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Untangling the Central African *Cantharellus* sect. *Tenues: Cantharellus minutissimus* sp. nov. and epitypification of *Cantharellus alboroseus*

Bart BUYCK[a], Eske DE CROP[b], Annemieke VERBEKEN[b] & Valérie HOFSTETTER[c]*

[a] Muséum National d'Histoire Naturelle, Dépt. Systématique et évolution, CP 39, ISYEB, UMR 7205 CNRS MNHN UPMC EPHE, 12 rue Buffon, F-75005 Paris, France ; email: buyck@mnhn.fr

[b] Research Group Mycology, Department of Biology, Ghent University, K. L. Ledeganckstraat 35, 9000 Ghent, Belgium; e-mail: eske.decrop@ugent.be

[c] Department of plant protection, Agroscope Changins-Wadenswil Research Station ACW, Rte de Duiller, 1260, Nyon, Switzerland; email: valerie.hofstetter@agroscope.admin.ch

Abstract – *Cantharellus* section *Tenues* was originally created for four new, very small, red-orange-yellow Central African chanterelles with a more or less fistulose stipe, short basidia and an omphaloid habit. The type species, *C. tenuis*, is here considered unrelated to the other three species as it is the only species having clamp connections. All four species remain poorly known and need to be recollected and epitypified with recently collected, sequenced specimens that comply to the original description. In this paper, *C. alboroseus* is epitypified, and an equally small species, *C. minutissimus,* is introduced. Both species are systematically placed using a multigene phylogeny.

***Cantharellus floridulus* / *Cantharellus* subg. *Rubrinus* / multigene phylogeny / taxonomy**

INTRODUCTION

Cantharellus section *Tenues* Heinemann presents several taxonomic problems, both as a group and at species level. It was originally described (Heinemann 1958) to harbor four new, very small, red-orange-yellow Central African chanterelles with a fistulose stipe, short basidia and an omphaloid habit (i.e resembling slender, very small Tricholomataceae with a relatively long stipe and decurrent gills). The new section was typified by *C. tenuis*, an entirely (cap, stipe and hymenophore) bright orange species with a cap measuring merely 10-15 mm diam. and having abundant clamp connections. As for the other three species, the presence of clamp connections was mentioned for *C. pseudofriesii*, but left unresolved for both *Cantharellus floridulus* Heinem. (ut *C. floridula*) and *C. alboroseus* Heinem. Upon

* Corresponding author: buyck@mnhn.fr

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his revision of the four type specimens, Eyssartier (2001) confirmed the presence of clamp connections in *C. tenuis*, but concluded that the other three species lacked clamp connections. Considering the importance of presence/absence of clamps in the systematic arrangement of the genus (Buyck *et al.* 2014), this feature therefore places *C. tenuis* most likely in subg. *Cinnabarinus* Buyck & V. Hofstetter, whereas the remaining three species of sect. *Tenues* are unrelated and most probably belong in subg. *Rubrinus* Buyck & Eyssart. As a consequence, sect *Tenues* does not correspond to a monophyletic concept.

A fifth species for which the original material had been lost (fide Eyssartier 2001), *Cantharellus addaiensis* P. Henn., was considered by Heinemann to be very closely related to his *C. floridulus* because of the very similar micro- and macromorphology, but the original description (Hennings, 1898) mentioned a concolorous hymenophore and the species was most likely associated with woodland vegetation. Although Eyssartier (2001) suggested that Heinemann's species could be a later synonym of *C. addaiensis* because of the highly similar descriptions, he had adopted the name *C. floridulus* for woodland collections with a highly similar macro- and micromorphology but a concolorous hymenophore. Eyssartier was followed herein by most other researchers (Buyck *et al.* 2000, Eyssartier & Buyck 1998, De Kesel *et al.* 2002, Härkönen *et al.* 1995, 2003).

The types of the chanterelles that were placed in sect. *Tenues* are kept at BR (Meise, Belgium) and have been collected by Mrs. Goossens-Fontana, now almost one century ago. With the exception of *C. floridulus*, none of these species has ever been mentioned again in the literature. Decennia passed since Heinemann described the collections of Goossens-Fontana and, during all these years, chanterelles had not been recollected from African rain forest until very recently. It were Eyi Ndong *et al.* (2011) who first illustrated new collections of chanterelles from this habitat, including specimens identified as *C. floridulus* showing a distinctly white hymenophore (corresponding to the original description), and thus quite different from the woodland collections identified as such. Consequently, Buyck (2012) neotypified *C. addaiensis* as a very similar but distinct species with a concolorous hymenophore and exclusively associated with woodland vegetation in tropical Africa. It was placed with strong molecular support in subg. *Rubrinus* sect. *Isabellinus* Eyssart. & Buyck, where it was the unique reddish species in a clade of otherwise entirely yellowish- brown and often much larger taxa (Buyck *et al.* 2014).

In the present paper, the authors discuss identification problems and systematic placement of some of the species that were previously assigned to sect. *Tenues* on the basis of several recent collections that were made only some 350 km away from the holotype locality and in their original habitat, the *Gilbertiodendron dewevrei* rain forest. Considering the poor state of the type specimens and the impossibility of obtaining good DNA sequence data from these types, it is important to epitypify each of the names introduced by Heinemann, a process that started only recently (De Kesel *et al.* 2016, this issue; Buyck et al, 2016a,b this issue). Therefore specimens have to be collected that correspond to the original description and, more importantly, they have to be sequenced for the most important gene regions used in current fungal phylogenies to reliably fix their future identification. In particular the future epitypification of *C. floridulus* would be an important step as the species was selected as type of subg. *Rubrinus* Buyck & Eyssart. (in Eyssartier & Buyck 2001).

