

Mauro Ballero & Marco Contu

Some new species of Basidiomycetes from Sardinia

Abstract

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Three new species of gilled fungi, *Collybia eugeniae* spec. nov., *Lyophyllum inocybeoides* spec. nov. and *Conocybe dubia* spec. nov. are described from Sardinia. Their ecology as well as the taxonomic placement are discussed. In addition a new combination in *Lyophyllum* is made.

Extensive studies carried out on the mycological flora of Sardinia lead us to recognize three still undescribed basidiomycetes and their description as well the discussion on their taxonomic placement and ecology are the object of this communication. Nomenclature and taxonomy follow Singer (1986).

Collybia eugeniae, spec. nov.

Holotypus: Siurgus Donigala (Sardegna Centrale, prov. Cagliari) under *Quercus suber* L. and *Q. ilex* L., 1.12.1991, Ballero & Contu 91/331 (CAG). Plate 1.

Pileus 5.5-9 cm latus, carnosus, explanatus, exumbonatus, siccus, omnino albo-pruinatus, sub pruina pallideochraceus, iove pluvio striis destituto. Lamellae haud confertae, latiores, adnexae, griseo-brunneae, interdum subviolaceae. Stipes 4.5-9 x 0.8-1.2 cm, fusiformis, fibrilloso-striolatus, ad basim albo-strigosus, interdum etiam omnino lanatus, pileo confluentis. Caro sat conspicua, alba, leviter brunnescens; odor gravis, peculiaris, nauseosus; sapor mitis. Sporarum pulvis alba. Sporae 7-9 x 3.5-4 µm, hyalinae, fusiformes-elongatae, leves, guttulatae. Basidia 21-26 x 6-7 µm, tetraspora clavata, fibulata. Cystidia nulla. Pilei cutis ex hyphis diverticulatis laxe intertextis constituta, pigmento intraparietalis praeditis. Fibulae numerosae. Habitatio: ad terram, in nemoribus frondosis cum quercibus (*Quercus suber* L. et *Q. ilex* L.) in regione mediterranea. Autumno. Praeclarae conlegae Eugeniae Ghi haec species dicata est.

Cap 5.5 - 9 cm, fleshy, explanate with a depressed not umbonate centre, not striate, entirely white-pruinose, dry, pale ochre. Gills wide, thick, adnexed, grey-buff or with violaceous shades. Stem 4.5-9 x 0.8 - 1.2 cm, confluent, subfusiform to fusiform, dry, fibrillose or striolate, the base covered in white woolly hairs, often entirely covered by these hairs.

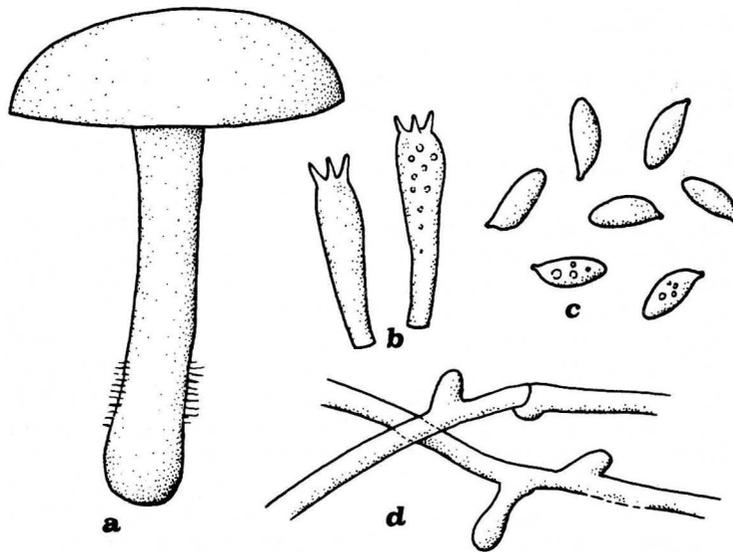


Fig. 1. *Collybia eugeniae* sp. nov.- a. basidiome; b. basidia; c. spores; d. hyphae of pileal surface.

Flesh thick, white, slightly darkening in the stem; smell very distinctive, nauseose; taste mild. Spore-print white. Spores 7-9 x 3.5-4 μm , hyaline, smooth, not dextrinoid, elongate-fusiform to fusiform, with oil-drops and a small apiculus. Basidia 21- 26 x 6-7 μm , four- spored, clavate, with clamps. Hymenophoral trama slightly irregular, with thick-walled hyphae. Cystidia of any kind none. Pileal surface a cutis of repent to intermixed, nodulose-coralloid, 3-6 μm , wide hyphae, mostly with an intraparietal pigmentation. Clamp connections on all septa.

