

***Clitopilus chalybescens*, a new species from Thailand**

Timothy J. Baroni¹, Dennis E. Desjardin² and Nigel Hywel-Jones³

¹Department of Biological Sciences, State University of New York College at Cortland, P.O. Box 2000, Cortland, NY 13045, USA

²Department of Biology, San Francisco State University, 1600 Holloway Ave., San Francisco, CA 94132, USA; e-mail: ded@sfsu.edu

³National Center for Genetic Engineering and Biotechnology (BIOTEC), National Science and Technology Development Agency, 73/1 Rama VI Road, Rajdhevee, Bangkok 10400, Thailand

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Clitopilus chalybescens sp. nov. (*Entolomataceae*, Agaricales) is described and illustrated from material collected in Khao Yai National Park, Thailand, and comparisons with phenetically similar taxa are provided.

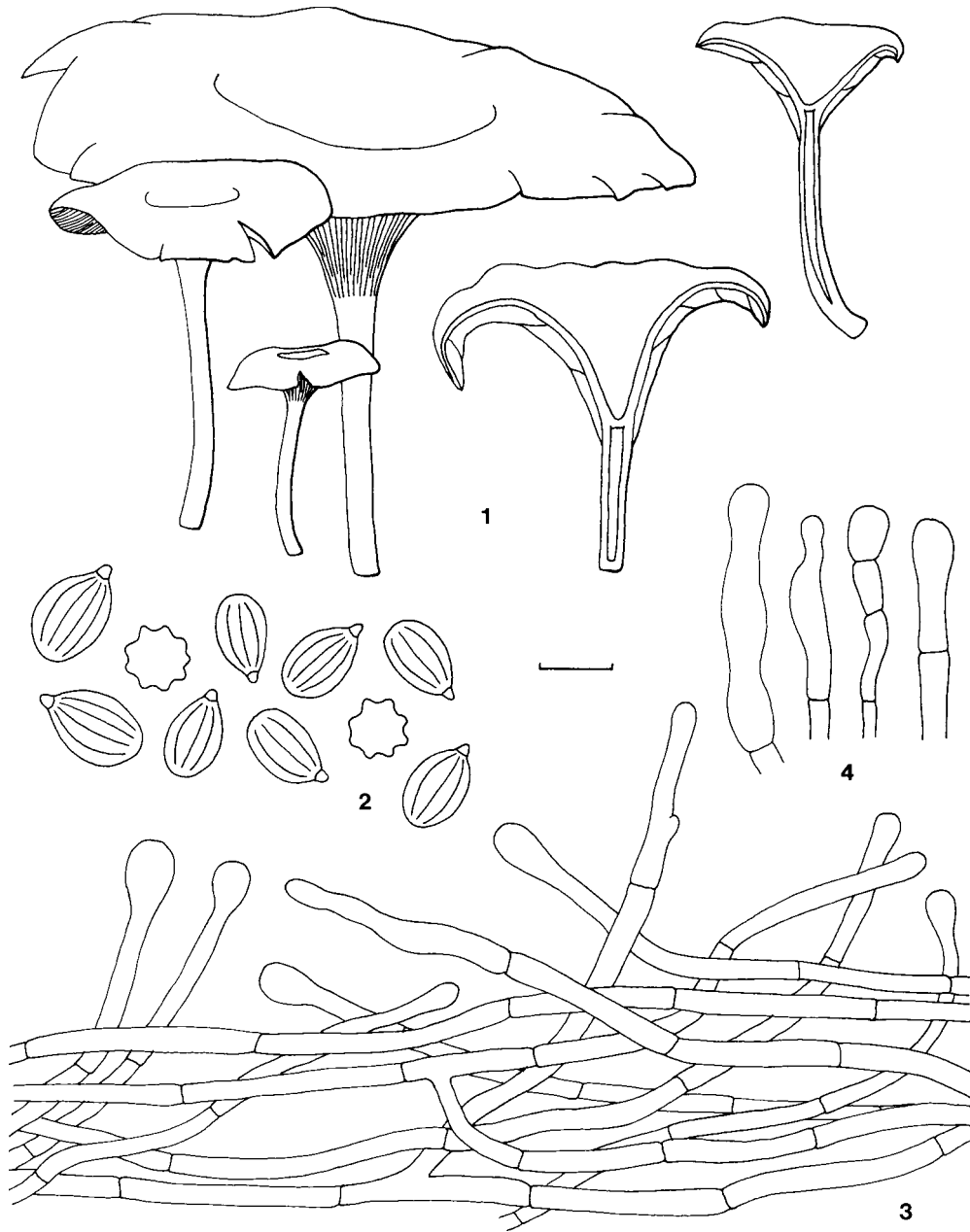
Key words: agarics, basidiomycetes, *Entolomataceae*, fungi, taxonomy.