MATERIAL AND METHODS

Taxon sampling, DNA isolation, amplification and sequencing

Genomic DNA isolation, amplification and sequencing of the here newly included *Cantharellus* samples were performed as described in Buyck *et al.* (2014) and the analysis is based on the same four loci but includes now 94, instead of 82 specimens. Compared to the original sampling in Buyck *et al.* (l.c.), we replaced some collections for which we had missing data in order to maximize molecular support in our analyses (Table 1): *Cantharellus appalachiensis* (previously sampled from GenBank) is replaced by our collection 1084; both samples of *C. congolensis* (247 and 512) were replaced by samples 1645 and 1676 (now both from the original rain forest habitat); the single sample for *C. friesii* (481) is now represented by two new, fully sequenced collections of the same species (1001 and 1004); the sample for *C. subpruinosus* (484) by two more recent collections (1110 and 1115; here renamed as *C. pallens*, see Olariaga *et al.,* in press); the sample 267 for *C. addaiensis* is replaced by the fully sequenced sample 1630; the new samples 1608, 1609 and 1533 were added for *C. miomboensis, C. cf subcyanoxanthus* and *C. subamethysteus* respectively; the holotype sample for *C. conspicuus* is replaced by the fully sequenced sample 1629. Finally, samples for previously not included taxa were added for *C. guyanensis* (samples 1501 and 1517; see Buyck *et al.* 2016b, this issue) and *C. miniatescens* (samples 1671, 1682 and 1683, see Buyck *et al.* 2016a, this issue), together with representative samples for the here discussed taxa (samples 1670, 1659 and 1621). We used a single taxon as the outgroup: *Craterellus tubaeformis*.

All in all, 59 sequences were newly generated for this study (Table 1): 15 mitochondrial small subunit (mitSSU), 15 nuclear large subunit (nucLSU), 15 RNA polymerase II second largest subunit (*RPB*2) and 14 translation elongation factor 1-alpha (*TEF*1) partial locus sequences.

Phylogenetic analyses

After the introduction of the newly produced sequences in single locus alignments of Buyck *et al.* (2014) using MacClade 4.05 (Maddison and Maddison, 2002) and the removal of five taxa (replacements; see Materials and Methods section), the final 4 loci dataset included 94 taxa. The full alignment included 5916 characters. After exclusion of introns and ambiguously aligned regions, the combined dataset included 3326 characters. In-depth congruence tests have been conducted for individual locus sequence data by Buyck *et al.* (2014) for 82 out of the 94 taxa analyzed in the present study. Therefore we did not repeat congruence tests for the 4 loci-94 taxa dataset: for taxa replacements, but the newly introduced data were checked for sequence similarity with previously obtained sequence data for the same species; for additional sequence data, represented by more than one collection, we checked for sequence similarity between collections of the same species.

Searches for optimal trees and branch robustness for the four loci used in combination were conducted with the program PhyML (Guindon & Gascuel, 2003) under the "best-fit" model (Lio & Goldman, 1998) estimated using Modeltest v. 3.06 (Posada & Crandall, 1998), with the search starting from a distance-based tree and with the proportion of invariable sites, the gamma shape parameter and the number of substitution categories estimated during the search. Three of these searches were implemented to check for convergence to the same likelihood value. Phylogenetic

Table 1. Voucher table showing additional or replaced *Cantharellus* sequence data compared to the voucher table in Buyck *et al.* 2014

Taxon	*Voucher*	*Provenance*	*Herbarium*	*Genbank accession numbers*			
				mitSSU	*nucLSU*	RPB*2*	TEF*1*
Cantharellus addaiensis	1630/EDC14.414	Togo	GENT	**KX857126**	**KX857100**	**KX857004**	**KX857073**
C. minutissimus	1621/EDC14.281	Cameroon	GENT	**KX857125**	**KX857099**	**KX857003**	–
C. appalachiensis	1084/JJ MOCant3	USA	PC 0142451	**KX857116**	**KX857090**	**KX856994**	**KX857032**
C. congolensis	1645/BB16.044	C-African Rep.	PC 0142445	**KX857128**	**KX857102**	**KX857006**	**KX857075**
C. congolensis	1676/BB16.123	C-African Rep.	PC 0142446	**KX857132**	**KX857106**	**KX857010**	**KX857078**
C. conspicuus	1629/EDC14.407	Togo	GENT	**KX857126**	**KX857100**	**KX857004**	**KX857073**
C. alboroseus	1659/BB16.086	C-African Rep.	PC 0142441	**KX857129**	**KX857103**	**KX857007**	**KX857076**
C. alboroseus	1670/BB16.108	C-African Rep.	PC 0142442	**KX857130**	**KX857104**	**KX857008**	**KX857077**
C. friesii	1001/EC09.16	Italy	PC 0142447	**KX857109**	**KX857083**	**KX856987**	**KX857015**
C. friesii	1004/EC09.43	Italy	PC 0142448	**KX857110**	**KX857084**	**KX856988**	**KX857016**
C. miomboensis	1608/EDC14.018	Zambia	GENT	**KX857123**	**KX857097**	**KX857001**	**KX857071**
C. pallens	1110/BB12.077	Italy	PC 0142449	**KX857117**	**KX857091**	**KX856995**	**KX857035**
C. pallens	1115/BB12.082	Italy	PC 0142450	**KX857118**	**KX857092**	**KX856996**	**KX857036**
C. cf subcyanoxanthus	1609/EDC14.034	Zambia	GENT	**KX857124**	**KX857098**	**KX857002**	**KX857072**
C. cf subamethysteus	1533/AV12.003	Thailand	GENT	**KX857122**	**KX857096**	**KX857000**	**KX857062**