Ecology: terrestrial, in leaf litter of deciduous woods with *Quercus suber* L. and *Q. ilex*, not cespitose. Late autumn. Rare and thus far known only from Sardinia.

The very distinctive appearance, especially the unusual, fleshy basidiome make *C. eugeniae* an unmistakable entity in the genus *Collybia* (Fr.) Staude. The new species takes its place in the group of entities bearing coloured gills. *C. tergina* (Fr.) Lundell, *C. subhybrida* Sing. in Sing. & Moser an *C. hybrida* (Kühner & Romagnesi) Svrcek & Kubicka are clearly different in having cheilocystidia and a striate pileal surface. *C. peronata* (Bolt.: Fr.) Sing., although similar in habit, has a very hot taste and a different smell. *C. hebelomoides* Gerhardt is even more different because it has no cystidia, and possesses a smaller size, a not pruinose pileal surface and lacks a nauseous smell. On account of these differences we feel necessary to describe our collection under a new name because none of the similar described entities (see Halling 1983) seem to fit it. *C. eugeniae* has thus far been recorded only from Sardinia but in our opinion, because its xero-thermophilous ecology, it will probably be recorded also in other countries of the mediterranean area.

Conocybe dubia spec. nov.

Holotypus: Cagliari, Botanical Garden, scattered in a grassy, open place, 22.12.1989, *Contu & Ballero* 89/460 (CAG). Plate 2.

Pileus 0.8 - 1.5 cm latus, haud carnosus, campanulatus, umbonatus, viscidulus, iove pluvio striis destituto, albo-lacteus sed siccando leviter flavescens. Lamellae modice confertae, tenues, adnexae, ochraceae, acies concolor. Stipes 3.5 - 7.5 x 0.02 - 0.05 cm, elongatus, cylindraceus, basi leviter incrassatus, albus, sericeus, superne pruinosis. Caro parce conspicua, tenuis, albida; odor et saporque debilis. Sporarum pulvis ochraceus. Sporae 13.5 - 16.5 x 8 - 10.5 μm , ochraceae, ellipsoideae vel obovatae, leves, poro lato praeditis, leves, parietes incrassatae. Basidia 18 - 24 x 10 - 12 μm , mono vel bispora, late clavata, typice cum abundantispseudoparaphysis intermixta. Pleurocystidia nulla. Cheilocystidia 18-27 x 7.5 - 13.5 μm , lecythiformia, capitulum 4-5 μm latum. Pilei cutis gelatinosa, hymenodermica. Stipitis cutis cystidia typi sectionis *Mixtae* praedita. Fibulae constantes. Habitatio: in herbis locis, gregaria. Autumno. Rara.

Cap 0.8 - 1.5 cm, across, not very fleshy, bell-shaped, umbonate, not striate, slightly viscid, white, slightly yellowish on drying. Gills thin, not very crowded, narrow, adnexed, ochraceous-buff, with a concolorous edge. Stem 3.5 - 7.5 x 0.02 - 0.05 cm, thin, elongate, cylindrical, slightly enlarged towards the base but not bulbous, white, sericeous, pruinose at apex. Flesh very thin, white, unchanging; smell and taste not distinctive.

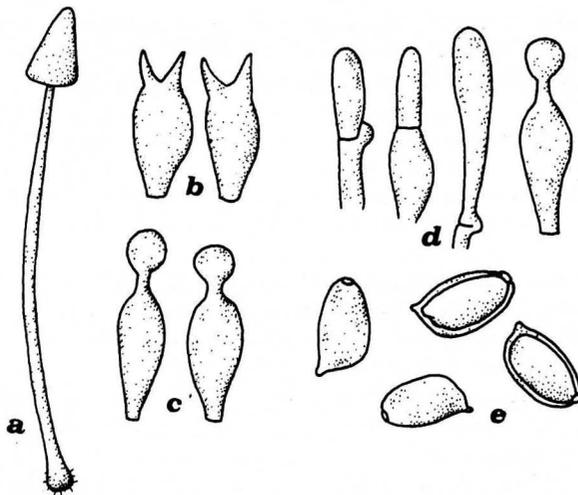


Fig. 2. *Conocybe dubia* sp. nov. a. basidioma; b. basidia; c. cheilocystidia; d. caulocystidia; e. spores.

