). Denizli-Acıpayam, Güney town, 960 m, in pine forest, 24.3.2010, *O* 132; Denizli-Acıpayam, Çiftlik town, 996 m, in pine forest, 11.4.2010, *O* 142; Denizli-Acıpayam, Benlik village, 1021 m, in pine forest, 8.5.2011, *O* 334; Denizli-Acıpayam, Ören town, 906 m, in pine forest, 20.5.2012, *O* 367. **13.** *Morchella elatovelutipes* Jacquet. (Fig. 1,13). Denizli-Acıpayam, Benlik village, 1320 m, in pine forest, 25.4.2011, *O* 229; Denizli-Acıpayam, Alcı town, 920 m, in pine forest, 25.4.2013, *O* 230. **14.** *Morchella vulgaris* var. *alba* (Bull.) Clowez (Fig. 1,14). Denizli-Acıpayam, Sandalcık town, 923 m, in pine forest, 25.4.2011, *O 234; Denizli-Acıpayam, Alcı* town, 900 m, in pine forest, 25.4.2011, *O* 235. **15.** *Verpa conica* (O.F. Müll.) Sw. (Fig. 1,15). Denizli-Acıpayam, Gölcük town, 930 m, in pine forest, 14.4.2010, *O* 144.

Pezizaceae Dumort.: **16.** *Peziza depressa* Pers. (Fig. 1,16). Denizli-Acıpayam, Kelekçi town, 950 m, in pine forest, 16.5.2011, *O* 154. **17.** *Sarcosphaera coronaria* (Jacq.) J. Schröt. (Fig. 1,17). Denizli-Acıpayam, Boğazdere, 935 m, in pine forest, 16.5.2010, *O* 159.

Pyronemataceae Corda: **18.** *Anthracobia melaloma* (Alb. & Schwein.) Boud. (Fig. 1,18). Denizli-Acıpayam, Boğazdere, 860 m, roadside, 10.3.2012, *O* 258; Denizli-Acıpayam, Suçatı town, 940 m, oak area, 10.3.2011, *O* 259. **19.** *Geopora sumneriana* (Cooke) M. Torre (Fig. 1,19). Denizli-Acıpayam, Kelekçi town, 914 m, grassy area, 20.4.2012, *O* 261. **20.** *Gyromitra esculenta* (Pers.) Fr. (Fig. 1,20). Denizli-Acıpayam, Benlik village, 1172 m, in pine forest, 4.4.2011, *O* 264; Denizli-Acıpayam, Gölcük town, 950 m, in pine forest, 4.4.2011, *O* 268.

Basidiomycota R.T. Moore
Agaricomycetes Doweld
Agaricales Underw.

Agaricaceae Chevall.: **21.** *Agaricus bisporus* (J.E. Lange) Imbach (Fig. 1,21). Denizli-Acıpayam, Kelekçi town, 940 m, 12.3.2011, *O* 282; Denizli-Acıpayam, Hisar town, 954 m, grassy area, 4.4.2011, *O* 278; Denizli-Acıpayam, Alcı town, 912 m, grassy area, 5.4.2013, *O* 281. **22.** *Agaricus campestris* L. (Fig. 1,22). Denizli-Acıpayam, Ören town, 948 m, grassy area, 22.9.2010, *O* 175. **23.** *Agaricus comtulus* Fr. (Fig. 1,23). Denizli-Acıpayam Çakır town, 970 m, grassy area, 14.10.2010, *O* 180; Hisar town, 992 m, grassy area, 16.10.2011, *O* 182. **24.** *Agaricus langei* (F.H. Møller) F.H. Møller (Fig. 1,24). Denizli-Acıpayam, Sandalcık town, 965 m, piny area, 4.10.2011, *O* 293; Benlik village, 1225 m, piny area, 14.10.2011, *O* 303. **25.** *Bovista nigrescens* Pers. (Fig. 1,25). Denizli-Acıpayam, Alcı town, 935 m, grassy area, 10.10.2010, *O* 104; Kelekçi town, 925 m, piny area, 20.10.2011, *O* 313; Sandalcık town, 943 m, piny-grassy area, 26.11.2011, *O* 351. **26.** *Bovista plumbea* Pers. (Fig. 1,26). Denizli-Acıpayam, Hisar town, 982 m, piny area, 12.10.2011, *O* 316; Kuzören village, 925 m, piny area, 20.10.2012, *O* 319; Kelekçi town, 940 m, piny-grassy area, 26.05.2013, *O* 277. **27.** *Coprinus comatus* (O.F. Müll.) Pers. (Fig. 1,27). Denizli-Acıpayam, Gölcük town, 890 m, grassy area, 16.10.2010, *O* 147; Kelekçi town, road side, 860 m, road side meadow area, 16.10.2012, *O* 138. **28.** *Cyathus olla* (Batsch) Pers. (Fig. 1,28). Denizli-Acıpayam, Ören town, 928 m, piny area, 10.10.2010, *O* 113; Gölcük town, 926 m, gizzard area, 16.10.2010, *O* 143. **29.** *Cystoderma amianthinum* (Scop.) Fayod (Fig. 1,29). Denizli-Acıpayam, Benlik village, 942 m, piny area, 10.10.2010, *O* 150; Olukbaşı village, 928 m, piny area, 16.10.2010, *O* 151; Gölcük town, 950 m, piny area, 12.11.2011, *O* 349. **30.** *Cystodermella granulosa* (Batsch) Harmaja (Fig. 1,30). Denizli-Acıpayam, Çakır town, 912 m, piny area, 16.10.2011, *O* 161; Kelekçi town, 914 m, piny area, 22.10.2013, *O*

