

# Annotated checklist of Basidiomycota (subclass Agaricomycetidae) from the islands of Naxos and Amorgos (Cyclades, Greece)

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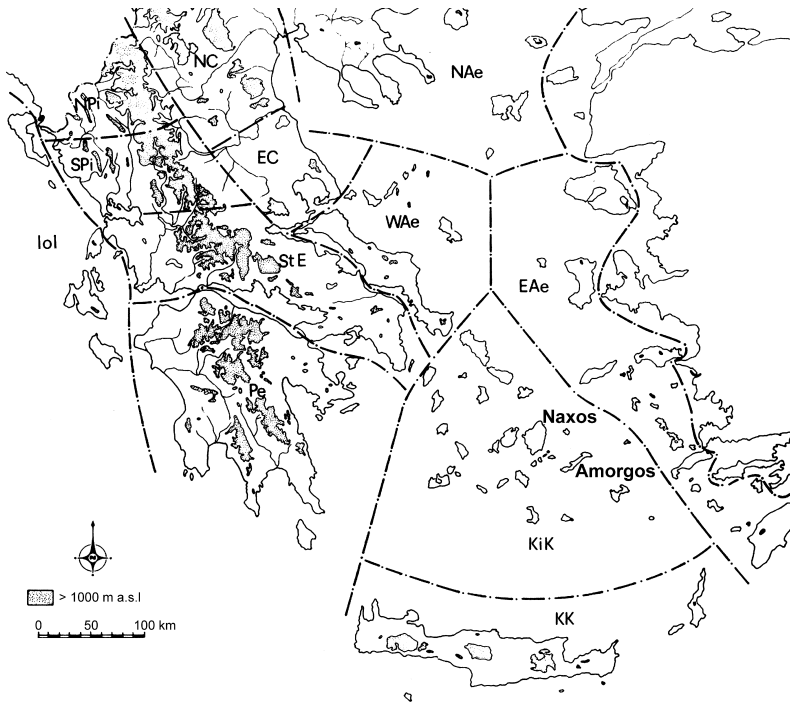
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Naxos and Amorgos are islands in the Aegean Sea with a typically arid to semiarid climate, the vegetation being dominated by thermo-Mediterranean shrubs. From the floristic point of view, both are among the most interesting islands of the Cyclades. However, no data were available on their fungal diversity. This work presents an annotated check-list of the basidiomycetes belonging to the subclass Agaricomycetidae (Agaricales and Boletales) from these two islands. A total of 142 species and subspecific taxa are recognized and assigned to 58 genera. The genus *Simocybe* as well as 21 taxa at the species or subspecies level constitute new records for Greece, while further 76 taxa represent first national reports for habitat, hosts and/or substrates. A brief description of key diagnostic characters — in conjunction with a discussion of pertinent literature — is provided for the most interesting findings.

## Introduction

The Cyclades islands comprise one of the thirteen distinct phytogeographical regions of Greece according to the *Flora Hellenica* project (Strid & Tan 1997) (Fig. 1). Naxos is the largest island of the Cyclades (Figs. 1 and 2), with the surface area of 442 km<sup>2</sup>. It is characterized by a remarkably varied bas-relief, and the three high mountain peaks (Zas 1004 m a.s.l., Koronos 998 m a.s.l. and Fanari 888 m a.s.l.). Geomorphologically, Naxos is divided into three distinct parts: (1) the mountainous part with

high peaks and deep gorges, (2) the mainland plateaus, which are isolated by the mountainous parts, and (3) the relatively extended alluvial valleys in the west of the island. The geology of Naxos is very complex and a large variety of minerals are found; the dominant rock types are granite, marmarygian schist and marble. The climate of Naxos is characterized by an intensely hot summer with a dry period of almost seven months. The annual precipitation ranges between 300 and 400 mm and the wet period of the year starts in November and lasts until March, with the maximum precipitation in December



**Fig. 1.** Greece and its phytogeographical zones according to the "Flora Hellenica" project (Strid & Tan 1997). Abbreviations: Iol = Ionian Islands, NP = North Pindos, SP = South Pindos, NC = North Central, EC = East Central, NAe = North Aegean, WAe = West Aegean, EAe = East Aegean, StE = Sterea Ellas, Pe = Peloponnissos, KiK = Kyklades (Cyclades), KK = Kriti-Karpathos.

and January. Mean monthly temperatures range from approximately 12 °C in winter to 25 °C in summer. Snowfall and frost may appear at altitudes above 600 m. In the mountainous mainland of the northern part of the island, the climatic conditions are considerably different from the coastal zone due to the prevailing north winds that increase humidity and lower the temperatures. In contrast, the southern part is significantly more arid. The hydrographic network of Naxos includes a few small rivers with constant flow in the north of the island.

Amorgos is the easternmost of the large islands of the Cyclades, with a surface area of 121 km<sup>2</sup>, and its shape is elongate with a 33-km-long NE–SW axis, and a width varying between 1.5 and 6 km (Figs. 1 and 3). It is a mountainous and rocky island, and the highest peak (823 m a.s.l.) is found in the NE part of the island. The southeastern coast is extremely sheer, while a number of small alluvial valleys and beaches are present in the northwestern part. The main rock types of the island are schist and limestone. Climatic data for Amorgos are not available (there is no meteorological station on the island), but they are expected not to differ significantly from

those available for Naxos due to their geographic proximity. Amorgos possesses limited water resources and only a few streams that become completely dry during the summer months.

From the floristic point of view, Naxos and Amorgos are among the most interesting islands of the Cyclades, both having high numbers of species, including several Greek and/or Cyclades endemics or even single-island endemics (three local endemics exist on both islands). Although several botanists have explored the islands, pertinent floristic information is available for Naxos only. According to Böhring (1994), the flora of Naxos consists of 931 taxa of vascular plants and its vegetation is mainly characterized by low shrubs and phrygana communities (e.g. *Sarcopoterium spinosum*, *Genista acanthoclada*, *Coridothymus capitatus*, *Erica manipuliflora*, *Centaurea spinosa*, *Calicotome villosa*, *Phlomis fruticosa*, *Satureja thymbra*, *Cistus creticus* and *C. salviifolius*). There are no forests on Naxos, but large stands with *Acer sempervirens*, *Quercus coccifera* and *Q. ilex*, with trees 5–6 m high, are found in many localities; they are considered to be relicts of the indigenous sclerophyllous forests that once existed there. Few oak and

poplar trees (*Quercus pubescens*, *Q. ithaburensis* ssp. *macrolepis* and *Populus* spp.) form small thickets close to some villages, but they are considered allochthonous to the island (Böhling 1994). Conifers such as *Cupressus sempervirens*, *Pinus halepensis*, *P. brutia* and *P. pinea* were also introduced. *Platanus orientalis* dominates in wet ravines and streams, while *Alnus glutinosa* and *Salix alba* are occasionally present. As the streams get dry, trees are replaced by vegetation dominated by *Nerium oleander* and, close to estuaries, *Tamarix hampeanus*. In the littoral zone, *Juniperus oxycedrus* ssp. *macrocarpus*, *J. phoenicea* and *Pistacia lentiscus* often form a dense vegetation cover, which is more common in the south coasts of the island on limestone and terra rosa.

Although a floristic inventory of Amorgos has not yet been published, its vascular flora is estimated to include no fewer than 800 taxa (D. Tzanoudakis unpubl. data). As in the case of Naxos, the vegetation on Amorgos typically consists of low shrubs and phrygana such as *Euphorbia dendroides*, *E. acanthothamnus*, *Coridothymus capitatus*, *Salvia fruticosa*, *Balota acetabulosa*, *Sarcopoterium spinosum*, *Genista acanthoclada*, *Erica manipuliflora*, *Centaurea spinosa*, *Calicotome villosa*, *Satureja thymbra*, *Cistus creticus* and *C. salviifolius*. At various localities, however, trees of mac-

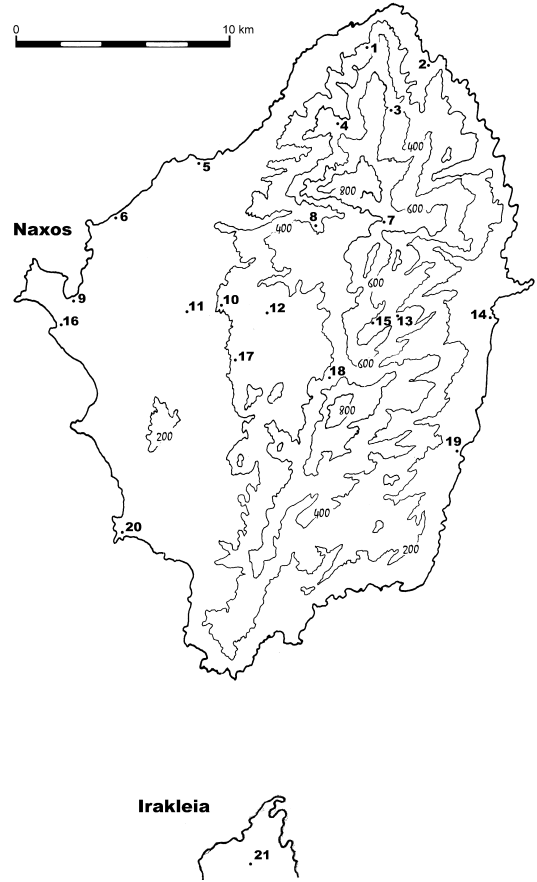


Fig. 2. The map of the Naxos and the adjacent islets with numbers indicating sampling localities (see Table 1).