Spore-print ochraceous. Spores 13.5-16.5 x 8-10.5 μm , ochraceous, smooth, ellipsoid to oval, with a wide and often excentric germ-pore, apiculate, thick-walled. Basidia 18-24 x 10-12 μm , one or two-spored, clavate. Subhymenium cellular-angular. Pleurocystidia none but hymenial texture with a number of vesiculose pseudoparaphyses. Cheilocystidia 18-27 x 8-10.5 μm , lecythiform, head 4-5 μm wide. Pileal surface an ixohymeniderm made up of clavate, unpigmented cells. Subcutis made up of cylindrical, intermixed, thin and clamped hyphae. Caulocystidia lecythiform, clavate or even lageniform and similar to

that of *Conocybe* section *Mixtae*. Clamp connections present on the thin hyphae of the pileal subcutis.

Ecology: in a open space, grassy court, on basic soil, very likely adventitious. Late autumn.

This seems to be a very peculiar taxon for it has an intermediate position between the genera *Conocybe* Fayod and *Bolbitius* Fr. The slightly viscid pileal surface and the hymenial pseudoparaphyses could suggest a placement in *Bolbitius* but overall appearance and cystidial morphology, on the contrary, are typical of *Conocybe*. Singer (1986), Watling (1982) and Moser (1986) place similar taxa such as *C. crispa* (Longyear) Sing. or *C. lactea* (J. Lge) Métrod in *Conocybe* section *Candidae* Kühner ex Singer whereas in a recent paper Bon (1992) transferred them to *Bolbitius*. Although Bon's arguments seem to have some merit and deserve consideration we wish to follow Singer and Moser and, as a consequence, place our new taxon in *Conocybe* because in our opinion Singer's (l. c.) treatment, although conservative, seems to be more natural. *C. crispa* (Longyear) Sing. could be confused with *C. dubia* but is clearly different in having anastomized gills and not lecythiform cheilocystidia.

C. lactea (J. Lge) Métrod is characterised by tetrasporic basidia and smaller spores whereas *C. huijsmanii* Watl. has an expanding cap, more robust structure and different caulocystidia. Among the other white members of the genus *C. alba* Sing. is well differentiated by the lack of hymenial pseudoparaphyses and four-spored basidia. When collected this new species was fruiting with some other members of *Conocybe*, namely *C. moseri* Watl. and *C. siennophylla* (Berk. & Br.) Sing. and with some other grassland-species such as *Psathyrella candolleana* (Fr.) R. Maire. We do not know, if it could be a native or, on the contrary, an introduced, adventitious species.

Lyophyllum inocybeoides spec. nov.

Holotypus: Sardinia, Cagliari, Botanical Garden, on sandy and acid soil near *Pinus halepensis* L., 31.10.1990, Ballero & Contu, 90/135 (CAG). Plate 3.

Pileus 0.8 - 3.6 cm, carnosulus, irregulariter explanatus, ad medium leviter depressus et acute umbonatus, hygrophanus, omnino albo-pruinosis, castaneo-brunneus dein griseo-luridus vel griseo-cinereus, radialiter fibrillosus, striis destituto. Lamellae tenues, modice confertae, adnatae vel decurrentes, albidae vel pallide ochraceae dein griseo-roseae interdum pallide roseo-brunneae, acie clariore. Stipes 1-2.6 x 0.2-0.3 cm, curtus, cylindraceus vel ad basim attenuatus, fistulosus, albo-pruinosis, sub pruina fibrilloso-sericeus, pileo concolor. Caro sat fragilis, albida, in stipite brunnea; odor saporque debilis, haud farinaceis. Sporarum pulvis alba. Sporae 5.2-6.7 x 4.5-5.7 μ m, hyalinae, cyanophilae, globosae vel subglobosae, monoguttulatae, apiculatae, leves. Basidia 33-42 x 7-9 μ m, tetraspora, clavata, cum granulis siderophilis, ad basim fibulata. Cystidia nulla. Pilei cutis ex hyphis cylindraceis, subradialibus, 3-6 μ m latis constans, pigmento intraparietali vel incrustante. Fibulae numerosae.

Habitatio: ad terram, saepe subcaespitosum, in sabulosis locis, in humo basica. Autumno.

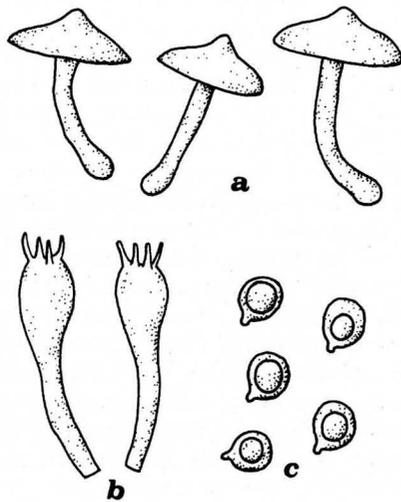


Fig. 3. *Tephroclybe inocybeoides* sp. nov. a. basidioma; b. basidia; c. spores.