367. **31.** *Lepiota cristata* Barla (Fig. 1,31). Denizli-Acıpayam, Suçatı town, 968 m, piny area, 16.10.2011, *O* 268. **32.** *Lepiota ignivolvata* Bousset & Joss. (Fig. 1,32). Denizli-Acıpayam, Gölcük town, 990 m, piny-oak area, 26.10.2011, *O* 320; Hisar town, 919 m, piny area, 4.10.2011, *O* 333. **33.** *Lycoperdon lividum* Pers. (Fig. 1,33). Denizli-Acıpayam, Kelekçi town, 918 m, oak area, 4.10.2010, *O* 219; Güney town, 900 m, piny area, 14.10.2011, *O* 317; Boğazdere, 913 m, piny-oak area, 15.10.2011, *O* 322. **34.** *Lycoperdon molle* Pers. (Fig. 1,34). Denizli-Acıpayam, Kelekçi town, 956 m, piny area, 12.10.2010, *O* 190; Ören town, 906 m, oak area, 14.10.2011, *O* 297; Suçatı village, 910 m, piny area, 06.11.2012, *O* 290. **35.** *Lycoperdon nigrescens* Pers. (Fig. 1,35). Denizli-Acıpayam, Çiftlik town, 960 m, piny-oak area, 13.10.2011, *O* 179; Sandalcık village, 990 m, piny area, 24.11.2011, *O* 271. **36.** *Lycoperdon pyriforme* Schaeff. (Fig. 1,36). Denizli-Acıpayam, Gölcük town, 998 m, piny-oak area, 2.09.2012, *O* 219; Boğazdere, 900 m, piny area, 10.11.2010, *O* 169. **37.** *Macrolepiota procera* (Scop.) Singer (Fig. 1,37). Denizli-Acıpayam, Gölcük town, 942 m, piny area, 18.9.2011, *O* 309; Benlik village, 1298 m, piny area, 12.10.2011, *O* 342; Akşar town, 936 m, piny-oak area, 4.10.2011, *O* 326; Hisar town, 920 m, piny area, 24.11.2013, *O* 376. **38.** *Tulostoma brumale* Bertero (Fig. 1,38). Denizli-Acıpayam, Hacıkurtlar village, 880 m, grassy area, 07.11.2011, *O* 387.

Amanitaceae R. Heim ex Pouzar: **39.** *Amanita ovoidea* (Bull.) Link (Fig. 1,39). Denizli-Acıpayam, Hisar town, 968 m, piny area, 15.11.2010, *O* 170; Gölcük town, 990 m, piny area, 18.11.2012, *O* 372. **40.** *Amanita phalloides* Secr. (Fig. 1,40). Denizli-Acıpayam, Çakır village, 920 m, piny area, 26.11.2011, *O* 382; Boğazdere, 900 m, piny area, 28.11.2012, *O* 401; Yolçatı village, 958 m, piny area, 28.11.2013, *O* 402.

Bolbitiaceae Singer: **41.** *Conocybe apala* (Fr.) Arnolds (Fig. 1,41). Denizli-Acıpayam, Kuzören village, 990 m, piny area, 15.10.2010, *O* 139; Sandalcık village, 962 m, piny area, 21.11.2013, *O* 339. **42.** *Panaeolus papilionaceus* (Bull.) Quél. (Fig. 1,42). Denizli-Acıpayam, Hacıkurtlar village, 940 m, midden area, 15.10.2010, *O* 140.

Cortinariaceae R. Heim: **43.** *Cortinarius trivialis* J.E. Lange (Fig. 1,43). Denizli-Acıpayam, Hisar town, 966 m, oak area, 06.10.2011, *O* 79; Karaismeiller village, 926 m, piny area, 12.11.2011, *O* 372; Güney town, 946 m, piny area, 12.11.2012, *O* 379.

Entolomataceae Kotl. & Pouzar: **44.** *Entoloma sericeum* Quél. (Fig. 1,44). Denizli-Acıpayam, Hisar town, 965 m, piny area, 10.11.2010, *O* 65; Benlik village, 1360 m, piny area, 24.11.2012, *O* 364.

Hygrophoraceae Lotsy: **45.** *Hygrocybe conica* (Schaeff.) P. Kumm. (Fig. 1,45). Denizli-Acıpayam, Gölcük town, 966 m, piny area, 16.12.2010, *O* 72. **46.** *Hygrophorus chrysodon* (Batsch) Fr. (Fig. 1,46). Denizli-Acıpayam, Kelekçi town, 960 m, piny area, 22.11.2011, *O* 81.

Inocybaceae Jülich: **47.** *Inocybe amethystina* Kuyper (Fig. 1,47). Denizli-Acıpayam, Kelekçi town, 980 m, piny area, 10.11.2011, *O* 109; Akşar town, 984 m, piny area, 01.12.2010, *O* 115; Ören town, 944 m, piny area, 07.11.2012, *O* 385. **48.** *Inocybe flocculosa* Sacc. (Fig. 1,48). Denizli-Acıpayam, Akşar town, 984 m, piny area, 01.12.2010, *O* 125; Denizli-Acıpayam, Ören town, 930 m, piny area, 08.11.2011, *O* 411. **49.** *Inocybe rimosa* Britzelm. (Fig. 1,49). Denizli-Acıpayam, Benlik village, 954 m, piny area, 16.12.2010, *O* 112.