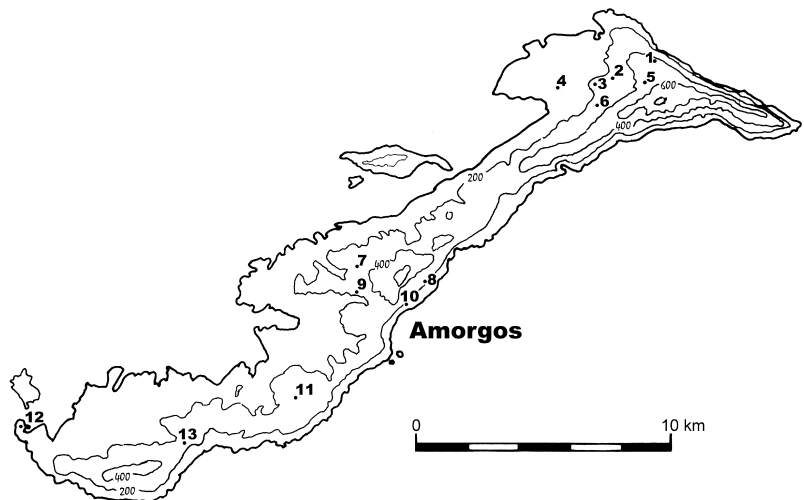


Fig. 3. The map of the Amorgos and the adjacent islets with numbers indicating sampling localities (see Table 2).

quis vegetation (*Quercus coccifera*, *Juniperus phoenicea*, *Pistacia lentiscus* and *Rhamnus oleifolius*) are present. No hydrophilous trees are found on Amorgos, and only *Nerium oleander* grows close to some streams. Typical elements of the anthropogenic vegetation of the island are the extensive olive orchards in the Aigiali area.

The central Aegean islands (Cyclades), as is the case with several others parts of Greece, are very poorly investigated as regards their mushroom diversity. Particularly for Naxos and Amorgos, no pertinent data have previously been published, with the exception of few concerning coprophilous species (Richardson 2008). The study of the macrofungi on these islands was a project initiated in 1998 within the framework of an ongoing inventory of Greek macromycetes in selected areas and habitats of the country (Dimou et al. 2002, Zervakis et al. 2002a, Zervakis et al. 2002b, Zervakis et al. 2004, Dimou et al. 2008, Polemis et al. 2011); most of the data on the mycobiota of Naxos and Amorgos formed part of the Ph.D. dissertation of the first author (Polemis 2010).

## Material and methods

The present checklist includes mushroom species belonging to the orders Agaricales and Boletales of the subclass Agaricomycetidae (as defined in the recent multilocus molecular phylogenetic studies, e.g. Hibbett et al. 2007) including the 'agaricoid', 'boletoid', 'gasteroid' and few 'clavarioid' taxa. We sampled the most representative biotopes from the sea level to an altitude of 600 m on Naxos and Amorgos (see Tables 1 and 2, and Figs. 2 and 3, respectively). All specimens collected are deposited in the herbarium of the Laboratory of General and Agricultural Microbiology of the Agricultural University of Athens (ACA). For specimen identification and classification, we used pertinent key references (e.g. Kits van Waveren 1985, Kuyper 1986, Bas et al. 1988, 1990, 1995, 1999, Canduzo & Lanzoni 1990, Hansen & Knudsen 1992, Antonín & Noordeloos 1993, 1997, 2004, Noordeloos et al. 2001, 2005, Ladurner & Simonini 2003, Robich 2003, Neville & Puimarat 2004, Muñoz 2005, Sarasini 2005).

Field parameters, macroscopic characteristics and some macrochemical reactions of the collected specimens were recorded *in situ*. Following the classical methods, dried samples were examined under a light microscope and phase-contrast mostly at the Agricultural University of Athens, but some specimens were transferred to Copenhagen (Botanical Museum) and Leiden (National Herbarium of the Netherlands) for further study and/or comparison with relevant samples. All sections were mounted and observed in KOH 3%–5%, and — depending on the specimen — in Melzer's reagent, congo red, cotton blue, sulfovaniline and/or cresyl blue. The nomenclature follows mainly *Index Fungorum* (<http://www.indexfungorum.org>). The transliteration of the Greek geographical names into English follows the international standard ISO 843 (1999).

## Results

Genera and species are presented alphabetically. For each specimen, location, habitat and host/substrate, collection date and sample code are given; the initials EP refer to E. Polemis and DD to D. Dimou. First records for Greece are marked with an asterisk (\*), and a brief description of their most prominent characteristics is included together with a short discussion of the pertinent literature (if necessary). New habitat or host/substrate records for Greece are marked with a cross (†) placed before the taxon's name or after the host/substrate if it is reported for the first time.

### *Agaricus bisporus* (J.E. Lange) Imbach

**Amorgos:** Kaloteritisa Bay, on manured soil in littoral pastures, 3 Jan. 2005, EP.05-M062; Amorgos Town (Terlakia), on manured soil and leaf litter under *Quercus coccifera*, 6 Dec. 2005, EP.05-M230. **Naxos:** Apeiranthos, on manured soil, 2 Dec. 1998, EP.98-N023; Naxos Town, 2 km NW of the town, on sandy, manured soil in pastures, 11 Oct. 2005, EP.05-N302.

### *Agaricus bresadolanus* Bohus

**Amorgos:** Arkesini, on manured soil among shrubs, 3 Dec. 2005, EP.05-M191.

*Agaricus campestris* L.

**Amorgos:** Stavros, on manured soil, 3 Dec. 2005, *EP.05-M178*. **Naxos:** Melanes, among shrubs on manured soil, 11 Dec. 2004, *EP.04-N180*.

*Agaricus cupreobrunneus* (Jul. Schäff. & Steer) Pilát

**Naxos:** Apeiranthos, on manured soil, 1 Dec. 1998 *EP.98-N008*.

†*Agaricus langei* (F.H. Møller) F.H. Møller.

**Naxos:** Skeponi, on soil under *Quercus coccifera*, 2 Dec. 1998 *EP.98-N016*.

†*Agaricus litoralis* (Wakef. & A. Pearson) Konrad & Maubl.

**Amorgos:** Arkesini, on manured soil among shrubs, 3 Dec. 2005, *EP.05-M187*. **Naxos:** Chalkeio, under *Olea europaea*†, 13 Dec. 2004, *EP.04-N215*.

**Table 1.** Sampling localities on the island of Naxos with their respective numbers, geographic coordinates and altitude (see Fig. 2).

	Locality	Coordinates	Altitude (m a.s.l.)
1	Agia	37°11'06''N, 25°31'17''E	250
2	Apolonas	37°10'40''N, 25°33'09''E	0
3	Koronida	37°08'34''N, 25°31'39''E	550–600
4	Skeponi	37°08'13''N, 25°29'57''E	300–400
5	Amiti Bay	37°08'09''N, 25°26'05''E	0
6	Naxos Town (2 km NW)	37°07'12''N, 25°24'15''E	50–100
7	Keramoti (Sifones)	37°06'04''N, 25°31'15''E	650
8	Kynidaros	37°05'58''N, 25°28'47''E	400–450
9	Naxos Town (Alykes)	37°05'11''N, 25°21'59''E	0
10	Melanes	37°05'07''N, 25°27'11''E	200–250
11	Kato Potamia	37°04'44''N, 25°25'43''E	50
12	Chalkeio	37°04'41''N, 25°28'58''E	250–300
13	Apeiranthos (to Moutsouna)	37°04'24''N, 25°31'51''E	500–550
14	Moutsouna	37°04'18''N, 25°35'05''E	0–50
15	Apeiranthos	37°04'17''N, 25°31'15''E	500–600
16	Agia Anna	37°03'51''N, 25°21'20''E	0
17	Ano Sagkri	37°02'37''N, 25°26'21''E	200
18	Filoti	37°02'30''N, 25°29'44''E	450
19	Marathi beach	37°00'47''N, 25°34'05''E	0
20	Pyrgakia	36°58'49''N, 25°23'20''E	0
21	Irakleia	36°50'20''N, 25°27'16''E	0–50

**Table 2.** Sampling localities on Amorgos with their respective numbers, geographic coordinates and altitudes (see Fig. 3).

	Locality	Coordinates	Altitude (m a.s.l.)
1	Agios Theologos Monastery	36°55'02''N, 26°01'28''E	500–600
2	Lagkada (Panagia Epanochoriani)	36°54'47''N, 26°00'21''E	250
3	Lagkada (Stroumpos)	36°54'36''N, 26°00'03''E	150–200
4	Aigiali	36°54'35''N, 25°59'09''E	20
5	Lagkada (path to Agios Theologos)	36°54'27''N, 26°01'23''E	400–450
6	Lagkada	36°54'14''N, 26°00'04''E	350
7	Amorgos Town (Terlakia)	36°50'57''N, 25°53'30''E	250–300
8	Chozoviotissa Monastery to Agios Ioannis	36°50'28''N, 25°55'00''E	300–350
9	Amorgos Town (Kato Fylladi Stream)	36°50'13''N, 25°53'29''E	150–200
10	Agia Anna	36°50'04''N, 25°54'57''E	20
11	Stavros	36°48'08''N, 25°51'56''E	300
12	Kalotaritissa Bay	36°47'37''N, 25°44'36''E	0
13	Arkesini	36°47'15''N, 25°48'28''E	200

†*Agaricus moelleri* Wasser

**Naxos:** Filoti, on leaf-litter under *Quercus pubescens* and *Q. coccifera*, 14 Dec. 2004, *EP.04-N247*; Apeiranthos, on leaf-litter under *Q. pubescens*, 15 Dec. 2004, *EP.04-N252*; Apeiranthos, 2 km on the way to Moutsouna, on leaf-litter of *Q. coccifera*†, 29 Nov. 2005, *EP.05-N364*.