Abbreviations for collectors are as follows: AV Annemieke Verbeken, BB Bart Buyck, EC Emanuele Campo, EDC Eske de Crop, JJ Jay Justice.

confidence was evaluated based on 500 ML bootstrap replicates using the same settings as for the searches for the most likely trees. Bootstrap values ≥ 70% were considered significant (Alfaro *et al.*, 2003).

RESULTS

Phylogenetic analyses

The most likely tree (-ln = 78507.437) out of the three runs conducted under the estimated GTR "best fit" substitution model, is depicted in Figure 1. The topology of the recovered phylogeny is quite similar to the topology recovered by Buyck *et al.* (2014). *Cantharellus alboroseus* is part of subclade 2b *sensu* Buyck *et al.* (2014 = *Cantharellus* subg. *Rubrinus* sect. *Heinemannianus* Eyssart. & Buyck) and highly supported by ML bootstrap values (ML-bs) to be monophyletic with (ML-bs = 90%) and sister taxon (ML-bs = 100%) to *C. ibityensis*. Phylogenetic analyses place *C. minutissimus* in subclade 2b *sensu* Buyck *et al.* (2014, = *Cantharellus* subg. *Rubrinus* sect. *Isabellinus* Eyssart. & Buyck) and our new species nests with maximum support (ML-bs = 100%) in the subclade including all reddish-greyish to dark brown species of subclade 2b with the exception of *C. miomboensis* which is suggested to be sister to this clade but without significant support. Also the internal relationships within the subclade containing *C. minutissimus* remain poorly supported and our species is not resolved from the other closely related species. The whitish, more yellowish to pale brown species of sect. *Isabellinus* constitute a third, significantly supported subclade (ML-bs 74%).

Taxonomy

Cantharellus alboroseus Heinem., *Bull. Jard. Bot. État*, 28 (4): 420. 1958
Figs 2-4, 8-10

Original diagnosis: "Pileus tenuis, depressus, rubeolus. Stipes breviusculus, fistulosus, pileo concolor. Lamellae pliciformes, distantes, albidae vel luteolae, ramosae. Caro rubeola, odore C. cibarii. Sporae ellipsoideae, 7-8 × 4,5-5,5 µm."

Original description (freely translated from French): "Pileus ca 1 cm diam., thin, soon depressed-concave with rounded-incurved and slightly lobed margin; surface glabrescent, reddish pink. Stipe 10-20 × 1 mm, cylindrical, sometimes a bit flexuous or curved, narrowly fistulose (?), concolorous. Lamellae fold-like, spaced, narrow (0.5 mm), white with very faint yellow tinges, forked or unequal, subsmooth in between. Context reddish pink. Smell of *C. cibarius* when boiling a part of the exsiccatum. Spore print white. Exsiccatum entirely pale orange brown. Spores yellowish, 7-8 × 4.5-5.5 µm, shortly ellipsoid or a bit ovoid, finely rugose in ammonium, appearing inamyloid and smooth in Melzer's reagent; apiculus small. Basidia long, claviform, measuring 53 × 9 for ex., at least four-spored. Pseudoparenchyma well characterized at least in the stipe."

Holotype: Democratic Republic of the Congo. district forestier central, Binga, oct. 1925, Mrs. Goossens-Fontana 946 (BR).