Marasmiaceae Roze ex Kühner: **50.** *Marasmius oreades* (Bolton) Fr. (Fig. 1,50). Denizli-Acıpayam, Hisar town, 924 m, piny area, 18.10.201, *O* 201; Gölcük town, 920 m, piny area, 21.10.2012, *O* 287; Suçatı, 954 m, piny area, 28.11.2013, *O* 341. **51.** *Gymnopus androsaceus* (L.) J.L. Mata & R.H. Petersen (Fig. 1,51). Denizli-Acıpayam, Kelekçi town, 950 m, oak leaf, 6.10.2011, *O* 217.

Mycenaceae Roze: **52.** *Mycena abramsii* (Murrill) Murrill (Fig. 1,52). Denizli-Acıpayam, Kelekçi town, 975 m, piny area, 6.10.2012, *O* 230. **53.** *Mycena maculata* P. Karst. (Fig. 1,53). Denizli-Acıpayam, Alcı town, 985 m, piny area, 11.10.2011, *O* 162; Boğazdere, 905 m, piny area, 6.10.2012, *O* 262. **54.** *Mycena renati* Quél. (Fig. 1,54). Denizli-Acıpayam, Çiftlik village, 964 m, piny area, 20.5.2010, *O* 176. **55.** *Mycena strobilicola* J. Favre & Kühner (Fig. 1,55). Denizli-Acıpayam, Sandalcık village, 910 m, pine cone, 16.10.2011, *O* 162; Hisar town, 972 m, pine cone, 26.11.2012, *O* 267; Benlik village, 998 m, pine cone, 15.11.2013, *O* 352.

Physalacriaceae Corner: **56.** *Armillaria mellea* (Vahl) P. Kumm. (Fig. 1,56). Denizli-Acıpayam, Kelekçi town, 984 m, pine root, 16.10.2010, *O* 173; Çakır town, 956 m, pine root, 22.11.2013, *O* 373.

Pleurotaceae Kühner: **57.** *Pleurotus eryngii* (DC.) Quél. (Fig. 1,57). Denizli-Acıpayam, Alcı town, 980 m, bush and grassy area, 22.5.2011, *O* 178; Olukbaşı village, 989 m, bushy area, 18.11.2013, *O* 391. **58.** *Pleurotus ostreatus* (Jacq.) P. Kumm. (Fig. 1,58). Denizli-Acıpayam, Eskiköy village, 910 m, at poplar root, 16.05.2010, *O* 182; Güney town, 998 m, bushy area, 16.05.2010, *O* 189; Çakır village, 972 m, at poplar root, 22.11.2013, *O* 418.

Pluteaceae Kotl. & Pouzar: **59.** *Volvariella volvacea* (Bull.) Singer (Fig. 1,59). Denizli-Acıpayam, Ören town, 938 m, grassy area, 20.10.2011, *O* 393; Kelekçi town, 988 m, grassy and meadow area, 22.11.2011, *O* 324. **60.** *Volvopluteus gloiocephalus* (DC.) Vizzini, Contu & Justo (Fig. 1,60). Denizli-Acıpayam, Çakır town, 970 m, grassy and meadow area, 22.10.2011, *O* 277.

Psathyrellaceae Locq.: **61.** *Coprinellus disseminatus* (Pers.) J.E. Lange (Fig. 1,61). Denizli-Acıpayam, Hisar town, 979 m, meadow area, 26.10.2011, *O* 358; Benlik town, 970 m, meadow area, 16.11.2012, *O* 359. **62.** *Coprinellus micaceus* (Bull.) Vilgalys (Fig. 1,62). Denizli-Acıpayam, Akşar town, 900 m, meadow area, 16.10.2011, *O* 284; Ören town, 980 m, tree root, 26.11.2012, *O* 380. **63.** *Coprinopsis pseudoradiata* (Kühner & Joss. ex Watling) Redhead (Fig. 1,63). Denizli-Acıpayam, Kuzören village, 930 m, meadow area, 18.9.2012, *O* 231; Hisar town, 960 m, meadow area, 7.10.2013, *O* 331. **64.** *Parasola plicatilis* (Curtis) Redhead (Fig. 2,64). Denizli-Acıpayam, Güney town, 940 m, meadow area, 18.9.2011, *O* 232. **65.** *Psathyrella leucotephra* (Berk. & Broome) P.D. Orton (Fig. 2,65). Denizli-Acıpayam, Akşar town, 940 m, piny area, 12.4.2011, *O* 214; Kelekçi town, 932 m, piny area, 12.4.2011, *O* 215.

Schizophyllaceae Quél.: **66.** *Schizophyllum commune* Fr. (Fig. 2,66). Denizli-Acıpayam, Kelekçi town, 935 m, at pine tree, 10.3.2010, *O* 192; Benlik village, 1305 m, at oak tree, 12.4.2011, *O* 292; Suçatı village, 943 m, at pine tree, 18.4.2011, *O* 452.