*Agaricus pampeanus* Speg.

**Amorgos:** Lagkada (Stroumpos), on manured soil among shrubs, 17 Dec. 2004, *EP.04-M008*; Kalotaritissa Bay, on manured soil among shrubs, 3 Jan. 2005, *EP.05-M063*; Arkesini, on manured soil among shrubs, 4 Jan. 2005, *EP.05-M087*. **Naxos:** Apeiranthos, on manured soil among shrubs, 15 Dec. 2004, *EP.04-N267*; Kynidaros, on manured soil in pastures, 28 Nov. 2005, *EP.05-N345*; Skeponi, on manured soil among shrubs, 30 Nov. 2005, *EP.05-N382*.

†*Agaricus porphyizon* P.D. Orton

**Amorgos:** Arkesini, on soil under *Ceratonia siliqua*, *Pistacia lentiscus* and *Juniperus phoenicea*†, 4 Jan. 2005, *EP.05-M086*. **Naxos:** Filoti, on leaf-litter under *Quercus pubescens* and *Q. coccifera*†, 14 Dec. 2004, *EP.04-N246*; Apeiranthos, 2 km on the way to Moutsouna, on leaf-litter of *Q. coccifera*, 29 Nov. 2005, *EP.05-N365*; Skeponi, on leaf-litter of *Q. coccifera*, 30 Nov. 2005, *EP.05-N383*.

†*Agaricus pseudopratensis* (Bohus) Wasser

**Amorgos:** Aigiali, on soil under *Olea europaea*, 6 Jan. 2005 *EP.05-M108*. **Naxos:** Apeiranthos, on leaf-litter of *Quercus coccifera*, 15 Dec. 2004, *EP.04-N263*; Apeiranthos, 2 km on the way to Moutsouna, on leaf-litter of *Q. coccifera*, 29 Nov. 2005, *EP.05-N374*.

†*Agaricus silvaticus* Schaeff.

**Amorgos:** Amorgos Town (Terlakia), on soil under *Quercus coccifera*, 9 Jan. 2005, *EP.05-M147*; Agios Theologos Monastery — on manured soil with leaf litter of *Q. coccifera*, 4 Dec. 2005, *EP.05-M202*; Lagkada (Stroumpos), on leaf-litter under *Ceratonia siliqua*, 5 Dec. 2005, *EP.05-M215*.

†*Agaricus silvicola* (Vittad.) Peck

**Naxos:** Apeiranthos, 2 km on the way to Moutsouna, on leaf-litter of *Quercus coccifera*, 29 Nov. 2005, *EP.05-N375*.

*Agaricus xanthodermus* Genève.

**Naxos:** Apeiranthos on leaf-litter under *Quercus pubescens*, 1 Dec. 1998, *EP.98-N007*; Skeponi, on soil under *Q. coccifera*, 2 Dec. 1998, *EP.98-N015*; Chalkeio, under *Q. coccifera*,

13 Dec. 2004, *EP.04-N230*; Kynidaros, under *Q. coccifera*, 28 Nov. 2005, *EP.05-N344*.

*Agrocybe cylindracea* (DC.) Maire

**Naxos:** Chalkeio, on *Platanus orientalis*, 11 Oct. 2005, *EP.05-N312*.

†*Amanita citrina* (Schaeff.) Pers.

**Naxos:** Kynidaros, under *Quercus coccifera*, 12 Dec. 2004, *EP.04-N209*.

\**Amanita gracilior* Bas & Honrubia

**Naxos:** Chalkeio, under *Quercus ithaburensis* ssp. *macrolepis* and among *Cistus* sp., 12 Jan. 2005, *EP.05-N290*.

NOTES: The only basidioma collected possessed numerous clamps in all tissues, and the spores size was 10–13 × 5.5–7.5(8.5) μm. A Mediterranean species that is often confused with *A. boudieri*; the latter, however, is characterized by the absence of clamps and appearance of basidiomata in spring (Neville & Poumarat 2004).

†*Amanita ovoidea* (Bull.) Link

**Amorgos:** Lagkada (Stroumpos), under *Quercus coccifera*, 5 Dec. 2005, *EP.05-M214*. **Naxos:** Apeiranthos, 2 km on the way to Moutsouna, under *Q. coccifera*, 11 Jan. 2005, *EP.05-N283*.

\**Amanita proxima* Dumée

**Amorgos:** Amorgos Town (Terlakia), on soil under *Quercus coccifera*, 6 Dec. 2005, *EP.05-M227*. **Naxos:** Filoti (Vrisi Arias), under *Q. coccifera*, 11 Oct. 2005, *EP.05-N309*; Filoti, under *Q. pubescens* and *Q. coccifera*, 11 Oct. 2005, *EP.05-N308* (Neville & Poumarat 2004).

NOTES: It is a Mediterranean species of the section *Amidella*, related to *A. ovoidea*, from which it differs by its orange-reddish rooting volva and the persisting membranous ring.

*Armillaria mellea* (Vahl) P. Kumm.

**Naxos:** Koronida, on *Platanus orientalis*, 12 Oct. 2005, *EP.05-N328*.

†*Bolbitius titubans* (Bull.) Fr.

**Amorgos:** Lagkada (Stroumpos), in pastures with *Olea europaea*†, on manured soil, 17 Dec. 2004, *EP.04-M001*. **Naxos:** Agia Anna, in littoral pastures, on grassy residues, 3 Dec. 1998, *EP.98-N027*; Amiti Bay, in littoral pastures, on sandy manured soil, 25 Jan. 2002, *EP.02-N104*.

***Boletus aereus* Bull.**

**Naxos:** Chalkeio, under *Quercus pubescens*, 11 Oct. 2005, *EP.05-N311*.

***Boletus impolitus* Fr.**

**Amorgos:** Amorgos Town (Terlakia), under *Quercus coccifera*, 9 Jan. 2005 *EP.05-M151*. **Naxos:** Filoti, under *Q. pubescens* and *Q. coccifera*, 14 Dec. 2004, *EP.04-N249*; Kynidaros, under *Q. coccifera*, 12 Oct. 2005, *EP.05-N316*; Marathi beach, under *Q. coccifera*, 29 Nov. 2005, *EP.05-N379*.

**†*Boletus lupinus* Fr.**

**Amorgos:** Amorgos Town (Terlakia), under *Quercus coccifera*†, 6 Dec. 2005, *EP.05-M223*. **Naxos:** Filoti, under *Q. pubescens* and *Q. coccifera*, 11 Oct. 2005, *EP.05-N305*; Kynidaros, under *Q. coccifera*, 12 Oct. 2005, *EP.05-N317*.

***Boletus luridus* Schaeff.**

**Amorgos:** Amorgos Town (Terlakia), under *Quercus coccifera*, 6 Dec. 2005, *EP.05-M225*.

***Boletus pulverulentus* Opat.**

**Amorgos:** Lagkada (Stroumpos), under *Quercus coccifera*, 5 Dec. 2005, *EP.05-M217*. **Naxos:** Kynidaros, under *Q. ilex*, 28 Nov. 2005, *EP.05-N338*.

***Boletus queletii* Schulzer**

**Naxos:** Filoti, under *Quercus pubescens* and *Q. coccifera*, 11 Oct. 2005, *EP.05-N304*; Kynidaros, under *Q. ilex*, 12 Oct. 2005, *EP.05-N319*.

**†*Boletus radicans* Pers.**

**Naxos:** Filoti, under *Quercus pubescens* and *Q. coccifera*, 11 Oct. 2005, *EP.05-N306*; Kynidaros, under *Q. ilex*†, 12 Oct. 2005, *EP.05-N320*.

**†*Bovista plumbea* Pers.**

**Amorgos:** Aigiali, on soil under *Olea europaea*, 6 Jan. 2005, *EP.05-M107*.

**\**Clavaria fragilis* Holmsk.**

**Naxos:** Koronida, on wet soil under *Acer sempervirens*, 13 Jan. 1999, *EP.99-N066*.

NOTES: Basidiomata up to 8.5 × 0.7 cm, very fragile, vermiform, cylindrical, clavate to fusiform and sometimes

compressed, white, with yellowish to brown apices; spores 4.5–7 × 3–5(–6) μm, ellipsoid-ovoid; basidia clampless. Differentiating characters of this taxon are the non-branching basidiomata, the size of spores and the absence of clamps at the basidia (Jülich 1984). This taxon is previously referred in Greece as *C. vermicularis* from western Macedonia (Constantinidis 2006); however, since no pertinent herbarium specimen was available for examination/confirmation (G. Constantinidis pers. comm.), we consider our finding as the first record of this species.

**\**Clitocybe candicans* (Pers.) P. Kumm.**

**Naxos:** Ano Sagkri, on needle litter, under *Pinus halepensis*, 3 Dec. 1998, *EP.98-N034*.

NOTES: Our samples consisted of basidiomata with pileus diameter of 1.5–2 cm, spores not in tetrads, measuring (4–)4.5–6.5(–7) × 2.5–3(–3.5) μm. The closely-related taxon *C. rivulosa* has larger basidiomata, wider spores (sometimes up to 25%) arranged in tetrads (Kuyper in Bas *et al.* 1995).

