# Revision of the classification of the genus *Psilocybe* I. Section *Neocaledonicae*, a new section in *Psilocybe*

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**Revisión de la clasificación del género *Psilocybe* I. Sección *Neocaledonicae*, una nueva sección en *Psilocybe***

**Resumen**. La combinación de los caracteres de esporas subromboides con pared gruesa, presencia de crisocistidios, subpelis no celular y la ausencia de una pigmentación amarilla en el basidioma, se considera propia del género *Psilocybe* para proponer una nueva sección. De esta manera, la sección *Neocaledonicae* descrita por Guzmán en 1980 en *Hypholoma* (*Naematoloma*) se transfiere a *Psilocybe*. Especies pertenecientes a esta nueva sección son: *P. aequatoriae* de Ecuador, *P. naematoliformis* de México, *P. neocaledonicum* de Nueva Caledonia y *P. neorhombisporum*, nombre nuevo, de México, todas ellas tropicales y cerulescentes.

**Palabras clave**: crisocistidios, *Psilocybe*, subrhomboide, esporas de pared gruesa.

**Abstract**. The combination of subrhomboid, thick-walled spores, presence of chrysocystidia, non cellular subpellis, and absence of a yellow pigmentation on the basidioma are considered good features for a new section in the genus *Psilocybe*. In this way section Neocaledonicae described by Guzmán in 1980 in *Hypholoma* (*Naematoloma*) is moving to *Psilocybe*. Species belonging to this section are *P. aequatoriae* from Ecuador, P. *naematoliformis* from Mexico, *P. neocaledonicum* from New Caledonia and *P. neorhombisporum*, a new name, from Mexico, all of them tropical and blueing fungi.

**Key words**: **chrysocystidia,** *Psilocybe*, subrhomboid, thick-walled spores.

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## Introduction

Guzmán [1] first considered the genus *Psilocybe* with or without chrysocystidia and with cellular and non-cellular subpellis (= hypodermium), following Singer [6, 7]. In this way he described the tropical fungus *P. naematoliformis* Guzmán with chrysocystidia, subrhomboid, thick-walled spores and non-cellular subpellis. Later [2, 3, 4] excluded from *Psilocybe* all the species with chrysocystidia, among them those of section Chrysocystidiatae Singer as *P. chrysocystidiata* Singer [6] to consider them in *Hypholoma* (*Naematoloma*). Guzmán [2] described the section *Neocaledonicae* Guzmán with *Naematoloma neocaledonicum* (Guzmán & Horak) Guzmán and *N. naematoliformis* (Guzmán) Guzmán. The genus *Naematoloma* presents a yellow pigmentation in the basidioma, absent in *Psilocybe*, and non subrhomboid spores, following the concepts of Smith [10] and Singer [7, 8].

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Revising the author new tropical specimens with subrhomboid, thick-walled spores, chrysocystidia, non-cellular subpellis, and non yellow pigmentation in the basidioma, considered more suitable to take them in *Psilocybe* instaed in *Hypholoma*, as it will discuss in this paper.

## Materials and methods

The types and other specimens of *Psilocybe chrysocystidiata*, *P. neocaledonicum*, *P. naematoliformis* and *Naematoloma rhombisporum* were studied by the microscopy, with sections mounted in 5 % KOH solution.

## Results

***Psilocybe*, Sect. *Neocaledonicae* (Guzmán) Guzmán, comb. nov.**

= *Hypholoma*, Sect. *Neocaledonicae* Guzmán, *Mycotaxon 12*: 236, 1980.

Chrysocystidia present. Subpellis non-cellular. Spores subrhomboid in face view, subellipsoid in side-view, thick-walled, wall up to 1-1.5 µm thick. Basidioma without yellow pigmentation. Tropical and subtropical species. Type species: *P. neocaledonicum* Guzmán & Horak, *Sydowia* 31: 53, 1978.

As antecedent of this section, Guzmán and Horak [5] observed that the combination of non-cellular subpellis with the subrhomboid spores are distinctly features to separate *Psilocybe neocaledonicum* from *Naematoloma.*

Section *Neocaledonicae* differs from section *Chrysocystidiatae* by the spores, subellipsoid in both face- and side-view and thin-walled as observed in the type of *Psilocybe chrysocystidiata* Singer (Singer B-1747, BAFC) from Bolivia. The status of *P. chrysocystidiata* is however undetermined yet, because the type material is badly preserved; probably belongs to *Hypholoma.*

Species considered in section Neocaledonicae, besides the type are: ***P. aequatoriae*** Singer, *Nova Hedwigia 29*: 59, 1975, from Ecuador [*Naematoloma aequatoriae* (Singer) Guzmán, *Mycotaxon 12*: 237, 1980; *Hypholoma aequatoriae* (Singer) Guzmán, *Doc. Mycol. 29 (114)*: 65, 1999], ***P. naematoliformis*** Guzmán, Beih. *Sydowia 8*: 172, 1979, from Mexico [*Naematoloma naematoliformis* (Guzmán) Guzmán, *Mycotaxon 12*: 236, 1980; *Hypholoma naematoliformis* (Guzmán) Guzmán, *Doc. Mycol. 29 (114)*: 66, 1999], and ***P. neorhombispora*** Guzmán, new name, from Mexico [*Naematoloma rhombisporum* Guzmán, *Mycotaxon 12*, 237, 1980; *Hypholoma rhombisporum* (Guzmán) Guzmán, *Doc. Mycol. 29 (114)*: 66, 1999] [*Psilocybe rhombispora* (Britz.) Sacc., *P. rhomboidospora* (Atkinson) A.H. Smith ex Guzmán and *Stropharia rhombispora* Höhnel are independent species or names, according to Guzmán 3].

All species of section *Neocaledonicae* are tropical or subtropical and belong to the group of caerulescent fungi, and following the criterion of Guzmán [3], besides they present the stipe covered by white fibrils, and to have farinaceous flavor and odor, they have hallucinogenic properties.

It is probably that *Naematoloma campestre* A.L. Smith from deciduous forests of Michigan, U.S.A. [9, 10], is a member of the section *Neocaledonicae*, because Smith described subrhomboid spores. Smith [9] (fig. 43) wrote about this point: "The spores characters… are more like *Psilocybe*, but the pleurocystidia are typical of *Naematoloma*". A study of the type of this species will be made by the author in a near future.

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