Strophariaceae Singer & A.H. Sm.: **67.** *Cyclocybe parasitica* (G. Stev.) Vizzini (Fig. 2,67). Denizli-Acıpayam, Alcı town, 920 m, at pine tree, 12.10.2010, *O* 186; Benlik town, 1320 m, at pine tree, 24.11.2010, *O* 198; Sandalcık village, 952 m, at oak tree, 15.10.2011, *O* 386; Gölcük town, 941 m, at poplar tree, 10.11.2011, *O* 487. **68.** *Hebeloma sarcophyllum* (Peck) Sacc. (Fig. 2,68). Denizli-Acıpayam, Yolçatı village, 910 m, piny area, 12.10.2010, *O* 187; Boğazdere, 922 m, piny area, 12.10.2010, *O* 188. **69.** *Pholiota tuberculosa* (Schaeff.) P. Kumm. (Fig. 2,69). Denizli-Acıpayam, Suçatı village, 950 m, at pine branch, 18.10.2010, *O* 194. **70.** *Stropharia coronilla* W. Saunders & W.G. Sm. (Fig. 2,70). Denizli-Acıpayam, Suçatı village, 980 m, grassy area, 18.10.2010, *O* 195.

Tricholomataceae R. Heim ex Pouzar: **71.** *Clitocybe costata* Kühner & Romagn. (Fig. 2,71). Denizli-Acıpayam, Güney town, 912 m, piny area, 18.10.2010, *O* 199; Alcı town, 987 m, piny area, 18.10.2010, *O* 200; Akşar town, 994 m, piny area, 16.10.2011, *O* 398; Çiftlik town, 981 m, piny area, 18.11.2013, *O* 492. **72.** *Clitocybe odora* (Bull.) P. Kumm. (Fig. 2,72). Denizli-Acıpayam, Kelekçi town, 956 m, piny area, 12.10.2011, *O* 208; Yolçatı village, 943 m, piny area, 20.11.2011, *O* 348; Sandalcık village, 989 m, piny area, 21.11.2013, *O* 412. **73.** *Rhizocybe vermicularis* (Fr.) Vizzini (Fig. 2,73). Denizli-Acıpayam, Çakır town, 940 m, piny area, 20.5.2011, *O* 365; Boğazdere, 1067 m, piny area, 26.5.2012, *O* 392. **74.** *Infundibulicybe geotropa* (Bull.) Harmaja (Fig. 2,74). Denizli-Acıpayam, Benlik village, 1250 m, piny area, 19.5.2011, *O* 269; Çakır town, 950 m, piny area, 20.5.2013, *O* 307. **75.** *Lepista nuda* (Bull.) Cooke (Fig. 2,75). Denizli-Acıpayam, Hisar town, 910 m, piny area, 24.11.2012, *O* 429; Kelekçi town, 998 m, piny area, 26.11.2013, *O* 437; Ören town, 932 m, piny area, 27.11.2013, *O* 491. **76.** *Melanoleuca stridula* (Fr.) Singer (Fig. 2,76). Denizli-Acıpayam, Eskiköy village, 968 m, piny area, 28.4.2010, *O* 374; Yolçatı village, 975 m, piny area, 12.5.2010, *O* 392; Ören town, 962 m, piny area, 20.5.2013, *O* 421. **77.** *Melanoleuca polioleuca* (Fr.) Kühner & Maire (Fig. 2,77). Denizli-Acıpayam, Olukbaşı village, 1270 m, piny area, 20.5.2010, *O* 174. **78.** *Tricholoma caligatum* (Viv.) Ricken (Fig. 2,78). Denizli-Acıpayam, Sandalcık village, 1005 m, piny area, 17.10.2010, *O* 249; Suçatı village, 915 m, piny area, 08.11.2011, *O* 346; Çiftlik town, 955 m, piny area, 8.11.2011, *O* 449. **79.** *Tricholoma batschii* Gulden (Fig. 2,79). Denizli-Acıpayam, Gölcük town, 956 m, piny area, 20.5.2010, *O* 381; Eskiköy town, 990 m, piny area, 8.5.2011, *O* 406. **80.** *Tricholoma terreum* (Schaeff.) P. Kumm. (Fig. 2,80). Denizli-Acıpayam, Kelekçi town, 917 m, piny area, 28.10.2010, *O* 247; Benlik village, 1118 m, piny area, 10.10.2010, *O* 273; Çakır town, 989 m, piny area, 8.11.2011, *O* 355; Güney town, 948 m, piny area, 16.11.2012, *O* 409; Kuzören village, 995 m, piny area, 16.11.2012, *O* 417; Hacıkurtlar village, 925 m, piny area, 22.11.2012, *O* 445; Olukbaşı village, 1005 m, piny area, 24.11.2013, *O* 458.

Auriculariales J. Schröt.

Auriculariaceae Fr.: **81.** *Exidia recisa* (Ditmar) Fr. (Fig. 2,81). Denizli-Acıpayam, Hisar town, 952 m, at willow branch, 14.11.2011, *O* 444; Suçatı village, 926 m, at willow branch, 14.11.2013, *O* 447.

Boletales E.-J. Gilbert

Diplocystidiaceae Kreisel: **82.** *Astraeus hygrometricus* (Pers.) Morgan (Fig. 2,82). Denizli-Acıpayam, Gölcük town, 965 m, bushy area, 28.11.2013, *O* 515.

Gomphidiaceae Maire ex Jülich: **83.** *Chroogomphus rutilus* (Schaeff.) O.K. Mill. (Fig. 2,83). Denizli-Acıpayam, Kelekçi town, 943 m, piny area, 4.10.2010, *O* 135; Gölcük town, 903 m, piny area, 10.11.2012, *O* 347; Güney town, 934 m, piny area, 22.11.2013, *O* 507; Hisar town, 916 m, piny area, 22.11.2013, *O* 508.