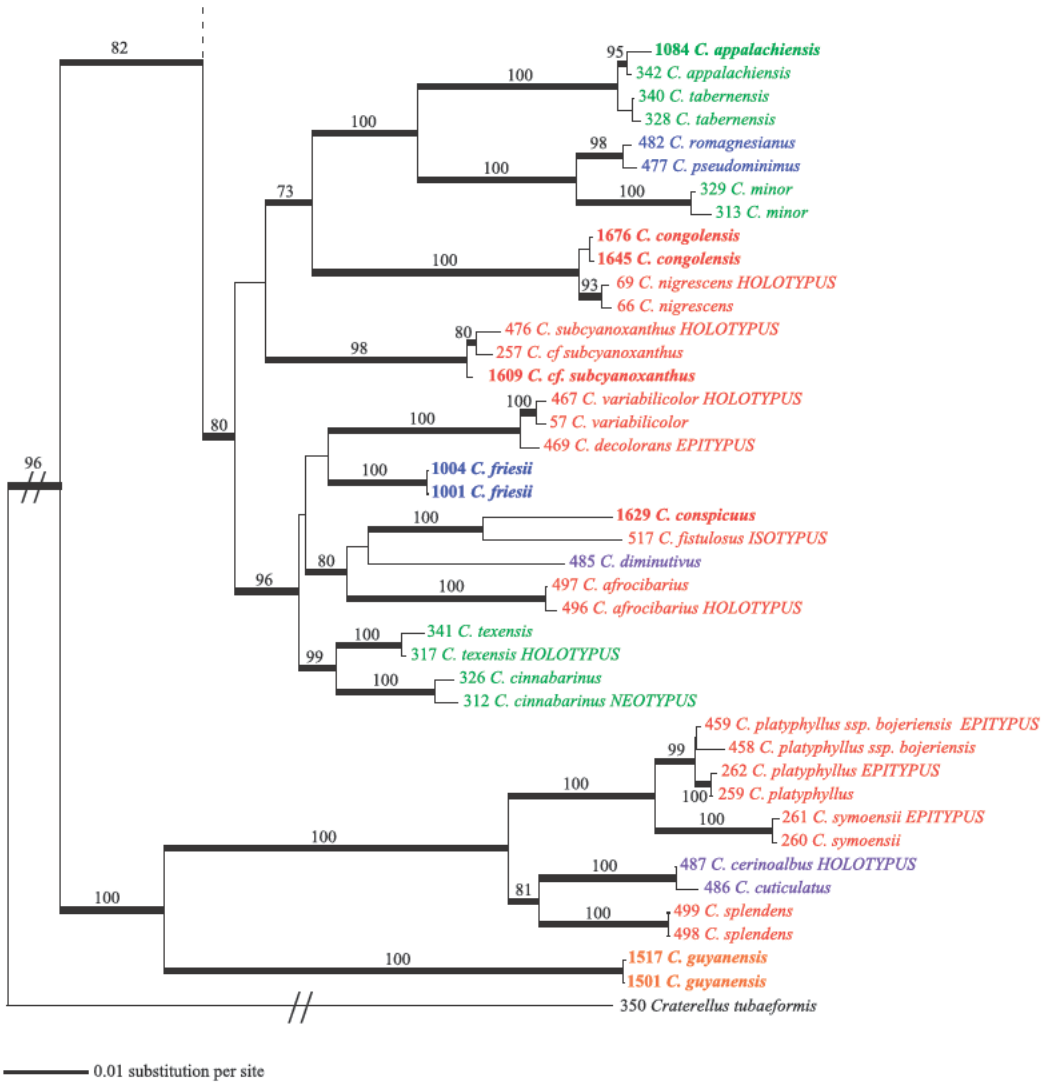


Fig. 1. Most likely tree (-ln = 22902.011) inferred from maximum likelihood (ML) analyses of the 96 taxa-4 loci dataset. Branches that received significant bootstrap values (MLbs ≥ 70%) are in bold with bootstrap values indicated along branches. Colors refer to geographic origin of the collections following Buyck *et al.* (2014), viz.: red = Africa+Madagascar, orange = South America, green = North America, blue = Europe, lilac = Asia.

