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Clitopilus canariensis (Basidiomycota, Entolomataceae), a new species in the *C. nitellinus*-complex (*Clitopilus* subg. *Rhodophana*) from the Canary Islands (Spain)

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Abstract

Clitopilus canariensis is described as a new species belonging to *Clitopilus* subgenus *Rhodophana* on the basis of a collection from La Palma, Canary Islands. The new species grows on humus of *Cistus monspeliensis* and is known from a single site. A photograph of fresh basidiomes of the type-collection and line drawings are provided.

Key Words

Agaricomycetes Agaricales *Rhodocybe* taxonomy

In this paper the taxonomic concepts of Co-David et al. (2009) are followed for placement of taxa formerly considered as *Rhodocybe* Maire, and therefore the genus *Clitopilus* (Fr. ex Rabenh.) P. Kumm. emend. Co-David & Noordel. will be used. So, taxa previously placed in *Rhodocybe* section *Rhodophana* (Kühner) Singer, will now be considered as members of *Clitopilus* subgenus *Rhodophana* (Kühner) Contu (Contu, 2009), with basidiomes characterized by a collybioid to mycenoid habit, orange-red colorations, and the presence of clamp connections. This subgenus was represented in the Canary Islands by only two species, *C. nitellinus* (Fr.) Noord. & Co-David and *C. melleopallens* (P.D. Orton) Noord. & Co-David (Contu, unpubl. data), when we found, among the collections of *Clitopilus* made by R.M. Dähncke in the Island of La Palma, a collection of a small, tiny species for which no name was available in the literature. In the present paper this species is introduced as a novel taxon based on its peculiar micromorphological features.

The macromorphological descriptions follow the detailed field notes taken on fresh material. Microscopic observations were made from dried material revived in 5% KOH and observed in Ammoniacal Congo Red and Phloxine. Spore size is expressed both as a range and mean value based on 30 randomly chosen spores. The following abbreviations are used: Q = the quotient of spore length by spore width; Qm = the mean of Q values; and Met = the color of the fresh basidiomes as matched

with Kornerup & Wanscher (1978). Nomenclature and taxonomy follow Co-David et al. (2009) and Contu (2009). The new species epithet was deposited in MycoBank (www.mycobank.org).

Clitopilus canariensis Dähncke, Contu & Vizzini, **sp. nov.** Type: Spain. Canary Islands, La Palma Island: Lomo del Cuchillo, 800 m, 6 Dec 2008, leg. R. M. Dähncke (holotype: TO AVEC11). Mycobank MB 518949. (Figs. 1, 2A–D)



Fig. 1 Basidiomes of *Clitopilus canariensis* (from the holotype).