Rhizopogonaceae Gäum. & C.W. Dodge: **84.** *Rhizopogon luteolus* Fr. (Fig. 2,84). Denizli-Acıpayam, Benlik village, 1398 m, piny area, 22.11.2010, *O* 158; Kuzören village, 928 m, piny area, 14.11.2011, *O* 456; Hisar town, 991 m, piny area, 14.11.2011, *O* 461. **85.** *Rhizopogon roseolus* (Corda) Th. Fr. (Fig. 2,85). Denizli-Acıpayam, Ören town, 934 m, grassy-piny area, 14.11.2010, *O* 160; Alcı town, 911 m, piny area, 14.11.2011, *O* 436.

Sclerodermataceae Corda: **86.** *Pisolithus arhizus* (Scop.) Rauschert (Fig. 2,86). Denizli-Acıpayam, Kelekçi town, 920 m, piny area, 24.10.2010, *O* 172.

Suillaceae Besl & Bresinsky: **87.** *Suillus collinitus* (Fr.) Kuntze (Fig. 2,87). Denizli-Acıpayam, Çakır town, 946 m, piny area, 14.10.2012, *O* 369. **88.** *Suillus granulatus* (L.) Roussel (Fig. 2,88). Denizli-Acıpayam, Hisar town, 954 m, piny area, 14.10.2012, *O* 366; Suçatı village, 988 m, piny area, 22.11.2011, *O* 469. **89.** *Suillus luteus* (L.) Roussel (Fig. 2,89). Denizli-Acıpayam, Kelekçi town, 945 m, piny area, 24.10.2011, *O* 377; Benlik village, 927 m, piny area, 14.10.2012, *O* 428; Hisar town, 920 m, piny area, 14.10.2012, *O* 430.

Geastrales K. Hosaka & Castellano

Geastraceae Corda: **90.** *Geastrum fimbriatum* Fr. (Fig. 2,90). Denizli-Acıpayam, Ören town, 915 m, piny area, 10.10.2012, *O* 328. **91.** *Geastrum rufescens* Pers. (Fig. 2,91). Denizli-Acıpayam, Suçatı village, 962 m, piny area, 8.4.2011, *O* 270. **92.** *Geastrum triplex* Jungh. (Fig. 2,92). Denizli-Acıpayam, Karaismailler village, 935 m, oak area, 10.12.2010, *O* 272; Hacıkurtlar village, 976 m, oak area, 18.11.2011, *O* 413.

Gloeophyllales Thorn

Gloeophyllaceae Jülich: **93.** *Gloeophyllum abietinum* (Bull.) P. Karst. (Fig. 2,93). Denizli-Acıpayam, Benlik village, 1260 m, pine tree root, 12.11.2011, *O* 291. **94.** *Gloeophyllum sepiarium* (Wulfen) P. Karst. (Fig. 2,94). Denizli-Acıpayam, Yolçatı village, 923 m, brook side, 10.11.2012, *O* 389.

Gomphales Jülich

Gomphaceae Donk: **95.** *Ramaria flaccida* (Fr.) Bourdot (Fig. 2,95). Denizli-Acıpayam, Gölcük town, 929 m, bushy area, 10.11.2012, *O* 394; Kuzören village, 976 m, çam ve bushy area, 22.11.2013, *O* 497.

Hymenochaetales Oberw.

Hymenochaetaceae Donk: **96.** *Phellinus igniarius* (L.) Quél. (Fig. 2,96). Denizli-Acıpayam, Kelekçi town, 964 m, at mulbery tree, 14.5.2012, *O* 233. **97.** *Fuscoporia torulosa* (Pers.) T. Wagner & M. Fisch. (Fig. 2,97). Denizli-Acıpayam, Gölcük town, 973 m, at tree root, 4.10.2011, *O* 410; Suçatı village, 912 m, at mulbery tree, 22.11.2013, *O* 454.

Polyporales Gäum.

Fomitopsidaceae Jülich: **98.** *Laetiporus sulphureus* (Bull.) Murrill (Fig. 2,98). Denizli-Acıpayam, Kelekçi town, 914 m, at mulbery tree, 4.10.2012, *O* 370.

Ganodermataceae Donk: **99.** *Ganoderma applanatum* (Pers.) Pat. (Fig. 2,99). Denizli-Acıpayam, Ören town, 940 m, at pine tree, 12.11.2013, *O* 494.

Polyporaceae Fr. ex Corda: **100.** *Fomes fomentarius* (L.) Fr. (Fig. 2,100). Denizli-Acıpayam, Hisar town, 850 m, at willow tree, 22.10.2010, *O* 116; Alcı town, 950 m, at willow tree, 20.11.2011, *O* 314. **101.** *Trametes versicolor* (L.) Lloyd (Fig. 2,101). Denizli-Acıpayam, Alcı town, 983 m, at oak root, 16.9.2010, *O* 148; Eskiköy village, 952 m, at poplar root, 15.10.2011, *O* 347; Kelekçi town, 997 m, at oak tree, 15.9.2013, *O* 140.