**†*Clitocybe costata* Kühner & Romagn.**

**Naxos:** Apeiranthos, on needles under *Pinus halepensis*, 3 Dec. 1998, *EP.98-N049*; Pyrgakia, on sandy soil in littoral grassland, 28 Jan. 2002, *EP.02-N166*.

**†*Clitocybe odora* (Bull.) P. Kumm.**

**Amorgos:** Path from Lagkada to Agios Theologos Monastery, on leaf-litter of *Quercus coccifera*, 18 Dec. 2004, *EP.04-M030*.

**†*Clitocybe rivulosa* (Pers.) P. Kumm.**

**Amorgos:** Amorgos Town (Kato Fylladi Stream), on soil under *Olea europaea*, 2 Dec. 2005, *EP.05-M169*. **Naxos:** Apeiranthos, on soil among leaf-residues of *Spartium junceum*, 15 Dec. 2004, *EP.04-N255*.

**†*Clitopilus hobsonii* (Berk. & Broome) P.D. Orton**

**Naxos:** Apeiranthos, 2 km on the road to Moutsouna, on *Quercus coccifera*, 29 Nov. 2005, *EP.05-N372*.

***Clitopilus prunulus* (Scop.) P. Kumm.**

**Naxos:** Koronida, on leaf litter of *Quercus pubescens* and *Q. coccifera*, 12 Oct. 2005, *EP.05-N325*.

**†*Conocybe rickenii* (Jul. Schäff.) Kühner**

**Amorgos:** Path from Chozoviotissa Monastery to Agios Ioannis, on manured soil among *Sarcopoterium spinosum*,

5 Jan. 2005, *EP.05-M094*. **Naxos:** Amiti Bay, on sandy manured soil in littoral pastures, 25 Jan. 2002, *EP.02-N105*.

***Conocybe semiglobata* (Kühner) Kühner & Watl.**

**Amorgos:** Stavros, on manured soil, 3 Jan. 2005, *EP.05-M053*. **Naxos:** Ano Sagkri, on grassy manured soil, 3 Dec. 1998, *EP.98-N033*. Chalkeio, on manured soil among shrubs, 13 Dec. 2004, *EP.04-N221*.

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

**Naxos:** Koronida, around a *Platanus orientalis* stump, 12 Oct. 2005, *EP.05-N329*.

†***Coprinellus radians* (Desm.) Vilgalys, Hopple & Jacq. Johnson**

**Amorgos:** Arkesini, on woody residues of *Pistacia lentiscus* and *Ceratonia siliqua*, 4 Jan. 2005, *EP.05-M070*; Amorgos Town (Kato Fylladi Stream), on woody residues of *Olea europaea* and other shrubs, 2 Dec. 2005, *EP.05-M165*.

***Coprinellus xanthothrix* (Romagn.) Vilgalys, Hopple & Jacq. Johnson**

**Naxos:** Amiti Bay, on burned woody residues, 25 Jan. 2002, *EP.98-N103*.

†***Coprinopsis picacea* (Bull.) Redhead, Vilgalys & Moncalvo**

**Amorgos:** Aigiali, among leaf-litter and woody residues of *Olea europaea*, 6 Jan. 2005, *EP.05-M104*; Agios Theologos Monastery, on leaf litter of *Quercus coccifera*, 4 Dec. 2005, *EP.05-M192*. **Naxos:** Kynidaros, on leaf-litter of *Platanus orientalis*, 28 Nov. 2005, *EP.05-N355*.

***Coprinopsis radiata* (Bolton) Redhead, Vilgalys & Moncalvo**

**Amorgos:** Aigiali, on donkey excrements, 6 Jan. 2005, *EP.05-M105*.

***Coprinopsis stercorea* (Fr.) Redhead, Vilgalys & Moncalvo**

**Naxos:** Apeiranthos, 2 km on the road to Moutsouna, on manured soil, 29 Nov. 2005, *EP.05-N378*.

\****Coprinus sterquilinus* (Fr.) Fr.**

**Amorgos:** Arkesini, on manured soil, 4 Jan. 2005, *EP.05-M069*.

NOTES: Easily distinguished from the related species *C. comatus* and *C. vosoustii*, due to its very large spores, measuring in our samples 16–24 × 8.5–14 μm.

***Coprinus vosoustii* Pilát**

**Amorgos:** Path from Chozoviotissa Monastery to Agios Ioannis, on manured soil, 5 Jan. 2005 *EP.05-M102*. **Naxos:** Moutsouna, on manured soil, 16 Jan. 1999, *EP.99-N088*.

\****Cortinarius caligatus* Malençon**

**Amorgos:** Amorgos Town (Terlakia), under *Quercus coccifera*, 9 Jan. 2005, *EP.05-M148*; Agios Theologos Monastery, under *Q. coccifera*, 4 Dec. 2005, *EP.05-M201*. **Naxos:** Apeiranthos, 2 km on the road to Moutsouna, under *Q. coccifera*, 11 Jan. 2005, *EP.05-N277*.

NOTES: Species known from the west Mediterranean countries in sclerophyllous *Quercus* spp. forests. Basidiomata medium to large; pileus 5.5–11.0(–13.0) cm, without conspicuous veil remnants; lamellae bright bluish-lilac when young; stipe 8–10(–13) × 1.5–3(–5) cm, fusiform, attenuate towards the base, with prominent veil-zones, cortina white; context white not reacting with KOH; spores 8–11(–15.5) × 5–6.5(–7) μm, amygdaliform, moderately verrucose. Veil remnants on pileus appearing as appressed scales were not clearly evident in our specimens, reminiscing thus the closely related species *C. variiformis*, which however has smaller basidiomata, not so brightly coloured lamellae, and clavate stipe, with indistinct veil-zones (Brandrud et al. 1998).

\****Cortinarius diasemospermus* Lamoure**

**Naxos:** Filoti, among *Cistus* sp. shrubs under *Quercus pubescens* and *Q. coccifera*, 14 Dec. 2004, *EP.04-N235*.

NOTES: Pileus up to 2 cm, convex with low umbo or conical acutely umbonate, hygrophanous, purple-date to fawn when dry, surface silky, pubescent; young lamellae milky-coffee to fawn; stipe cylindrical, 4–6 × 0.4–0.7 cm, white, to greyish-beige at top, girdled with white bands at base, veil abundant, white; context brownish, odour strongly aromatic reminiscent of pelargonium; spores (7.5–)8–10(11) × (4.5–)5–6(–6.5) μm, ellipsoid to subamygdaliform, moderately to coarsely verrucose. The small size of basidiomata, the sweet pelargonium odour and amygdaliform spores are the main diagnostic features of this taxon (Brandrud et al. 1998).

\****Cortinarius humolens* Brandrud**

**Naxos:** Filoti, under *Quercus pubescens* and *Q. coccifera*, 14 Dec. 2004, *EP.04-N250*.

NOTES: Pileus 8–12 cm, ochre, yellow, sulphur yellow, beige at places, or with rust spots, reddish-brown with KOH; lamellae young yellowish; stipe 8–12 × 1–2.5 cm, with marginate bulb up to 4.5 cm; flesh whitish, smell faint, not reacting with KOH; spores (10–)10.5–13(–13.5) × 6–7(–7.5) μm, amygdaliform to almost limoniform, coarsely verrucose.



The negative reaction of flesh with KOH, as well as the almost limoniform coarsely verrucose spores are the main diagnostic features of this taxon; however, the yellowish cortina was not observed in our specimens as well as the earthy smell mentioned in previous studies (Branbdrud *et al.* 1998, Consiglio *et al.* 2004).

### *Cortinarius infractus* (Pers.) Fr.

**Amorgos:** Amorgos Town (Terlakia), under *Quercus coccifera*, 9 Jan. 2005, *EP.05-M149*. **Naxos:** Apeiranthos, 2 km on the road to Moutsouna, under *Q. coccifera*, 11 Jan. 2005, *EP.05-N280*.

### *Crepidotus calolepis* (Fr.) P. Karst.

**Naxos:** Skeponi, on *Platanus orientalis*, 2 Dec. 1998, *EP.98-N013*.

### †*Crepidotus epibryus* (Fr.) Quél.

**Amorgos:** Arkesini, on *Ceratonia siliqua*†, 4 Jan. 2005, *EP.05-M072*; Aigiali, on *Olea europaea*†, 6 Jan. 2005, *EP.05-M103*. **Naxos:** Chalkeio, on wood of *Quercus ithaburensis* ssp. *macrolepis*†, 13 Dec. 2004, *EP.04-N227*; Filoti, on *Q. pubescens* trunk, 14 Dec. 2004, *EP.04-234*; Chalkeio, on *Q. ithaburensis* ssp. *macrolepis* leaves, 12 Jan. 2005, *EP.05-N287*.

### *Crepidotus variabilis* (Pers.) P. Kumm.

**Amorgos:** Lagkada (Stroumpos), on *Quercus coccifera*, 5 Dec. 2005, *EP.05-M213*.

### †*Crinipellis scabella* (Alb. & Schwein.) Murrill

**Amorgos:** Path from Chozoviotissa Monastery to Agios Ioannis, on *Sarcopoterium spinosum*, 5 Jan. 2005, *EP.05-M097*; Aigiali, on *Euphorbia dendroides*, 6 Jan. 2005, *EP.05-M111*; Stavros, on residues of various Poaceae, 3 Dec. 2005, *EP.05-M176*. **Naxos:** Skeponi, on leaf litter of *Quercus coccifera*, 2 Dec. 1998, *EP.98-N022*.

