



NOTA

## *Gloeocantharellus corneri* (Gomphales, Basidiomycota) from the Brazilian Amazonia

*Gloeocantharellus corneri* (Gomphales, Basidiomycota) para la Amazonía brasileña

Felipe Wartchow<sup>1\*</sup> ; Victor R. M. Coimbra<sup>2</sup> ; Mariana A. C. Sá<sup>3</sup> 

<sup>1</sup> Universidade Federal da Paraíba, Departamento de Sistemática e Ecologia/CCEN, CEP: 58051-970, João Pessoa, PB, Brazil.

<sup>2</sup> Avenida 30 de Outubro, 695, Jardim São Paulo, 50790-130, Recife, PE, Brazil.

<sup>3</sup> Centro Universitário João Pessoa – UNIPÊ, Rodovia BR-230, km 22, s/n, Água Fria, 58053-000, João Pessoa, PB, Brazil.

\* Corresponding author: <fwartchow@yahoo.com.br>

### ABSTRACT

Recent collection of *Gloeocantharellus corneri* is discovered from Amazonia in the State of Pará, North Brazil. Description, discussion, drawings and photographs are provided.

**Palabras clave** — Agaricomycetes; Neotropic; Phallomycetidae; taxonomy.

### RESUMEN

Colecta reciente de *Gloeocantharellus corneri* es descubierta para la Amazonía del estado de Pará, Norte de Brasil. El trabajo provee una descripción, discusión, diseños y fotografías.

**Keywords** — Agaricomycetes; Neotrópico; Phallomycetidae; taxonomía.

### INTRODUCTION

*Gloeocantharellus* Singer was described as close to *Gomphus* Pers., with *G. purpurascens* (Hesler) Singer as type species (Singer, 1945). It was for long time considered

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a problematic genus (e.g., Corner, 1969; González-Ávila *et al.*, 2020, Ralaiveloarisoa *et al.*, 2021). *Linderomyces* Singer and *Gomphus* sect. *Gloeocantharellus* (Singer) R.H. Petersen are some generic/infrageneric interpretation of this group of fungi (Singer, 1947; Petersen, 1974), including the recent unpublished thesis by Linhares (2018), who proposed to synonym *Gloeocantharellus* with *Phyllobolites* Singer based on molecular data.

The discovery of *G. corneri* from the western region of the biome Amazonia (sensu IBGE, 2004, 2012) is highlighted here, corresponding to a new distributional record from North Brazil far from southern original records of this species in this country.

## MATERIAL AND METHODS

The “Floresta Nacional de Caxiaunã” (01°37'14”–02°15'01”S and 51°15'12”–51°56'02”W), located in the municipalities of Melgaço and Portel, in the State of Pará, has an area of about 200,000 ha (Montag *et al.*, 2008; ICMBio, 2012). The region is characterized as having variable phytofisionomies, as for example, dense forest, flooded forest (‘várzea’ and ‘igapó’), savanna, secondary vegetation, and residual vegetation in farmlands (Almeida *et al.*, 1993; Gama *et al.*, 2005; Silva & Rosário, 2008; Bezerra, 2009).

Microscopic observations of the hymenial elements were made after the wedge of tissue containing many lamellae was removed from pileus, and then a transversal section is performed; they were mounted in 3% KOH, Congo red solution and Melzer’s reagent (Largent *et al.*, 1977; Singer, 1986; Pereira & Putzke, 1989). Color codes follow ‘OAC’ (Online Auction Color, 2004). Presentation of basidiospores data follows the methodology proposed by Tulloss *et al.* (1992), slightly modified here: abbreviations include **L (W)** = average basidiospore length (width), **Q** = the length: width ratio range as determined from all measured basidiospores, and **Qm** = the Q value averaged from all basidiospores measured. Measurements and statistics are based on 30 spores. The specimen is deposited in the Herbarium JPB (Thiers, 2022).

## TAXONOMY

*Gloeocantharellus corneri* (Singer) Corner,

Nova Hedwigia 18: 799. 1969. Figs. 1-3.

≡ *Linderomyces corneri* Singer, Vellozia 1: 14. 1961.