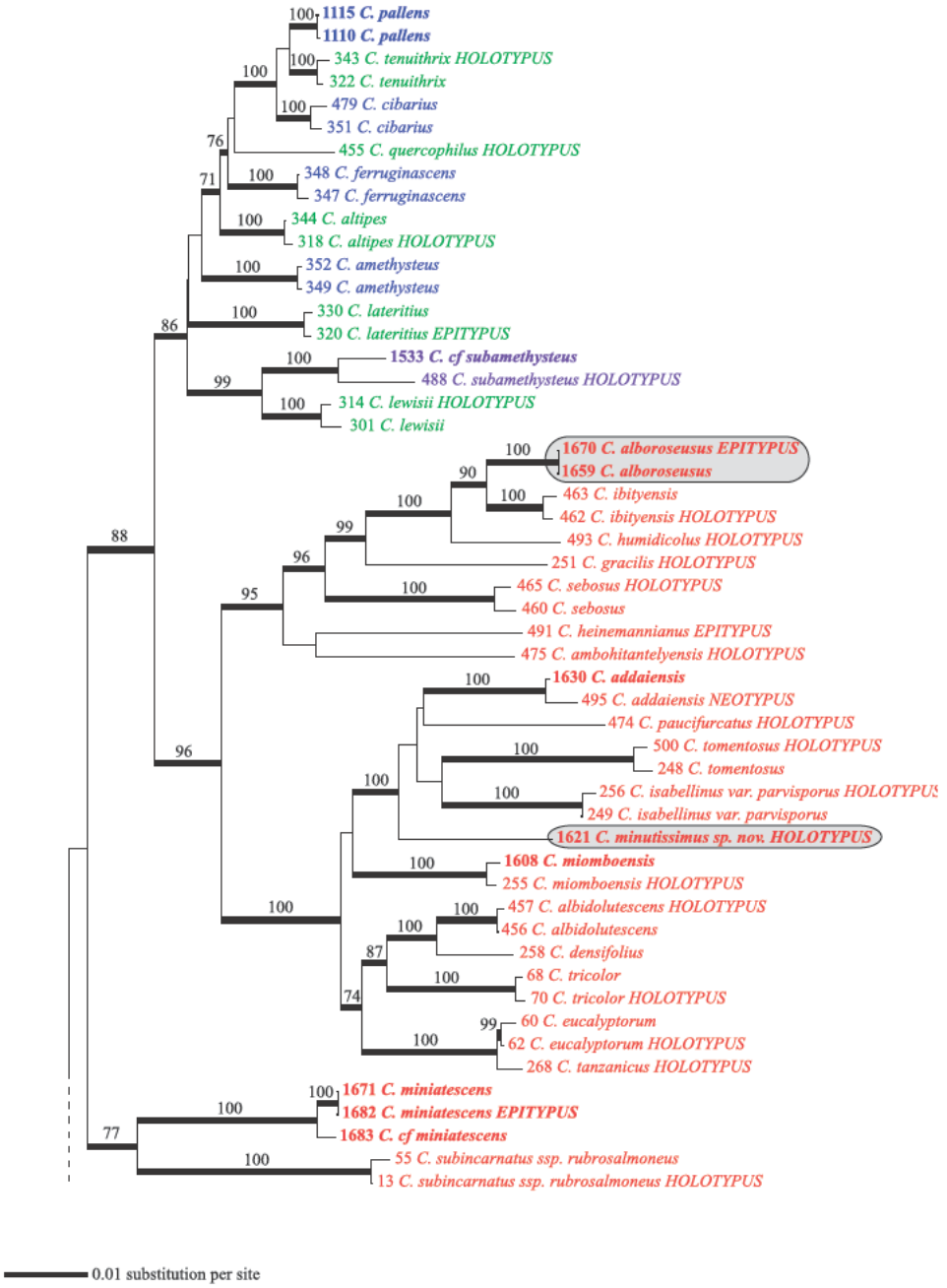
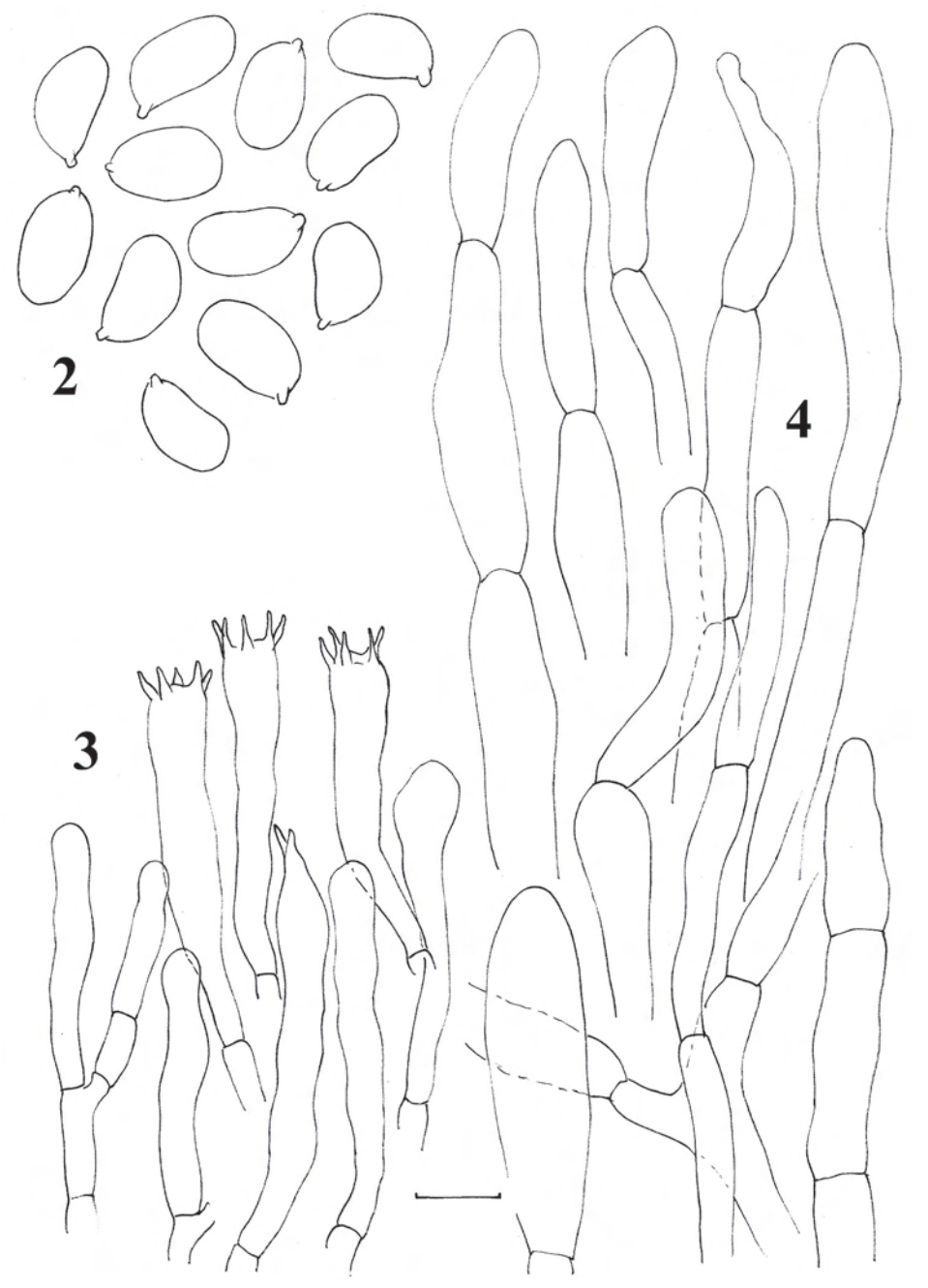


Fig. 1. (*continued*)



Figs 2-4. *Cantharellus alboroseus* (epitypus). **2.** Spores. **3.** Basidia and basidiola. **4.** Terminal elements of the pileipellis. Scale bar = 10 µm but 5 µm for spores. (drawings B. Buyck).