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

Russulaceae Lotsy: **102.** *Lactarius deliciosus* (L.) Gray (Fig. 2,102). Denizli-Acıpayam, Kelekçi town, 943 m, piny area, 10.11.2010, *O* 92; Çakır town, 920 m, piny area, 11.11.2010, *O* 191; Gölcük town, 918 m, piny area, 18.11.2011, *O* 203; Çiftlik town, 946 m, piny area, 26.11.2012, *O* 209; Kuzören village, 901 m, piny area, 8.11.2012, *O* 304; Olukbaşı village, 932 m, piny area, 13.11.2013, *O* 495; Ören town, 982 m, piny area, 25.11.2013, *O* 505. **103.** *Lactarius deterrimus* Gröger (Fig. 2,103). Denizli-Acıpayam, Benlik village, 1328 m, piny area, 11.11.2010, *O* 119; Gölcük town, 985 m, piny area, 18.11.2011, *O* 426; Suçatı village, 904 m, piny area, 23.11.2011, *O* 452. **104.** *Lactarius salmonicolor* R. Heim & Leclair (Fig. 2,104). Denizli-Acıpayam, Eskiköy village, 953 m, piny area, 14.10.2010, *O* 118; Benlik village, 1290 m, piny area, 18.11.2010, *O* 217; Gölcük town, 980 m, piny area, 15.11.2011, *O* 416; Kuzören village, 1050 m, piny area, 16.11.2012, *O* 428. **105.** *Russula chloroides* (Krombh.) Bres. (Fig. 2,105). Denizli-Acıpayam, Hisar town, 942 m, piny area, 21.10.2010, *O* 129; Benlik village, 1174 m, piny area, 28.11.2010, *O* 229; Çiftlik town, 974 m, piny area, 26.11.2013, *O* 427. **106.** *Russula delica* Fr. (Fig. 2,106). Denizli-Acıpayam, Akşar town, 986 m, piny area,08.10.2010, *O* 181; Benlik village, 1198 m, piny area, 12.11.2010, *O* 286; Kelekçi town, 972 m, piny area, 15.10.2012, *O* 375; Ören town, 927 m, piny area, 26.11.2012, *O* 501; Yolçatı village, 904 m, piny area, 28.11.2013, *O* 511. **107.** *Russula queletii* Fr. (Fig. 2,107). Denizli-Acıpayam, Eskiköy village, 976 m, piny area, 20.11.2012, *O* 492; Ören town, 906 m, piny area, 20.11.2013, *O* 493. **108.** *Russula rhodopus* Zvára (Fig. 2,108). Denizli-Acıpayam, Kelekçi town, 982 m, piny area, 8.10.2010, *O* 179; Güney town, 908 m, piny area, 15.10.2011, *O* 283; Alcı town, 917 m, piny area, 12.11.2012, *O* 388; Olukbaşı village, 941 m, piny area, 12.11.2013, *O* 398. **109.** *Russula torulosa* Bres. (Fig. 2,109). Denizli-Acıpayam, Gölcük town, 910 m, piny area, 12.11.2010, *O* 212; Karaismailler village, 948 m, piny area, 20.11.2010, *O* 358; Boğazdere, 981 m, piny area, 28.11.2011, *O* 472. **110.** *Russula turci* Bres. (Fig. 2,110). Denizli-Acıpayam, Suçatı village, 950 m, piny area, 18.11.2010, *O* 320; Hisar town, 982 m, piny area, 20.11.2010, *O* 337; Hacıkurtlar village, 961 m, piny area, 22.11.2013, *O* 419.

Stereaceae Pilát: **111.** *Stereum hirsutum* (Willd.) Pers. (Fig. 2,111). Denizli-Acıpayam, Kelekçi town, 925 m, at trre banch, 28.11.2010, *O* 245; Çakır town, 955 m, at oak root, 20.11.2012, *O* 448; Olukbaşı village, 937 m, at oak root, 20.11.2012, *O* 462.

Thelephorales Corner. ex Oberw.

Bankeraceae Donk: **112.** *Phellodon melaleucus* (Sw. ex Fr.) P. Karst. (Fig. 2,112). Denizli-Acıpayam, Çiftlik town, 963 m, at oak root, 28.11.2012, *O* 459; Gölcük town, 926 m, at oak root, 28.11.2013, *O* 462.

Thelephoraceae Chevall.: **113.** *Thelephora terrestris* Ehrh. (Fig. 2,113). Denizli-Acıpayam, Suçatı village, 955 m, piny area, 18.10.2012, *O* 431.