### *Cyathus olla* (Batsch) Pers.

**Naxos:** Apeiranthos, on soil and rotting organic matter, 4 Dec. 1998, *EP.98-N056*.

### *Entoloma griseopruinatum* Noordel. & Cheype

**Amorgos:** Agios Theologos Monastery, on soil among scrubs, 4 Dec. 2005, *EP.05-M199*.

NOTES: This is the only known record in Greece of this rare Mediterranean species previously recorded in south France and Spain (Noordeloos & Polemis 2008).

### *Entoloma griseorugulosum* Noordel. & Fern. Sas.

**Naxos:** Kynidaros, under *Quercus ilex*, 12 Dec. 2004, *EP.04-N207*.

NOTES: This is the only known record in Greece of this rare Mediterranean species previously known only from the type locality in Spain (Noordeloos & Polemis 2008).

### †*Entoloma hirtipes* (Schum.) M.M. Moser

**Amorgos:** Amorgos Town (Terlakia), on mossy soil under *Quercus coccifera*, 9 Jan. 2005, *EP.05-M138*. **Naxos:** Apeiranthos, on soil under *Acer sempervirens* and *Q. coccifera*, 15 Jan. 1999, *EP.99-N075*.

### \**Galerina graminea* (Velen.) Kühner

**Amorgos:** Lagkada (Stroumpos), on moss under *Quercus coccifera*, 17 Dec. 2004, *EP.04-M003*.

NOTES: Species belonging to the subgenus *Tubariocystis* Smith Singer; it is characterized by the total absence of clamps and calyptra on spores, and by the presence of tibiform cystidia in lamellar edges, pileipellis and stiptipellis (Gulden *et al.* 2005). Spores of our sample measured (7–)8–10.5(–12–14) × 4–5.5 μm, cheilocystidia 20–40 × 5–10 μm, with capitulum up to 5 μm broad, pileo- and caulocystidia similar, with larger capituli up to 9 μm broad.

### †*Gymnopus brassicolens* (Romagn.) Antonín & Noordel.

**Naxos:** Skeponi, on moss-covered trunks of *Platanus orientalis*, 2 Dec. 1998, *EP.98-N020*; Kynidaros, on leaf-litter, acorns and woody residues of *Quercus ilex*, 28 Nov. 2005, *EP.05-N333*.

### †*Gymnopus dryophilus* (Bull.) Murrill

**Amorgos:** Path from Lagkada to Agios Theologos Monastery, on leaf-litter of *Quercus coccifera*, 18 Dec. 2004, *EP.04-M019*; Amorgos Town (Kato Fylladi Stream), on leaf-litter and woody residues of various shrubs and phrygana†, 2 Dec. 2005, *EP.05-M155*. **Naxos:** Skeponi, on soil under *Q. coccifera*, 2 Dec. 1998, *EP.98-N017*; Ano Sagkri, on needle litter under *Pinus halepensis*, 3 Dec. 1998, *EP.98-N036*; Filoti, on mossy ground under *Cistus* sp.†, 14 Dec. 2004, *EP.04-N236*.

### †*Gymnopus quercophilus* (Pouzar) Antonín & Noordel.

**Amorgos:** Path from Lagkada to Agios Theologos Monastery, on leaves of *Quercus coccifera*, 18 Dec. 2004, *EP.04-M021*. **Naxos:** Koronida, on leaves of *Q. coccifera* and *Acer sempervirens*, 12 Oct. 2005, *EP.05-N330*.

†*Hebeloma crustuliniforme* (Bull.) Quél.

**Naxos:** Apeiranthos, on leaf-litter under *Quercus pubescens* and *Q. coccifera*, 15 Jan. 1999, *EP.99-N074*; Filoti, under *Q. coccifera*†, 14 Dec. 2004, *EP.04-N242*.

†*Hemimycena lactea* (Pers.) Singer

**Amorgos:** Arkesini, on needle litter of *Juniperus phoenicea*, 3 Dec. 2005, *EP.05-M182*.

†*Hygrocybe mucronella* (Fr.) P. Karst.

**Naxos:** Koronida, on wet soil under *Acer sempervirens*, 13 Jan. 1999, *EP.99-N064*.

†*Hygrocybe virginea* (Wulfen) P.D. Orton & Watling

**Naxos:** Koronida, on soil under *Acer sempervirens*, 13 Jan. 1999, *EP.99-N061*.

†*Hygrophorus discoxanthus* Rea

**Naxos:** Keramoti (Sifones), under *Quercus coccifera*, 17 Jan. 1999, *EP.99-N093*.

†*Inocybe bongardii* (Weinm.) Quél.

**Naxos:** Apeiranthos, 2 km on the road to Moutsouna, under *Quercus coccifera*, 11 Jan. 2005, *EP.05-N276*.

†*Inocybe flocculosa* (Berk.) Sacc.

**Naxos:** Chalkeio, Among *Cistus* spp. in the vicinity to *Quercus ithaburensis* ssp. *macrolepis*, 13 Dec. 2004 and 12 Jan. 2005, *EP.04-N220* and *EP.05-N289*, respectively.

†*Inocybe hirtella* Bres.

**Naxos:** Filoti, among *Cistus* sp., 14 Dec. 2004, *EP.04-N239*.

†*Laccaria laccata* (Scop.) Berk. & Broome

**Naxos:** Koronida, among *Cistus* sp. and *Quercus pubescens*, 13 Jan. 1999, *EP.99-N058*; Skeponi, under *Q. coccifera*, 26 Jan. 2002, *EP.02-N122*; Kynidaros, among *Cistus* sp.†, 12 Dec. 2004, *EP.04-N210*.

*Leccinellum lepidum* (Bouchet ex Essette) Bresinsky & Manfr. Binder

**Naxos:** Apeiranthos, 2 km on the road to Moutsouna, under *Quercus coccifera*, 12 Jan. 2005, *EP.05-N301*.

†*Lentinellus flabelliformis* (Bolton) S. Ito

**Naxos:** Apeiranthos, on unidentified wood (*Cistus* sp. or *Quercus coccifera*), 3 Dec. 1998, *EP.98-N054*.

†*Lepiota clypeolaria* (Bull.) P. Kumm.

**Amorgos:** Amorgos Town (Kato Fylladi Stream), on soil under *Quercus ithaburensis* ssp. *macrolepis*, 2 Dec. 2005, *EP.05-M152*. **Naxos:** Melanes, on leaf-litter under *Q. coccifera*, 11 Dec. 2004, *EP.04-N182*.

*Lepiota erminea* (Fr.) Gillet

**Amorgos:** Stavros, on manured soil, 3 Jan. 2005, *EP.05-M057*.

†*Lepista nuda* (Bull.) Cooke

**Amorgos:** Arkesini, on soil under *Juniperus phoenicea*†, 4 Jan. 2005, *EP.05-M079*; Amorgos Town (Terlakia), on soil under *Quercus coccifera*, 9 Jan. 2005, *EP.05-M140*. **Naxos:** Ano Sagkri, on needle litter under *Pinus halepensis*, 14 Jan. 1999, *EP.99-N072*; Apeiranthos, 2 km on the road to Moutsouna, on leaf-litter of *Q. coccifera*, 11 Jan. 2005, *EP.05-N275*; Chalkeio, on leaf-litter of *Q. ithaburensis* ssp. *macrolepis*†, 12 Jan. 2005, *EP.05-N291*.

†*Lepista panaeolus* (Fr.) P. Karst.

**Naxos:** Agia Anna, under *Juniperus oxycedrus* ssp. *macrocarpus*, 3 Dec. 1998, *EP.98-N030*; Chalkeio, under *Quercus ithaburensis* ssp. *macrolepis*, 13 Dec. 2004, *EP.04-N231*.

†*Lepista rickenii* Singer

**Naxos:** Koronida, on soil among shrubs, 13 Jan. 1999, *EP.99-N062*; Apeiranthos, on manured soil in pastures, 16 Jan. 1999, *EP.99-N085*.

*Lepista sordida* (Fr.) Singer

**Naxos:** Naxos Town, 2 km to the north of the town, in pastures, on manured soil among shrubs, 2 Dec. 1998, *EP.98-N02*.

†*Leratiomyces squamosus* (Pers.) Bridge & Spooner var. *squamosus*

**Naxos:** Apeiranthos, on leaf litter of *Quercus coccifera*, 1 Dec. 1998 and 29 Nov. 2005, *EP.98-N005* and *EP.05-N367*, respectively.

†*Leratiomyces squamosus* (Schulzer) Bridge & Spooner var. *thraustus*

**Naxos:** Apeiranthos, on needles under *Pinus halepensis*, 3

Dec. 1998 and 29 Nov. 2005, *EP.98-N048* and *EP.05-N381*, respectively.