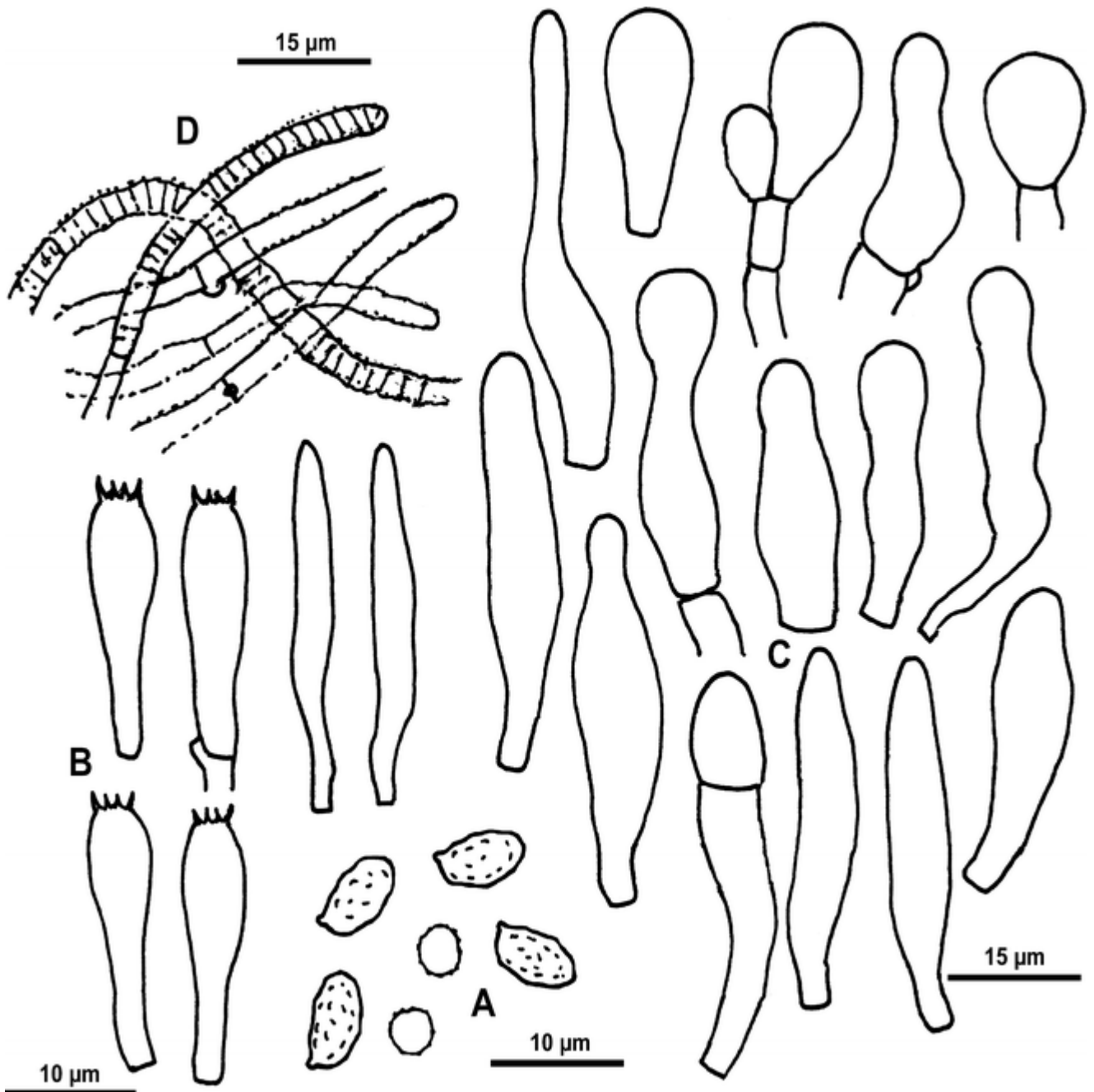


Fig. 2 Microscopic features of *Clitopilus canariensis* (from the holotype). **A.** Spores. **B.** Basidia. **C.** Cheilocystidia. **D.** Elements of the pileipellis.

Pileus 10–22 mm latus, parce carnosus, convexus, exumbonatus, opacus, siccus, hygrophanus, fulvus dein pallide alutaceus, estriatus. Lamellae modice confertae vel distantes, uncinato-adnatae, carneolae. Stipes 40–60 × 1.5–2 mm, cylindricus vel ad basim leviter attenuatus, pileo concolor. Caro fragilis, plerumque albida, immutabilis; odor funginus; sapor similis. Sporae 6–7.5 × 4–4.5 µm, hyalinae, ovoideae vel subamygdaliformes, leviter rugoso-undulatae vel verrucoso-angulatae, guttulatae. Basidia 20–25 × 6–7 µm, tetraspora, fibulata. Lamellarum trama regularis, ex hyphis 4–9 µm latis constituta. Pleurocystidia nulla. Cheilocystidia 15–60 × 8–12 µm numerosa, plerumque articulata, cellulis terminalibus clavatis, fusiformibus vel ventricosis, tenuitunicatis, hyalinis. Pilei cutis ex hyphis cylindricis subparallelis vel laxe intertextis, in suprapelle haud gelatis, 3–7.5(–9) µm latis, constituta; pigmento incrustanti. Caulocystidia nulla. Fibulae numerosae. Hyphae oleiferae absentes.