Tremellomycetes Doweld

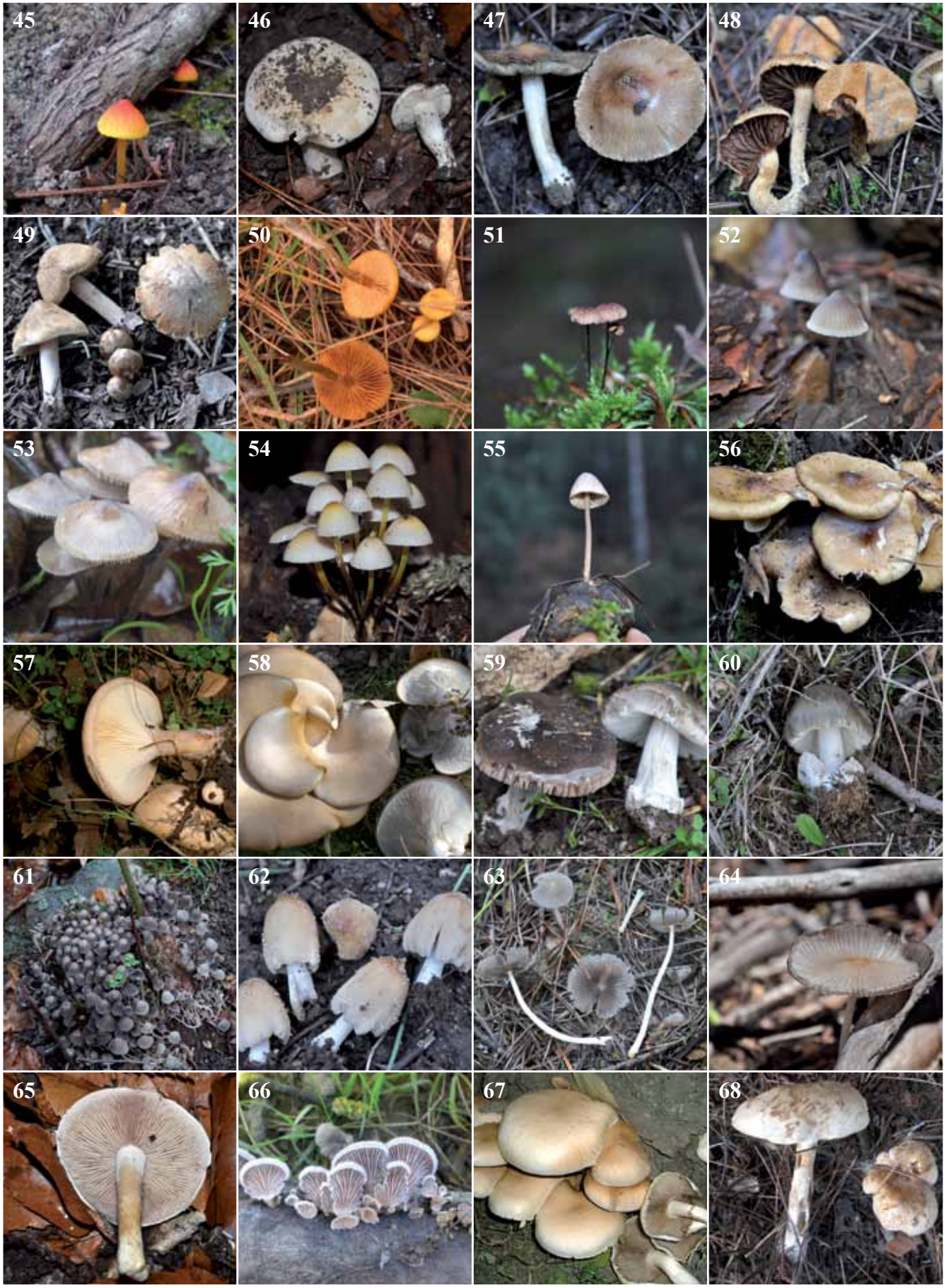
Tremellales Fr.

Tremellaceae Fr.: **114.** *Tremella mesenterica* Retz. (Fig. 2,114). Denizli-Acıpayam, Kuzören village, 935 m, at oak, 26.5.2013, *O* 400.

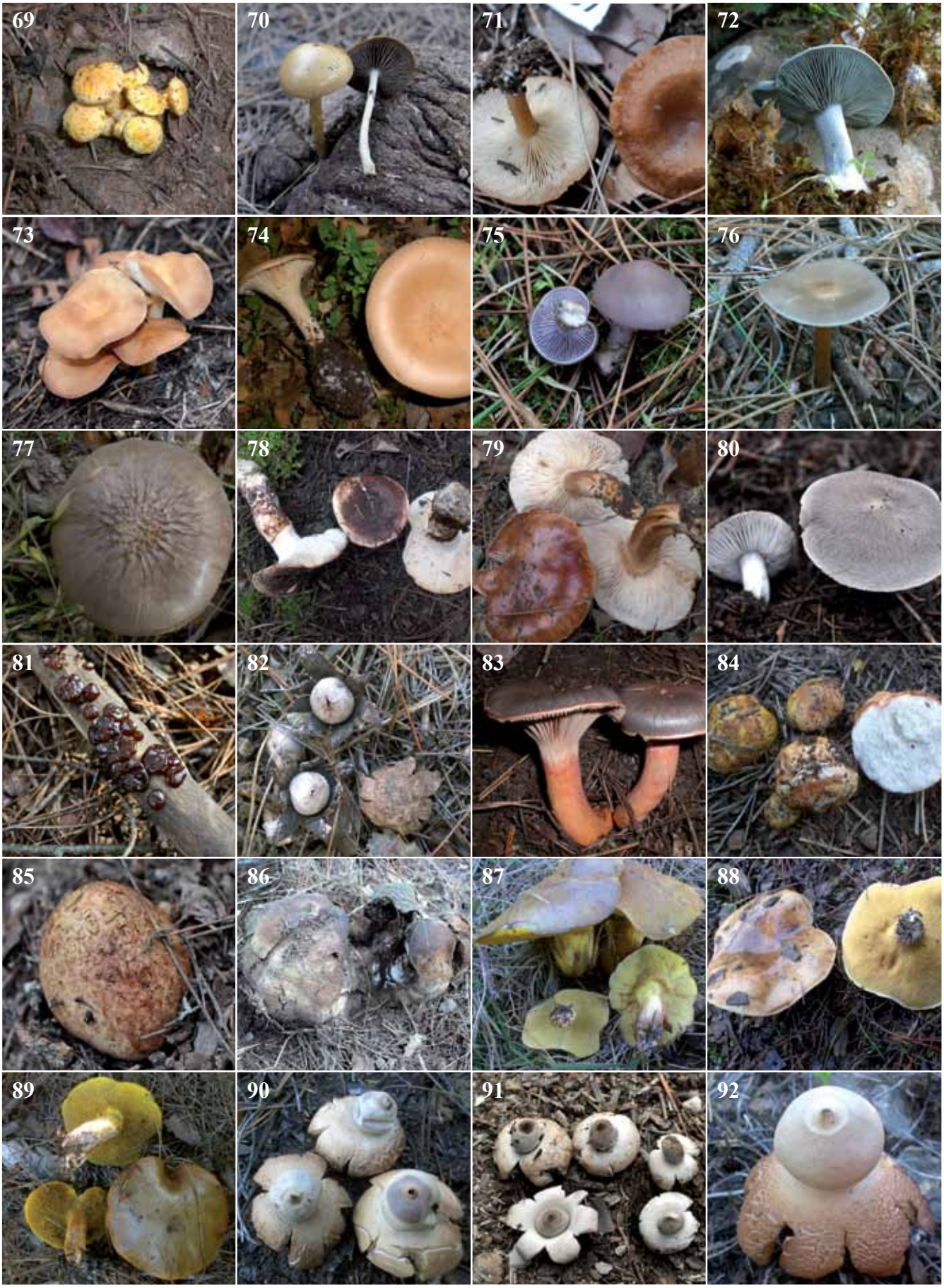
Appendix 2. Macrofungal diversity of Gireniz Valley