\**Leucoagaricus crystallifer* Vellinga

**Naxos:** Skeponi, on soil under *Alnus glutinosa*, 30 Nov. 2005, *EP.05-N390*.

NOTES: Pileus 3–4 cm, conical then to almost plane, ochre-beige at disc, whitish-cream towards the margin, silky fibrilliose; lamellae white; stipe 5–7 × 0.5–0.6 cm, clavate to almost bulbous (base up to 0.8 cm) white, annulus ascending white; spores (5.5–)6–10(–11) × 3.5–4.5(–5)  $\mu\text{m}$ , ellipsoid-subamygdaliform, oblong, often with apical papilla, dextrinoid, metachromatic in cresyl blue; cheilocystidia 22–45 × 6–12  $\mu\text{m}$ , cylindrical-fusiform, narrowly clavate or almost utriform; with crystals at apices; pileus covering a cutis made up of cylindrical elements 4–9  $\mu\text{m}$  broad. It is closely related to *L. serenus*, which possesses broadly clavate cheilocystidia without crystals (Noordeloos *et al.* 2001).

\**Leucoagaricus menieri* (Sacc.) Singer.

**Amorgos:** Amorgos Town (Kato Fylladi Stream), on manured soil in pastures among shrubs, 2 Dec. 2005, *EP.05-M168*. **Naxos:** Chalkeio, on manured soil, 11 Oct. 2005, *EP.05-N313*.

NOTES: Pileus 3–4 cm, white to brown squamous at centre; stipe 2–4 × 0.6 cm (–0.8 at base), cylindrical with emarginately bulbous base, with white rhizomorphs; context white not changing when cut, with sweet odour; spores (5–)5.5–8(–9) × (4–)4.4–5(–6)  $\mu\text{m}$ , slenderly fusiform, with prominent apiculus, conical apex, without germ-pore; cheilocystidia 16–45 × 6–13  $\mu\text{m}$ , fusiform, lageniform, slenderly clavate, often papillate. This taxon is distinguished from the closely related *L. crystallifer* by the relatively fleshier basidiomata, the marginally bulbous base and the lageniform cheilocystidia (Noordeloos *et al.* 2001).

*Lycoperdon lividum* Pers.

**Amorgos:** Arkesini, on manured soil, 4 Jan. 2005, *EP.05-M085*. Amorgos Town (Kato Fylladi Stream), on manured soil in grassy pastures, 2 Dec. 2005, *EP.05-M153*.

*Lycoperdon perlatum* Pers.

**Naxos:** Apeiranthos, 2 km on the road to Moutsouna, on leaf-litter of *Quercus coccifera*, 29 Nov. 2005, *EP.05-N371*.

*Lycoperdon pratense* Pers.

**Amorgos:** Kalotaritissa, on manured soil, 3 Jan. 2005, *EP.05-M067*; path from Chozoviotissa Monastery to Agios Ioannis, on manured soil among *Sarcopoterium spinosum*, 5 Jan. 2005, *EP.05-M091*. **Naxos:** Apeiranthos, on soil, in grassy pastures, 1 Dec. 1998, *EP.98-N006*; Ano Sagkri, on soil, in grassy pastures, 3 Dec. 1998, *EP.98-N043*.

\**Lyophyllum eustygium* (Cooke) Cléménçon

**Naxos:** Apeiranthos, 2 km on the road to Moutsouna, on leaf-litter of *Quercus coccifera*, 12 Jan. 2005, *EP.05-N295*.

NOTES: Pileus 2.5–3.5 cm, greyish-brown at centre to greyish at margin, innately fibrous to squamulose; lamellae whitish, brown when bruised; stipe 3.5–4.5 × 0.6–0.9, cylindrical, white; context white greyish black when cut, with strong mealy smell; spores 5.5–7 × 5–5.5(–6)  $\mu\text{m}$ , globose to subglobose. The color change of lamellae and context, in addition to the almost globose spores are the characteristic features of this taxon (Cléménçon 1982, Moser 1983).

†*Macrocystidia cucumis* (Pers.) Joss.

**Amorgos:** Amorgos Town (Kato Fylladi stream), on soil under *Ballota acetabulosa*, 8 Jan. 2005, *EP.05-M128*.

*Macrolepiota excoriata* (Schaeff.) Wasser

**Amorgos:** Path from Lagkada to Agios Theologos Monastery, on manured soil, 18 Dec. 2004, *EP.04-M029*. Stavros, on manured soil, 3 Dec. 2005, *EP.05-M177*. **Naxos:** Apeiranthos, on soil, 3 Dec. 1998, *EP.98-N047*; Ano Sagkri, on manured soil in grassy pastures, 3 Dec. 1998, *EP.98-N035*.

\**Macrolepiota fuliginosquarrosa* Malençon

**Naxos:** Kynidaros, on sandy soil, gregarious, 28 Nov. 2005, *EP.05-N348*.

NOTES: Pileus 7–9 cm, cylindrical to trapezoidal, then convex to plane, initially smooth velvety, blackish-brown, soon with large uplifted scales (as in *M. procera* (Scop.) Singer); stipe 7–12 × 1–1.5 cm (up to 3 cm at base), greyish-brown, fibrous, annulus simple, greyish-brown underneath; context white unchangeable; spores 11–14.5 × 8–10(–10.5)  $\mu\text{m}$ , cheilocystidia in chains, with clavate terminal elements 15–25 × 5–15  $\mu\text{m}$ , pileipellis consisting of cylindrical hyphae in chains, with terminal elements up to 70 × 5–11  $\mu\text{m}$ , often capitate, thick-walled, with intracellular and incrusting pigment; clamps not observed in any part of the basidiomata. A unique Mediterranean taxon reminiscing a small sized *M. procera*, without the typical “adder pattern” on stipe. In the original description of Malençon (1979), clamps are reported to exist; however, this is in contrast to what was later reported by Canduzo and Lanzoni (1990).

†*Macrolepiota mastoidea* (Fr.) Singer

**Naxos:** Apeiranthos, 2 km on the road to Moutsouna, on leaf-litter of *Quercus coccifera*, 11 Jan. 2005, *EP.05-N278*.

\**Macrolepiota phaeodisca* Bellú

**Naxos:** Apeiranthos, on soil, in pastures, 1 Dec. 1998, *EP.98-N009*; Kynidaros, on sandy soil, 28 Nov. 2005, *EP.05-N34*.

NOTES: This Mediterranean taxon was first recorded in Greece from Naxos island, but soon after it was found

to be very common in Andros, as well as in several other Aegean islands and coastal areas. Typical of this taxon is the trapezoidal pilei of young basidiomata, with a dark greyish brown disc in the pileus central part. Spores in our samples measured  $(11-12-20(-22) \times 8-11(-12) \mu\text{m}$  and they are significantly larger when compared with those described by Canduzo and Lanzoni (1990).

### *Macrolepiota procera* (Scop.) Singer

**Naxos:** Filoti, on leaf-litter under *Quercus pubescens* and *Q. coccifera*, 14 Dec. 2004, *EP.04-N248*; Koronida, on leaf-litter of *Q. pubescens* and *Q. coccifera*, 12 Oct. 2005, *EP.05-N327*.

### †*Marasmius anomalus* (Maire) Antonín var. *microsporus*

**Amorgos:** Path from Lagkada to Agios Theologos Monastery, on soil among shrubs, 18 Dec. 2004, *EP.04-M020*; Amorgos Town (Kato Fylladi stream), on *Ballota acetabulosa*, 8 Jan. 2005, *EP.05-M126*; Arkesini, on humus mixed with goat dung under *Juniperus phoenicea*, 3 Dec. 2005, *EP.05-M189*. **Naxos:** Agia Anna, on residues of *Foeniculum* sp., 3 Dec. 1998, *EP.98-N031*.

### †*Marasmius wynneae* Berk & Br.

**Amorgos:** Arkesini, on needle litter of *Juniperus phoenicea*, 3 Dec. 2005, *EP.05-M188*; Amorgos Town (Terlakia), on manured soil with leaf litter of *Quercus coccifera*, 6 Dec. 2005, *EP.05-M234*. **Naxos:** Agia Anna, on manured sandy soil, 3 Dec. 1998, *EP.98-N032*.

### \**Melanoleuca albifolia* Boekhout

**Naxos:** Koronida, on soil under *Acer sempervirens*, 13 Jan. 1999, *EP.99-N067*.

NOTES: Basidiomata small-sized; pileus 3.5–6 cm, hygrophanous, dark sepia, to almost black at centre when wet, lighter brown to beige when dry; lamellae greyish-white; stipe 4–6 × 0.4–1 cm, concolorous with pileus, striate and apically pruinose; spores  $(6.5-7-9(-9.5) \times 4-5.5(-6) \mu\text{m}$ ; cheilocystidia abundant, lageniform to fusiform 35–65 × 8–15(–18)  $\mu\text{m}$ , pleurocystidia similar, scarce. The darker colours of basidiomata and the mostly lageniform cystidia, are the main diagnostic features of this taxon (Bas et al. 1999).

### †*Melanoleuca brevipes* (Bull.) Pat.

**Amorgos:** Kalotaritissa, on sandy soil among shrubs, 3 Jan. 2005, *EP.05-M065*. **Naxos:** Filoti, on soil among *Cistus* sp.†, 14 Dec. 2004, *EP.04-N244*.

### †*Melanoleuca excissa* (Fr.) Singer.

**Amorgos:** Path from Chozoviotissa Monastery to Agios Ioannis, on soil among shrubs, 5 Jan. 2005, *EP.05-M101*.

**Naxos:** Apeiranthos, on soil, in pastures, 15 Jan. 1999, *EP.99-N077*; Naxos Town (Alykes), on sandy soil, in littoral pastures†, 25 Jan. 2002, *EP.02-N11*.