Pileus 10–22 mm broad, convex, not umbonate, not depressed towards the centre, hygrophanous, not translucently striate, when moist fulvous (Met6 D8–7), then paler, becoming pale rosy-buff (Met5 A3–4–5) on drying, slightly felted to glabrous, dry, opaque. *Lamellae* interspersed with lamellulae, adnate, distant, moderately thin, pinkish (Met5 A3–2) with a concolorous edge. *Stipe* 40–60 × 1.5–2 mm, central, cylindrical-equal, concolorous with the pileus or slightly darker (Met5 F4–5), with orange basal tomentum, without rhizomorphs, dry, glabrous, smooth. *Context* pale, white, unchanging; *smell* and *taste* not distinctive. *Spore-print* not obtained. *Spores* (5.5–)6–7.5 × (3.7–)4–4.5(–4.7) μm, on average 6.83 × 4.29 μm, Q = (1.33–)1.43–1.66(–1.75), Q_m = 1.55, hyaline, ovoidal to subamygdaliform in profile view, ellipsoid in face-view, round in polar view, slightly to distinctly undulate-verrucose but sometimes obscurely so and appearing smooth when older, wall thin and evenly cyanophilic, inamyloid, with a patent apiculus of the *Entolomataceae*-type (Co-David et al., 2009) (Fig. 2A). *Basidia* 20–25 × 6–7 μm, small, clavate, tetrasporic, with basal clamp (Fig. 2B). *Subhymenium* filamentous (not cellular). *Cheilocystidia* 15–60 × 8–12 μm, very numerous and making the lamellar edge entirely sterile, articulate to catenulate or pedicellate, with terminal element very variable, mainly clavate to broadly clavate or saccate but also spheropedunculate, utriform, fusiform or lageniform, more rarely capitulate or mucronate, hyaline, thin walled, with basal clamps (Fig. 2C) and pseudoclamps; *pleurocystidia* and *pseudocystidia* absent. *Hymenophoral trama* regular, made up of cylindrical, hyaline hyphae, 4–9 μm wide. *Pileus surface (pileipellis)* a dry cutis made up of tightly interwoven, coarsely encrusted with brown pigments, sometimes in a zebra-like pattern, cylindrical hyphae, 3–7.5(–9) μm wide (Fig. 2D); *subcutis* undifferentiated. *Stipe surface* consisting of a dry cutis of parallel, cylindrical hyphae, bearing a fuscous-brown intraparietal pigment; caulocystidia none. *Clamp connections* abundant and well formed. *Thromboplerous hyphae* (= oleiferous hyphae sensu Cléménçon, 2004) absent.

Distribution and ecology.—Gregarious, in small groups, not caespitose on humus of *Cistus monspeliensis* L. Autumn. Known only from Canary Islands (La Palma Island).

Etymology.—The specific epithet refers to the Canary Islands, where the species was collected.

Clitopilus canariensis resembles smaller, inodorous basidiomes of *C. nitellinus* (Fr.) Noord. & Co-David in the field, but the smaller, not heavily ornamented spores, sterile lamellar edge entirely covered by cheilocystidia, and coarsely encrusted hyphae of pileipellis are fully diagnostic for the new species. According to the literature, *Clitopilus nitellinus* is a medium-sized species characterized by heavily ornamented spores reaching 9 μm in length, no cheilocystidia, non- or minutely encrusted pileipellis hyphae, and a context with a rancid-mealy smell (Baroni, 1981; Noordeloos, 1988). *Clitopilus melleopallens* (P.D. Orton) Noordel. & Co-David has spores measuring 4.5–7 × 3–4 μm, no cheilocystidia, and a mealy smell (Orton, 1960; Noordeloos, 1983, 1988). *Clitopilus cupreus* (J. Favre ex Contu) Contu, thus far known only from Europe, is also a small species in *Clitopilus* subg. *Rhodophana*, but its colors are darker, the spores have a heavier ornamentation and the lamellar edge is fertile (Favre, 1960; Consiglio & Contu, 2006).

Among the non-European species, *Clitopilus gibbosus* (Horak) Noord. & Co-David, known from New Guinea, is also a species described with cystidia; however, according to the protologue, this species has larger and ornamented spores (7.5–10.5 × 6–8.5 μm), and the cystidia are described as rather elongate, fusoid, pigmented pseudocystidia deeply rooting in the subhymenium and connected with thromboplerous hyphae. In contrast, in *C. canariensis* only true cheilocystidia were found, which are not pigmented and not linked to any thromboplerous hypha. We were not able to find any other clamp-bearing *Clitopilus* species exhibiting the peculiar set of micromorphological features of *C. canariensis* (Singer & Digilio, 1951; Horak, 1978, 1979; Baroni, 1981; Baroni & Redhead, 1985; Noordeloos 1983, 1988; Baroni & Largent, 1989; Contu & Bon, 1991; Baroni & Halling, 1992; Baroni & Horak, 1994; Esteve-Raventos, 2001; Baroni & Gates, 2006; Bidaud & Contu, 2007;

Consiglio & Contu, 2008; Henkel et al., 2010) and we therefore consider this new species unique in the genus as a whole.

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