**PILEUS** 55–71 mm diam., plane-convex, glabrous, dry, smooth, light yellow (KW 4A5), reddish yellow (KW 4A6), deep orange (KW 6A8), reddish orange (KW 7B8) to orange red (KW 8A8), margin irregularly undulate. **HYMENOPHORE** lamellate, decurrent, yellowish white (KW 4A2) to orange white (KW 5A2), subdistant, thin, lamellulae of three lengths, edge even. **STIPE** 55–87 × 9–16 mm, cylindric, central to eccentric, tapering downwards, partially rooting, yellowish white (KW 4A2) to reddish orange (KW 7B8) apically, becoming orange grey (KW 5B2) downwards, sometimes covered by brownish hairs, fibrous, hollow. **CONTEXT** yellowish white (KW 1A2), unchanging. **ODOR** fungal, weak. **TASTE** none, slightly peppery.



Fig. 1. *Gloeocantharellus corneri*. Basidiomes in situ. Bar = 10 mm.

Fig. 1. *Gloeocantharellus corneri*. Basidiomas in situ. Barra = 10 mm.

BASIDIOSPORES  $10\text{--}13 \times 5\text{--}6.5 \mu\text{m}$  ( $L = 11.6 \mu\text{m}$ ;  $W = 5.7 \mu\text{m}$ ;  $Q = (1.61\text{--}) 1.83\text{--}2.20$  ( $\text{--}2.40$ );  $Q_m = 2.04$ ], ellipsoid to amygdaliform, rugulose/verrucose, pale golden in KOH, cyanophilous, inamyloid, thick-walled; hilar appendix subapical. BASIDIA  $35\text{--}52$  ( $\text{--}57$ )  $\times 7.5\text{--}11.5 \mu\text{m}$ , clavate, hyaline, inamyloid, thin-walled, 4-sterigmata. PLEUROCYSTIDIA as GLOEOCYSTIDIA  $45\text{--}78$  ( $\text{--}93$ )  $\times 5.5\text{--}11 \mu\text{m}$ , mainly subfusiform, tortuous, with mostly tapered to subacute sometimes subobtuse apex, with yellowish refractive content in KOH, arising from lamellar trama, thin-walled, cyanophilous. CHEILOCYSTIDIA  $39\text{--}52 \times 8\text{--}9 \mu\text{m}$ , inconspicuous, rare, fusoid to distorted sublanceolate, hyaline, thin-walled. PILEIPELLIS a cutis made of interwoven hyphae of  $4\text{--}11 \mu\text{m}$  diam., hyaline in KOH, with reddish brown granular to vacuolar in Melzer's reagent, thin walled. LAMELLAR TRAMA sub-regular, made of loosely interwoven hyphae of  $3\text{--}6 \mu\text{m}$ , hyaline, thin-walled; gloeoporous hyphae abundant,  $4\text{--}9 \mu\text{m}$  diam., flexuous, with yellowish refractive content in KOH, cyanophilous, thin-walled. STIPTIPELLIS interwoven, with distorted cylindrical, clavate to ventricose elements with  $20\text{--}30$  ( $\text{--}48$ )  $\times 7.5\text{--}11.5 \mu\text{m}$ , inconspicuous, sometimes lobed or weakly diverticulate, hyaline, thin-walled. CAULOCYSTIDIA  $38\text{--}58$  ( $\text{--}80$ )  $\times 4.5\text{--}8 \mu\text{m}$ , narrowly clavate to lanceolate, with yellowish refractive content in KOH, cyanophilous, thin-walled. CLAMP CONNECTIONS abundant.