Epitype description

Fruiting bodies few, widely dispersed. **Pileus** 10-15 mm diam., convex-plane to slightly depressed in the center, bright orange (5A8), hygrophanous and becoming pale pink when drying out, smooth, dull to waxy; cap margin remaining inrolled for a long time. **Stipe** up to 23 mm high, 2-3 mm diam., subcylindrical to slightly widening at the base, smooth, tinged with orange (5A3-5) but usually paler than cap, with yellowish tinges near the stipe base, solid inside. **Hymenophore** decurrent, composed of spaced, low veins (< 1 mm), unequal to sparsely forking, without interstitial anastomosing veins, not well delimited from the sterile stipe surface, off-white. **Context** thin, fibrous, distinctly staining pinkish red (6A3-4) when cut. **Smell** agreeable, fruity. **Taste** mild. **Spore print** not obtained, but certainly very pale.

Spores ellipsoid to narrowly ellipsoid, (6.9)7.1-*7.39*-7.7(7.9) × (4.0)-4.1-*4.42*-4.7(5.0) µm, Q = (1.4)1.5-*1.68*-1.8(1.9), smooth. **Basidia** clavulate, 40-53 × 7-8 µm, (2-4)5-spored. **Cystidia** none, **Subhymenium** filamentous. **Pileipellis** a cutis-like structure with few free endings, hyphal terminations all thin-walled, mostly 5-10(15) µm diam., composed of subcylindrical to slightly inflated cells; the terminal cell obtuse rounded, rarely tapering, of variable length, but often short and rather voluminous and clavate to even ellipsoid, mostly 30-60 µm long. **Clamp connections** absent.

Examined material: Central African Republic. Dzanga-Sangha Forest Reserve, near Bayanga, in Bai-Hakou base camp, N 02.859934- E 16.467492, under monospecific upper story *Gilbertiodendron dewevrei* forest, on bare sandy soil, 21 May 2016, Buyck 16.086 (PC 0142441); ibid., Buyck 16.108 (PC 0142442, **epitypus hic designatus**).

Commentary: Our identification of the abovementioned collections is based on a comparison and evaluation of observed differences and similarities with the type specimens of the various species. The absence of clamp connections in our collections immediately excludes *C. tenuis*, which is unrelated to the other species (see introduction). Because of the very pale-coloured hymenophore of our collections, it is also possible to rapidly exclude *C. pseudofriesii*, which has also much smaller spores compared to the remaining two species. In contrast, the attribution of our collections to either *C. alboroseus* or *C. floridulus* appeared to be much more difficult, even though the identification key provided by Heinemann (1958) seems straightforward:

I. Gills crowded (20-25/cm), well differentiated; cap and stipe vermillon; spores 6.5-7.7 × 4.5-5.6 µm *C. floridula.*
II. Gills spaced (L + 1: ± 15 total), fold-like; cap and stipe reddish pink; spores 7-8 × 4.5-5.5 µm *C. alboroseus*

Among the used criteria in this key, the size of spores is of little use and, the first author having a longstanding experience with the genus worldwide, also the subtle differences in color seem insignificant considering the enormous differences observed in most other "small red chanterelles" (Buyck in Ariyawansa *et al.* 2015, Buyck *et al.* 2016 this issue corralinus). This leaves only features of the hymenophore: crowded and well-differentiated versus spaced and vein-like. However, even the hymenophore configuration in *Cantharellus* is very variable as again illustrated in Buyck *et al.* (2016 this issue c.antillanus + miniatescens).

Due to the pity state of the type specimens (already noted by Heinemann), anatomical characters can hardly be exploited to distinguish between both types.