Cap 0.8-3.6 cm, not very fleshy, irregularly expanded, convex then plane, with a slightly depressed centre, usually acutely umbonate, margin often lobed, hygrophanous, slightly viscid then dry, entirely white-pruinose, dark date-brown then greysh, often maculate, non striate but radially fibrillose when discoloured. Gills thin, close, adnate to decurrent, white to deeper clay-buff then greysh or pale to brownish and often with a light pink shade, edge paler. Stem 1-2.6 x 0.2-0.3 cm, short, cylindric, sometimes narrowed at the extreme base, entirely white-pruinose, silky-fibrillose-striate, with a white tomentose base, concolorous or paler. Flesh not very thick, white, unchanging, brownish in the stem cortex; smell and taste weak, not distinctive, not mealy. Spore-print white. Spores 5.2-6.7 x 4.5-5.7 μm , hyaline, cyanophilous, globose to subglobose, smooth, with a single, large oil-drop and a small apiculus. Basidia 33-42 x 7-9 μm , four-spored, clavate, slender, with siderophilous grana, clamped. Cystidia of any kind none. Pileal surface a cutis of repent, cylindric, 3-6 μm wide, clamped hyphae with a intraparietal and incrusting pigmentation. Clamp connections present at all septa.

Ecology: gregarious to subcaespitose in sandy, basic soil originated by the disintegration of triassic calcareous rocks. Late autumn. Rare.

Characterised by the resemblance to some species of *Inocybe* or even *Collybia* or *Rhodocybe* but strongly different by its micromorphology (no cystidia, smooth spores and siderophilous basidia). On the basis of the treatment of the european *Lyophylleae* by Moser (1986) and Bon (1991) this new species would fit the genus *Tephroclybe* Donk, especially on account of its collybioid habit. Bon (1991) wish to keep the segregation of Donk's genus from *Lyophyllum* P. Karsten mainly on the basis of: a) size and appearance of the basidiome: viz. slender, collybioid or even mycenoid in *Tephroclybe* whereas it is truly tricholomoid in *Lyophyllum*; b) size and length of the basidia: they are small and not exceeding 20(25) μm in length in *Tephroclybe*, whereas in *Lyophyllum* they are much longer. It should be noted, however, that in some species of *Tephroclybe*, such as *T. coracina*, *T. boudieri* etc., basidia are longer and reach 30 μm and more, although they

remain shorter and smaller than those found in *Lyophyllum* taxa. In the present new species we have observed basidia that easily reach 40 μm (a feature of *Lyophyllum*) but basidiomes clearly collybioid (a feature of *Tephrocycbe*). As a consequence we think that our entity has an intermediate species between these two genera, thus corroborating Singer's (1986: 217) conclusion that the segregation of *Tephrocycbe* from *Lyophyllum* is not useful and should not be recognized at all. We agree with that idea and following Singer describe our new species under *Lyophyllum*. Into this genus *L. inocybeoides* takes its place in the section *Tephrophana*, subsect. *Orbisporinae*, where it approaches the European and boreal species *L. cessans* (P. Karsten) which is clearly different in several respects such as a pure-grey and striate cap cuticle, definitely shorter basidia and ecology.

As *L. inocybeoides* has been observed and collected only in very dry and sandy soil we have made a comparison with material from Sardinia concerning *Lyophylleae* occurring in similar biotopes but the only recorded entity is *Tephrocycbe graminicola* Bon, a species related to the *Lyophyllum tesquorum* complex. This is a quite different species on account of its much lighter colours, the very strong mealy smell and ellipsoid, asperulate spores. As one of us (Contu 1989) had the opportunity to describe in detail a collection whose determination had been kindly confirmed by Bon we feel necessary to propose, as a consequence of the taxonomical considerations made above, the following new combination:

Lyophyllum graminicola (M. Bon) Ballero & Contu, comb. nov.
basionym: *Tephrocycbe graminicola* M. Bon, Doc. Mycol., 7: 25-58 (1976).

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Addresses of the authors:

Dr. M. Ballero, Istituto di Botanica dell'Università degli Studi di Cagliari. Viale Fra Ignazio 13, 09123 Cagliari; M. Contu, Via Manzoni 33, 09128 Cagliari.