**Habitat.**— Growing in small groups on forest soil.

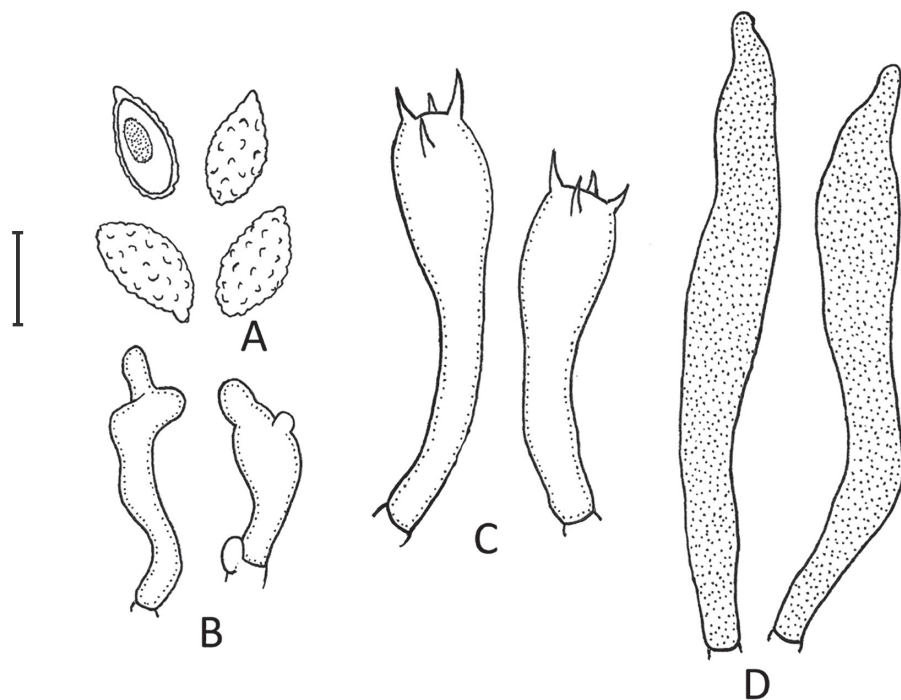


Fig. 2. *Gloeocantharellus corneri*. A) Basidiosporas. B) Cystidioid bodies of lamellae edge. C) Basidia. D) Gloeocystidium. Bar = 10  $\mu\text{m}$ .

Fig. 2. *Gloeocantharellus corneri*. A) Basidiosporas. B) Cuerpos cistidioides del margen de la laminilla. C) Basidios. D) Gleocistidios. Barra = 10  $\mu\text{m}$ .

**Material examined.**— BRAZIL. Pará, Portel/Melgaço, FLONA do Caxiuanã, 26-I-2014, V.R.M. Coimbra & A.M.S. Soares VCOC 132 (JPB63971).

**Notes.**— *Gloeocantharellus corneri* can be characterized by its pileus with orange tonalities, yellowish to pale orange/ochraceous lamellae, radicant stipe, basidiospores size, and gloeocystidia presenting tapering/subacute apex [Corner, 1969; Petersen, 1974 as *Linderomyces corneri*; Watling & de Meijer, 1997; Giachini, 2004; Linhares, 2018 as '*Phyllobolites corneri* (Singer) Linhares & M.A. Neves' nom. prov.].

*Phyllobolites miniatus* (Rick) Singer is somewhat similar. It was originally described as *Paxillus miniatus* Rick from South Brazil as a fungus with whitish pruina over a 'miniato' (Latin for 'red lead' color, Borror, 1966) pileus surface, sordid white decurrent lamellae, yellowish verrucose basidiospores  $7\text{--}10 \times 4\text{--}6 \mu\text{m}$ , and growing solitary on soil (Rick, 1906). Later, Singer (1981) elected a neotype basing in specimens discovered from Manaus (state of Amazonas) with red pileus, non-rooting white stipe with a fugacious annulus at very apex, basidiospores  $9\text{--}12 \times 5.7\text{--}6.3 \mu\text{m}$ , and versiform cystidia but often cylindrical to fusiform or subclavate usually obtusely rounded at the tip. More recently, Linhares (2018) studied the neotype and redescribed the microscopic features: she reported basidiospores similar in size to *G. corneri*  $(9.5\text{--}10\text{--}13.5\text{--}14) \times (4\text{--}4.5\text{--}6\text{--}6.5) \mu\text{m}$  ( $Q_m = 2.18$ ), but the gloeocystidia shape was confirmed as having mostly obtuse apex.

In the Neotropics, at least two additional species with similar basidiome characteristics are known: the Colombian *G. uitotanus* Vasco-Pal. & Franco-Mol. differs in