### *Melanoleuca grammopodia* (Bull.) Pat.

**Amorgos:** Lagkada (Stroumpos), on manured soil in pastures among shrubs, 5 Dec. 2005, *EP.05-M208*.

### †*Melanoleuca iris* Kühner

**Naxos:** Naxos Town (Alykes), on sandy soil, in littoral pastures, 25 Jan. 2002, *EP.02-N119*; Amiti Bay, on sandy soil under *Tamarix* sp., 25 Jan. 2002, *EP.02-N107*.

### †*Mycena arcangeliana* Bres.

**Amorgos:** Amorgos Town (Kato Fylladi Stream), on *Ceratonia siliqua*, 8 Jan. 2005, *EP.05-M117*.

### †*Mycena galopus* (Pers.) P. Kumm.

**Amorgos:** Lagkada (Stroumpos), on leaf litter and woody residues of *Quercus coccifera*, 5 Dec. 2005, *EP.05-M210*. **Naxos:** Skeponi, on leaf litter of *Q. coccifera*, 2 Dec. 1998, *EP.98-N019*; Chalkeio, on leaf-litter and woody residues of *Q. coccifera*, 13 Dec. 2004, *EP.04-N217*; Kynidaros, on leaf-litter and woody residues of *Q. ilex*, 28 Nov. 2005, *EP.05-N332*.

### †*Mycena niveipes* (Murrill) Murrill

**Naxos:** Skeponi, on leaf-litter and twigs of *Alnus glutinosa*, 30 Nov. 2005, *EP.05-N392*.

### *Mycena pura* (Pers.) P. Kumm.

**Naxos:** Koronida, on wet soil among *Acer sempervirens* and *Quercus coccifera*, 13 Jan. 1999, *EP.99-N060*; Apeiranthos, 2 km on the road to Moutsouna, on leaf-litter of *Q. coccifera*, 11 Jan. 2005, *EP.05-N274*.

### *Mycena seynesii* QuéL.

**Naxos:** Ano Sagkri, on *Pinus halepensis* cones, 3 Dec. 1998, *EP.98-N041*; Melanes, on *P. brutia* cones, 11 Dec. 2004, *EP.04-N195*.

### †*Mycena zephyrus* (Fr.) P. Kumm.

**Naxos:** Apeiranthos, on needles of *Pinus halepensis*, 3 Dec. 1998, *EP.98-N045*.

### †*Panaeolina foenicicii* (Pers.) Maire

**Naxos:** Kourounochori, on manured soil among *Olea europaea*, 12 Dec. 2004, *EP.04-N202*.

†*Panaeolus acuminatus* (Schaeff.) Quél.

**Naxos:** Apeiranthos, 2 km on the road to Moutsouna, on manured soil under *Quercus coccifera*, 29 Nov. 2005, *EP.05-N368*.

\**Panaeolus cinctulus* (Bolton) Sacc.

**Amorgos:** Aigiali, on soil under *Olea europaea*, 6 Jan. 2005, *EP.05-M112*.

NOTES: Pileus 1–2 cm, conical to hemispherical, hygrophanous, dark brown when wet, yellowish-brown and concentrically zonate on drying; stipe 1–5 × 0.1–0.4 cm, cylindrical, yellowish-brown, pruinose at apex; spores (11–)11.5–15(–17) × (5.5–)6–8.5 × 8–9.5(–10) μm, citriform in face-view, ellipsoid in side-view, dark-brown, thick-walled and with large germ-pore (up to 3 μm); cheilocystidia 26–45 × 6–11 μm, fusiform-lageniform, often with capitate apex up to 7 μm broad; pleurochryso-cystidia absent. *Panaeolus cinctulus* is characterized by the absence of pleurochryso-cystidia and by the shape of its cheilocystidia (Gerhardt 1996).

*Panaeolus papilionaceus* (Bull.) Quél.

**Amorgos:** Amorgos Town (Kato Fylladi Stream), on horse/donkey excrements, 2 Dec. 2005, *EP.05-M163*. **Naxos:** Apeiranthos, on manured soil in pastures, 1 Dec. 1998, *EP.98-N012*.

†*Parasola leiocephala* (P.D. Orton) Redhead, Vilgalys & Hopple

**Naxos:** Apeiranthos, 2 km on the road to Moutsouna, on leaf litter of *Quercus coccifera*, 29 Nov. 2005, *EP.05-N370*.

*Parasola schroeteri* (P. Karst.) Redhead, Vilgalys & Hopple

**Amorgos:** Stavros, on manured soil among shrubs, 3 Dec. 2005, *EP.05-M173*.

†*Phaeomarasmium erinaceus* (Pers.) Scherff. ex Romagn.

**Naxos:** Kynidaros, on *Quercus ilex*, 28 Nov. 2005, *EP.05-N343*.

†*Pholiota highlandensis* (Peck) A.H. Sm. & Hesler

**Naxos:** Moutsouna, on soil around *Juniperus phoenicea* burned stumps, 16 Jan. 1999, *EP.99-N096*.

*Pleurotus eryngii* (DC.) Quél.

**Amorgos:** Stavros, on residues of *Eryngium campestre*, 3

Jan. 2005, *EP.05-M066*. Agios Theologos Monastery, on *E. campestre*, 4 Dec. 2005, *EP.05-M206*. **Naxos:** Apeiranthos, on soil with *E. campestre*, 15 Jan. 1999, *EP.99-N081*; Keramoti (Sifones), on soil among *E. campestre* 17 Jan. 1999, *EP.99-N094*; Kynidaros, on *E. campestre*, 28 Nov. 2005, *EP.05-N35*.

*Pleurotus eryngii* var. *ferulae* (Lanzi) Sacc.

**Amorgos:** Amorgos Town (Terlakia), on *Ferula communis*, 6 Dec. 2005, *EP.05-M2361*; Irakleia, on *F. communis*, 5 July 2008, *DD-2929*.

†*Pluteus nanus* (Pers.) P. Kumm.

**Amorgos:** Amorgos Town (Kato Fylladi stream), on woody residues of *Ceratonia siliqua*, 8 Jan. 2005, *EP.05-M120*; Amorgos Town (Terlakia), on leaf-litter and woody residues of *Quercus coccifera*, 9 Jan. 2005, *EP.05-M137*. **Naxos:** Apeiranthos, 2 km on the road to Moutsouna, on *Q. coccifera*, 12 Jan. 2005, *EP.05-N294*.

†*Pluteus phlebophorus* (Ditmar) P. Kumm.

**Amorgos:** Agios Theologos Monastery, on leaf litter of *Quercus coccifera*, 4 Dec. 2005, *EP.05-M197* (Vellinga in Bas *et al.* 1990).

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

**Amorgos:** Aigiali, among leaf-litter and woody residues of *Olea europaea*, 6 Jan. 2005, *EP.05-M109*. **Naxos:** Apeiranthos, on acorns and sheep dung under *Quercus coccifera*, 15 Jan. 1999, *EP.99-N076*; Chalkeio, on woody residues of *Q. coccifera*, 13 Dec. 2004, *EP.04-N216*.

†*Psathyrella candolleana* (Fr.) Maire

**Amorgos:** Amorgos Town (Kato Fylladi stream), on soil and plant residues under *Ceratonia siliqua*, 2 Dec. 2005, *EP.05-M159*.

*Psathyrella conopilus* (Fr.) A. Pearson & Dennis

**Naxos:** Apeiranthos, in pastures on manured soil, 1 Dec. 1998, *EP.98-N002*; Skeponi, on leaf litter and woody residues under *Platanus orientalis*, 2 Dec. 1998, *EP.98-N014*; Agia Anna, in littoral pastures on manured sandy soil, 3 Dec. 1998, *EP.98-N028*.

†*Psathyrella lutensis* (Romagn.) M.M. Moser

**Amorgos:** Amorgos Town (Kato Fylladi stream), on soil and plant residues, 2 Dec. 2005, *EP.05-M158*.

†*Psathyrella marcescibilis* (Britz.) Romagn.

**Naxos:** Moutsouna, on manured soil under *Juniperus phoenicea*, 11 Jan. 2005, *EP.05-N273*.

†*Psathyrella microrhiza* (Lasch) Konr. & Maubl.

**Naxos:** Apeiranthos, on manured soil under *Quercus coccifera*, 1 Dec. 1998, *EP.98-N003*.

†*Psathyrella prona* (Fr.) Gill.

**Amorgos:** Path from Chozoviotissa Monastery to Agios Ioannis, on manured soil with woody residues among *Sarcopoterium spinosum*, 5 Jan. 2005, *EP.05-M093*; Amorgos Town (Kato Fylladi stream), on residues of various herbaceous plants and shrubs, 2 Dec. 2005, *EP.05-M157*.

†*Psathyrella tephrophylla* (Romagn.) Bon

**Amorgos:** Agios Theologos Monastery, on leaf litter of *Quercus coccifera*, 4 Dec. 2005, *EP.05-M195*.

*Psilocybe coprophila* (Bull.) P. Kumm.

**Amorgos:** Arkesini, on donkey excrements, 4 Jan. 2005, *EP.05-M083*; Stavros, on donkey excrements, 3 Dec. 2005, *EP.05-M174*.

\**Psilocybe subcoprophila* (Britz.) Sacc.