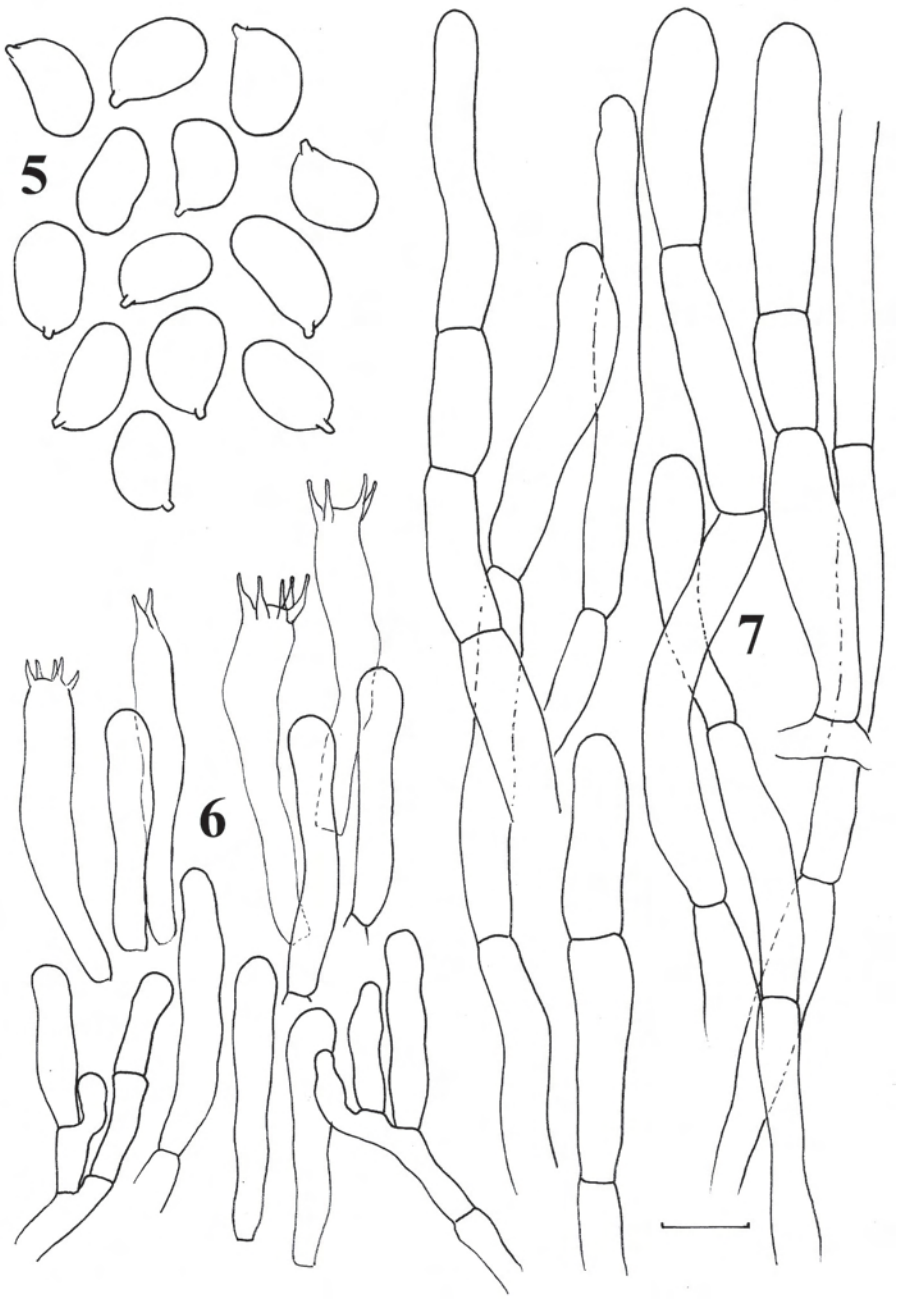
Table 2. Comparison of spore values and basidium size among the studied collections. Asterisk (*) indicating measurements from holotype fide Eyssartier (2001)

	Basidium size	*Spore length*	*Spore width*	*Length-width ratio*
C. alboroseus Holotype	53×9 40-50 (55)×8-10*	7-***7.69***-9*	4-***4.94***-5.5*	1.4-***1.56***-2.0*
C. alboroseus BB 16.108	40-53×7-8	(6.9)7.1-***7.39***-7.7(7.9)	(4.0)4.1-***4.42***-4.7(5.0)	(1.4)1.56-***1.68***-1.80(1.9)
C. alboroseus BB 16.086	40-55×7-8	(6.2)6.6-***6.93***-7.3	(3.5)3.9-***4.18***-4.4(4.6)	(1.5)1.57-***1.66***-1.75(1.9)
C. minutissimus Holotype	38-47×5-7	(6.0)6.2-***6.80***-7.4(8.1)	(3.5)3.9-**4.15**-4.4(4.6)	(1.36)1.48-**1.65**-1.82(1.95)
C. floridulus Holotype	35×10	6-***6.68***-7*	4-***4.85***-5.5*	1.2-***1.38***-1.55*
C. floridulus Eyi Ndong 2011	28-34×7-9	(5.7)5.6-***6.5***-7.3(8.1)	(3.4)3.5-***4.0***-4.5(4.7)	1.4-***1.61***-1.8(1.9)

Does the above implicate then that both names refer to a single species? Perhaps… but not certain, as there exists at least one other, probably more important microscopical difference between both type specimens as also suggested by the identification in Eyi Ndong *et al.* (2011): *C. floridulus* has distinctly shorter basidia (Table 2). Yet, Eyi Ndong *et al.* point out a relatively important difference in cap size between their collection, i.e. 10-15 mm diam. (exactly as in *C. alboroseus*) versus the 40 mm diam. mentioned for the cap diam. in the type description of *C. floridulus* and attribute this divergence to the fact that Mrs. Goossens-Fontana forgot to mention that she had applied an exceptional enlargement of the original size when representing the type specimen in her watercolor, an explanation that seems a bit farfetched as no enlargement was used by the same artist to represent other, equally small chanterelles.

Finally, there is one feature that definitely argues in favor of *C. alboroseus* as the correct name for our collections: the original description (Heinemann 1958) mentions a "reddish pink context". For such small species, the reddish color of cap and stipe automatically influences the color of the context immediately underneath (as observed in nearly all chanterelles) and we initially assumed that the very small size of this species was responsible for the mention of "reddish pink context" as nearly all context is situated in such small species is situated immediately beneath the surface. However, our collections now demonstrate a clear reddish pink staining of the entire context. Such a color change is unique among all known species in section *Heinemannianus* and therefore constitutes probably the best feature to characterize this tiny chanterelle. The fistulose aspect of the stipe was mentioned with a question mark in the original description (see above) and does indeed correspond to our specimens which clearly have a solid stipe in the epitype collection (Fig. 8), but show a near-fistulose stipe in the second collection obviously due to injuries caused by insect larvae (Fig. 10). It is in our opinion a second important difference with the other species originally placed in sect. *Tenues*.