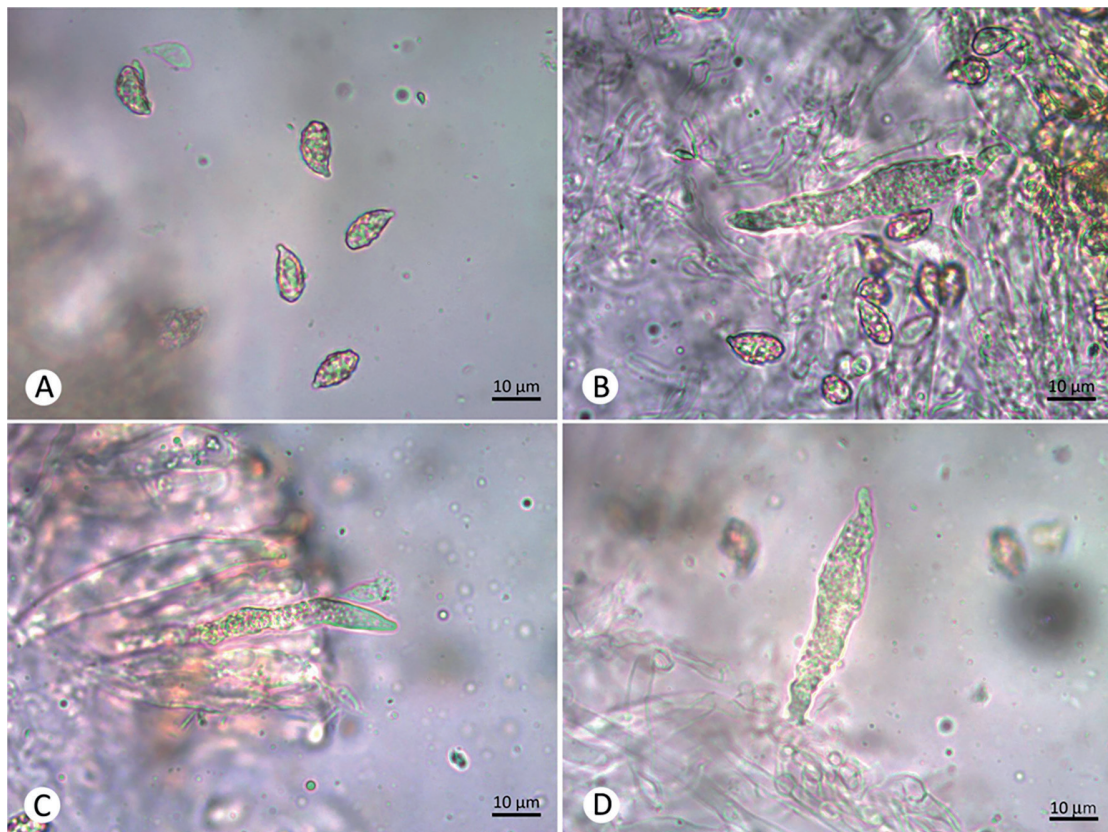


Fig. 3. *Gloeocantharellus corneri*. A) Basidiospores. B) Basidiospores and a gloeocystidium. C-D) Gloeocystidium.

Fig. 3. *Gloeocantharellus corneri*. A) Basidiosporas. B) Basidiosporas y un gloecistidio. C-D) Gleocistidios.

the reddish pileus, subdecurrent and anastomosing (near the stipe) lamellae, shorter basidiospores (8–)  $8.8\text{--}12 \times (4\text{--}) 4.8\text{--}6$  ( $-6.4$ )  $\mu\text{m}$  with average =  $9.5 \times 5 \mu\text{m}$  and  $Q_m = 1.89$  [ $8.5\text{--}10.5$  ( $-11$ )  $\times 4\text{--}6 \mu\text{m}$  ( $Q_m = 1.97$ ) according to Linhares, 2018), and cylindrical-elongated fusiform to lanceolate with tapered or obtuse apex gloeocystidia (Vasco-Palácios & Franco-Molano, 2005). Also, *G. aculeatus* Linhares, Daniëls & M.A. Neves from South Brazil is similar to *G. corneri* in the orange tints pileus, but differs in the smaller basidiospores ( $8.5\text{--}$ )  $9.0\text{--}10.5$  ( $-11.0$ )  $\times 5.0\text{--}6.0 \mu\text{m}$  ( $X = 9.43 \times 5.50 \mu\text{m}$ ) ( $Q = 1.73$ ) with prominent apically rounded aculei, and subventricose gloeocystidia bearing obtuse to subacute apex (Linhares *et al.*, 2016).

Although *Gloeocantharellus* is sometimes considered as ectomycorrhizal (ECM) genus (e.g., Comandini *et al.*, 2012; Sulzbacher *et al.*, 2013), no information regarding to trophic model of this collection was obtained. However, it is know that are in the region some ectotrophic type forests (sensu Singer & Araújo, 1979; Singer & Aguiar, 1986), as ‘igapó’ and ‘campinarana’ (Ferreira *et al.*, 2014; Garcia *et al.*, 2014; Carvalho *et al.*, 2021).

Known from Atlantic Forests (sensu IBGE, 2004, 2012) of the states of Rio de Janeiro (Corner, 1969) and Paraná (Watling & de Meijer, 1997), our study expands the geographic record of *G. corneri* to west Amazon in the state of Pará.

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