**Amorgos:** Amorgos Town (Kato Fylladi stream), on donkey excrements, 8 Jan. 2005, *EP.05-M127*.

NOTES: This taxon is identical to *P. coprophila* with the only exception of the very large ellipsoid spores (Bas et al. 1999) measuring in our specimens  $13\text{--}19 \times 7\text{--}9 \mu\text{m}$ .

†*Resupinatus applicatus* (Batsch) Gray

**Amorgos:** Lagkada (Panagia Epanochoriani), on *Quercus coccifera*, 19 Dec. 2004, *EP.04-M033*; Amorgos Town (Kato Fylladi stream), on *Ceratonia siliqua*†, 8 Jan. 2005, *EP.05-M119*.

†*Rhodocybe gemina* (Fr.) Kuyper & Noordel.

**Naxos:** Koronida, on soil under *Acer sempervirens*†, 13 Jan. 1999, *EP.99-N068*; Koronida, on leaf-litter of *Quercus pubescens* and *Q. coccifera*, 12 Oct. 2005, *EP.05-N326*.

\**Simocybe haustellaris* (Fr.) Watling

**Naxos:** Naxos Town (Alykes), on card-board, 25 Jan. 2002, *EP.02-N111*.

Notes: Basidiomata small; pileus 2–10 mm, greyish-

brown, pubescent; lamellae beige to brown in maturity; stipe rudimentary; spores  $(7\text{--})7.5\text{--}11(-12) \times 5\text{--}6(-7) \mu\text{m}$ , ellipsoid to kidney-shaped, thick-walled, with a small germ-pore; basidia 2-spored. The small size of basidiomata, the 2-spored basidia and the thick-walled spores with a more or less evident pore are the main diagnostic features of this taxon (Watling 1989).

*Stropharia coronilla* (Bull.) Quél.

**Amorgos:** Path from Lagkada to Agios Theologos Monastery, on manured soil, 18 Dec. 2004, *EP.04-M022*. **Naxos:** Apeiranthos, on soil, in pastures, 1 Dec. 1998, *EP.98-N004*; Kynidaros, on manured soil in pastures, 12 Dec. 2004, *EP.04-N213*.

\**Stropharia luteonitens* (Fr.) Quél.

**Naxos:** Kynidaros, on old dung, 28 Nov. 2005, *EP.05-N351*.

NOTES: Pileus 0.4–1 cm, conical-hemispherical, then convex to almost plane with a small papilla, hygrophanous, cinnamon at disc to ochre towards the margin, lubricous, viscid when wet; stipe 2.0–6.5  $\times$  0.1–0.2 cm, cylindrical, ochre-beige, faintly striate, pruinose above the indistinct annular zone and floccose below; spores  $(16\text{--})17\text{--}20.5(-23) \times (9\text{--})10\text{--}12(-13) \mu\text{m}$ , ellipsoid, with walls up to 2  $\mu\text{m}$  thick, with large central germ-pore; basidia 2-spored, cheilocystidia 20–40  $\times$  5–12  $\mu\text{m}$ , lageniform or cylindrical slightly enlarged at apex; pleurochrysocystidia absent; closely related to *S. semiglobata* from which it differs in the shape of pileus and the 2-spored basidia (Bas et al. 1999).

†*Suillus collinitus* (Fr.) Kuntze

**Naxos:** Melanes, under *Pinus brutia*†, 11 Dec. 2004, *EP.04-N184*; Ano Sagkri, under *Pinus halepensis*, 13 Dec. 2004, *EP.04-N214*.

†*Tricholoma scalpturatum* (Fr.) Quél.

**Naxos:** Apeiranthos, 2 km on the road to Moutsouna, under *Quercus coccifera*, 12 Jan. 2005, *EP.05-N299*.

†*Tricholoma stiparophyllum* Fr. & N. Lund

**Naxos:** Apeiranthos, 2 km on the road to Moutsouna, under *Quercus coccifera*, 29 Nov. 2005, *EP.05-N377*.

\**Tubaria dispersa* (L.) Singer.

**Naxos:** Agia Anna, in littoral pastures, on manured sandy soil, 3 Dec. 1998, *EP.98-N029*.

NOTES: Our samples possessed the typical yellow lamellae of this species, but spores were found somewhat wider than in pertinent descriptions (Hansen & Knudsen 1992, Moser 1983), measuring  $5\text{--}7.5(-8) \times 3\text{--}4.5(-5) \mu\text{m}$ . The

habitat for this collection is also noteworthy, since this species commonly grows in association with *Crataegus* spp.

†*Tubaria furfuracea* (Pers.) Gillet

**Amorgos:** Arkesini, on woody residues of *Pistacia lentiscus*, 4 Jan. 2005, *EP.05-M073*; Arkesini, on needle litter of *Juniperus phoenicea*, 3 Dec. 2005, *EP.05-M185*; Amorgos Town (Kato Fylladi stream), on leaf-litter of *Quercus coccifera* and other shrubs, 2 Dec. 2005, *EP.05-M154*; Agios Theologos Monastery, on leaf litter of *Q. coccifera*, 4 Dec. 2005, *EP.05-M198*. **Naxos:** Apeiranthos, on unidentified wood, 3 Dec. 1998, *EP.98-N046*; Kynidaros, on leaf-litter of *Q. ilex*†, 28 Nov. 2005, *EP.05-N334*; Apeiranthos, 2 km on the road to Moutsouna, on soil under *Q. coccifera*, 29 Nov. 2005, *EP.05-N369*; Skeponi, on leaf-litter of *Q. coccifera*, 30 Nov. 2005, *EP.05-N394*.

*Volvariella gloiocephala* (DC.) Boekhout & Enderle

**Amorgos:** Lagkada (Stroumpos), on manured soil, 17 Dec. 2004, *EP.04-M007*. **Naxos:** Koronida 3 km on the road to Apollonas, on soil, 13 Jan. 1999, *EP.99-N059*; Amiti Bay, on sandy manured soil, 25 Jan. 2002, *EP.02-N108*; Kourounochori, on manured soil in pastures, 12 Dec. 2004, *EP.04-N200*.

†*Xerocomus chrysenderon* (Bull.) Quéf.

**Amorgos:** Amorgos Town (Terlakia), under *Quercus coccifera*†, 9 Jan. 2005, *EP.05-M150*. **Naxos:** Chalkeio, under *Q. ihaburensis* ssp. *macrolepis*†, 13 Dec. 2004, *EP.04-N225*; Apeiranthos, under *Q. pubescens*, 15 Dec. 2004, *EP.04-N260*; Kynidaros, under *Q. ilex*†, 12 Oct. 2005, *EP.05-N318*.

\**Xerocomus ichnusanus* Alessio, Galli R. & Littini

**Naxos:** Kynidaros, under *Quercus coccifera*, 12 Oct. 2005, *EP.05-N314*.

NOTES: Two additional reports exist from mainland Greece (Constantinidis 2009); however, since no pertinent herbarium specimen was available for examination/confirmation (G. Constantinidis pers. comm.), we consider our finding as the first record of this species. Basidiomata caespitose; pileus 3.5–10 cm, brownish to beige, often with an olivaceous tint; pores lemon-yellow to olivaceous brown, bluing on bruising; stipe 3–9 × 0.8–2.5 cm attenuating towards the base, rooting, yellow at apex with brownish reticulum or striae towards the base, which is uniformly reddish-brown; context pale yellow at pileus, reddish below cuticle, bluing when cut and soon blackening; macrochemical reactions: dark yellow with H<sub>2</sub>SO<sub>4</sub> and orange with KOH; spores 12–17.5(–20) × 5–6.5(–7) μm; pileipellis an intricate trichoderm with cylindrical terminal elements 4–12 μm in diameter. The caespitose habit, reticulate stipe surface and

rooting base make this taxon easily identifiable (Ladurner & Simonini 2003).

†*Xerocomus roseoalbidus* Alessio & Littini

**Naxos:** Kynidaros, under *Quercus coccifera*, 12 Oct. 2005, *EP.05-N315*.

*Xerocomus subtomentosus* (L.) Quéf.

**Amorgos:** Amorgos Town (Terlakia), on soil under *Quercus coccifera*†, 6 Dec. 2005, *EP.05-M224*. **Naxos:** Filoti, under *Q. pubescens* and *Q. coccifera*, 11 Oct. 2005, *EP.05-N307*.

## Summary

In this survey, 58 genera and 142 taxa of macrofungi belonging to the subclass Agaricomycetidae were recorded. The genus *Simocybe* as well as 21 taxa at the species or subspecies level constitute new records for Greece, while 76 taxa represent first national reports for habitat, hosts and/or substrates. Apart from the taxa listed above, the coprophilous basidiomycetes *Coprinellus heptemerus*, *Coprinopsis filamentifer*, *C. vermiculifer* and *Coprinus ephemeroideus* were previously reported to occur on Naxos (Richardson 2008).

A significantly large number of these new records are taxa with a more or less typical Mediterranean geographic distribution known to date mainly from the west Mediterranean countries (e.g. *Amanita gracilior*, *A. proxima*, *Macrolepiota fuligineosquarosa*). In some cases, these taxa have been reported only from the type locality or from few localities (e.g. *Mycena bertaultiana*). This is especially evident with macrofungi that form ectomycorrhizal symbioses with evergreen sclerophyllous *Quercus* spp.; many species that were previously reported from *Q. ilex* woods in west Mediterranean only, occur also on Naxos and Amorgos islands, growing in association with *Q. coccifera* (e.g. *Cortinarius caligatus*, *Xerocomus ichnusanus*).

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