The use of statistics on spore measurements reveals no important differences, although *C. alboroseus* appears to have slightly longer spores compared to *C. floridulus*. Spore measurements for the holotype conform very well to the original



Figs 5-7. *Cantharellus minutissimus* (holotypus). **5.** Spores. **6.** Basidia and basidiola. **7.** Terminal elements of the pileipellis. Scale bar = 10 µm but 5 µm for spores. (drawings B. Buyck).

Fig. 8. *Cantharellus alboroseus* (epitypus). Photo B. Buyck.

Fig. 9. *Cantharellus alboroseus* (epitypus). Showing progressive discoloring when drying out. Photo B. Buyck.

Fig. 10. *Cantharellus alboroseus.* (BB 16.086). Photo B. Buyck.

Fig. 11. *Cantharellus minutissimus* (holotypus).

description and also to the holotype measurements given by Eyssartier (2001), but are nearly identical to those for *C. minutissimus* (Table 2). The somewhat smaller spore size for our second collection (BB 16.086) is probably due to its more immature nature as we found only few mature spores.

There is, however, yet another aspect about these species that raises questions: both the first author's collections on specimens that resemble *C. floridulus* in size, as well as the collection illustrated by Eyi Ndong *et al.* (2011) for *C. floridulus* concern prolific fruitings, consisting of many fruiting bodies dispersed over a considerable surface of the soil, and belong to a species that is apparently not rare in the rain forest (the first author has seen hundreds of such fruitings in hardly two weeks of collecting). So why did Mrs Goossens-Fontana, who lived there for so many years, illustrate so few specimens and only made a single collection for these small species while she usually has several collections for other rain forest chanterelles? We will probably never have the answer to this question, but our collections for *C. alboroseus* suggest that this extremely small species is easily overlooked, particularly because it occurs mixed with these prolific fruitings and fruiting bodies could easily be mistaken for young, immature specimens of this larger species.

So, in conclusion, our collections from Central African Republic match the description of *C. alboroseus* in context color change, in size of fruiting bodies and basidia, in spacing and color of the hymenophore, but differ because of the slightly smaller spores (yet shorter than in *C. floridulus*) and the orange instead of reddish pink color of the fruiting bodies.

Our phylogenetic analyses (Fig. 1) now confirm the assumed placement of *C. alboroseus* in subg. *Rubrinus*, more precisely as sister-species to the Malagasy *C. ibityensis* Buyck & V. Hofstetter in sect. *Heinemannianus* Eyssart. & Buyck. Within this clade it is difficult to confuse it with the other already known species by the combination of its macro- and microscopic features – compare with species described in Buyck *et al.* 2013, 2015).

Cantharellus minutissimus Buyck & V. Hofstetter, **sp. nov.** **Figs 5-7, 11**

Mycobank: MB 818372

Diagnosis: Differs from the equally small C. alboroseus in the absence of reddening context and slightly smaller spores, but even more in obtained sequence data from TEF-1, LSU, RPB2 and mitSSU, placing it in a different section of the genus.

Etymology: The name refers to its extremely small size, even compared to other small chanterelles.

Holotypus: CAMEROON. Eastern region, Haut-Nyong Department, Somalomo Commune, Dja Biosphere Reserve, 641 m, N-3°19'53'' E 12°45'25'', in rainforest with *Uapaca* sp. on terra firma, 17 May 2014, legunt Annemieke Verbeken and Eske de Crop, EDC 14-281 (GENT, **holotypus**).

Pileus very small, less than 8 mm diam., triangular in lateral view, with an almost plane cap surface but slightly depressed in the center; surface pinkish red, smooth. **Stipe** very slender, 10-15 × 2mm, subcylindrical, concolorous or slightly paler than the cap surface, pinkish, fistulose. **Hymenophore** strongly decurrent, composed of surprisingly well-developed gill folds considering its small size, white. **Context** extremely thin, almost inexistent, white. **Taste** and **smell** not observed. **Spore print** certainly very pale (white?).

Spores narrowly ellipsoid, (6.0)6.2-*6.80*-7.4(8.1) × (3.5)3.9-*4.15*-4.4(4.6) µm, Q = (1.36)1.48-*1.65*-1.82(1.95), smooth, with a short, relatively wide apiculus. **Basidia** rather short, 38-47 × 5-7 µm, clavulate, (2-)4-5-spored; basidiola subcylindrical, not remarkable undulate nor wavy in outline. **Subhymenium** filamentous, with diam. of subhymenial cells equal to the basal part of the basidium. **Cystidia** none. **Pileipellis** composed of very loosely interwoven hyphae that are larger than these of the thin underlying context (mostly 2-4(5) µm thick) and subhymenium; hyphal extremities with frequent septa, thin-walled or walls refringent but never thick-walled, composed of subcylindrical cells, (5)6-9(12) µm diam.; the terminal cell obtuse rounded, of variable length, but mostly < 50 µm long. **Clamp connections** absent.

Commentary: Because of its extremely small size, this African *Cantharellus* can only be confused with the species described in sect. *Tenues* sensu Heinemann (1958). Because of the absence of clamps and the reddish pink color, the confusion can actually be narrowed down to either *C. floridulus* or *C. alboroseus*, but the specimen does not fit either description. It was a real surprise to find out that our phylogenetic analyses did not even place this species in the same section as *C. alboroseus* considering the obvious similarity of their microscopic features.

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