Explanations: 1. *Discina ancilis*, 2. *Helvella acetabulum*, 3. *H. lactea*, 4. *H. lacunosa*, 5. *H. leucomelaena*, 6. *H. leucopus*, 7. *Mitrophora semilibera*, 8. *Morchella angusticeps*, 9. *M. conica*, 10. *M. costata*, 11. *M. deliciosa*, 12. *M. esculenta*, 13. *M. elatovelutipes*, 14. *M. vulgaris var. alba*, 15. *Verpa conica*, 16. *Peziza depressa*, 17. *Sarcosphaera coronaria*, 18. *Anthracobia melaloma*, 19. *Geopora sumneriana*, 20. *Gyromitra esculenta*, 21. *Agaricus bisporus*, 22. *A. campestris*, 23. *A. comtulus*, 24. *A. langei*, 25. *Bovista nigrescens*, 26. *B.*

plumbea, 27. *Coprinus comatus*, 28. *Cyathus olla*, 29. *Cystoderma amianthinum*, 30. *Cystodermella granulosa*, 31. *Lepiota cristata*, 32. *L. ignivolvata*, 33. *Lycoperdon lividum*, 34. *L. molle*, 35. *L. nigrescens*, 36. *L. pyriforme*, 37. *Macrolepiota procera*, 38. *Tulostoma brumale*, 39. *Amanita ovoidea*, 40. *A. phalloides*, 41. *Conocybe apala*, 42. *Panaeolus papilionaceus*, 43. *Cortinarius trivialis*, 44. *Entoloma sericeum*,



45. *Hygrocybe conica*, 46. *H. chrysodon*, 47. *Inocybe amethystina*, 48. *I. flocculosa*, 49. *I. rimosa*, 50. *Marasmius oreades*, 51. *Gymnopus androsaceus*, 52. *Mycena abramsii*, 53. *M. maculata*, 54. *M. renati*, 55. *M. strobilicola*, 56. *Armillaria mellea*, 57. *Pleurotus eryngii*, 58. *P. ostreatus*, 59. *Volvariella volvacea*, 60. *Volvopluteus gloiocephalus*, 61. *Coprinellus disseminatus*, 62. *C. micaceus*, 63. *Coprinopsis pseudoradiata*, 64. *Parasola plicatilis*, 65. *Psathyrella leucotephra*, 66. *Schizophyllum commune*, 67. *Cyclocybe parasitica*, 68. *Hebeloma*



sarcophyllum, 69. *Pholiota tuberculosa*, 70. *Stropharia coronilla*, 71. *Clitocybe costata*, 72. *C. odora*, 73. *Rhizocybe vermicularis*, 74. *Infundibulicybe geotropa*, 75. *Lepista nuda*, 76. *Melanoleuca stridula*, 77. *M. polioleuca*, 78. *Tricholoma caligatum*, 79. *T. batschii*, 80. *T. terreum*, 81. *Exidia recisa*, 82. *Astraeus hygrometricus*, 83. *Chroogomphus rutilus*, 84. *Rhizopogon luteolus*, 85. *Rhizopogon roseolus*, 86. *Pisolithus arhizus*, 87. *Suillus collinitus*, 88. *S. granulatus*, 89. *S. luteus*, 90. *Geastrum fimbriatum*, 91. *G. rufescens*, 92. *G. triplex*,

93. *Gloeophyllum abietinum*, 94. *G. sepiarium*, 95. *Ramaria flaccida*, 96. *Phellinus igniarius*, 97. *Fuscoporia torulosa*, 98. *Laetiporus sulphureus*, 99. *Ganoderma applanatum*, 100. *Fomes fomentarius*, 101. *Trametes versicolor*, 102. *Lactarius deliciosus*, 103. *L. deterrimus*, 104. *L. salmonicolor*, 105. *Russula chloroides*, 106. *R. delica*, 107. *R. queletii*, 108. *R. rhodopus*, 109. *R. torulosa*, 110. *R. turci*, 111. *Stereum hirsutum*, 112. *Phellodon melaleucus*, 113. *Thelephora terrestris*, 114. *Tremella mesenterica*