Introduction

A recent collecting expedition by Desjardin to study the marasmioid fungi of Khao Yai National Park in Thailand yielded a number of interesting agaric species, including the new species of *Clitopilus* (*Entolomataceae*, Agaricales) described below. Colour terms and notations are from Kornerup and Wanscher (1978). Spore statistics include: \bar{x} , the arithmetic mean of the spore length by spore width (\pm SD) for n spores measured; Q, the quotient of spore length and spore width in any one spore, indicated as a range of variation in n spores measured; \bar{Q} , the mean of Q-values (\pm SD).

***Clitopilus chalybescens* T.J. Baroni and Desjardin, sp. nov.** (Figs. 1-5)

Pileus vivide albus, aetate pallide griseo-caesius tingens, usque 90 mm latus, infundibuliformis, siccus, opacus, sericeo-coactus. *Lamellae* albae dein croceo-cinerascentes (5B4), longe decurrentes, percongestae, valde angustae. *Stipes* vivide albus, aetate pallide griseo-caesius tingens, 20-50 mm longus, 2-4 (-8) mm latus, centralis, aequus, glaber, farctus vel mox excavatus. *Odor* atque sapor farinaceus. *Basidiosporae* 5.5-7.5 \times 3.6-4.8 μ m, Q = 1.5, ellipsoideae, longitudinaliter porcatae, in visu polari angulatae, 8-10-prismaticae; parietes regulariter cyanophili. *Basidia* 4-sterigmatophora, clavata. *Cystidia* hymenialia nulla. *Hyphae* pileipellis laxae intricatae, maximam partem repentes, non incrustatae, cylindratae, pilocystidiis adspersis vel aggregatis ascendentibus subcapitatis vel cylindratae praeditae. *Stipitipellis* ad apicem stratum e hyphis cylindricis repentibus compositum formans;



Figs. 1-4. Clitopilus chalybescens (from holotype). 1. Basidiomes. 2. Basidiospores. 3. Pileipellis hyphae with pileocystidia. 4. Caulocystidia. Bars: 1 = 10 mm; 2 = 5 μ m; 3, 4 = 10 μ m.

caulocystidia recta vel repentia 16-32 x 5-7 mm, multiformia, cellulis subcapitatis numerosis ornata. *Fibulae* nullae.

Pileus (Fig. 1) 15-45 (-90) mm diam. infundibuliform, nearly perforate in age; margin undulate to lobed, splitting with age; surface dull, dry, opaque, silky-felted; pure white, often staining pale greyish blue (21135-6) in age. *Lamellae* long decurrent, extremely crowded, very narrow (to 2 mm), white becoming greyish orange (5B4). *Stipe* 20-50 x 2-4 (-8) mm, central, equal, terete although somewhat wavy in outline, glabrous, dry, fragile, stuffed or becoming hollow, pure white, often with greyish blue stains in age as on the pileus. *Odour* and *taste* farinaceous. *Basidiospores* (Figs. 2, 5) $5.5-7.5 \times 3.64.8\mu\text{m}$ ($x = 6.2 \pm 0.4 \times 4.1 \text{f} 0.3\mu\text{m}$, $Q = 1.33-1.72$, $Q = 1.5 \text{f} 0.2$; $n = 40$), ellipsoid in profile and face views with obscure to moderately pronounced longitudinal ridges, angled in polar view with 8-10 facets between equal numbers of low but obvious longitudinal ridges, evenly cyanophilous, hyaline or pale melleous in mass. *Basidia* 17.8-21 x 6.4-8 μm , 4-sterigmate, clavate, sterigmata reaching 2.4-3.2 μm long. *Hymenial cystidia* absent. *Lamellar trama* of parallel or interwoven, hyaline, cylindrical hyphae 2.4-4 μm diam. *Pileus trama* of radially arranged, compact, hyaline or pale melleous, cylindrical hyphae 4-10 μm diam. *Pileipellis* (Fig. 3) a layer of loosely entangled, mostly repent, non-encrusted, hyaline, cylindrical hyphae 3-6 μm diam., with scattered or clustered, ascendant, subcapitate to slightly swollen or cylindrical pileocystidia (terminal cells), subcapitate portion of hyphal ends 610 μm diam., pileocystidia collapsed and not as obvious on older specimens. *Stipitipellis* at stipe apex a layer of repent, hyaline, cylindrical hyphae 3-6 μm diam., producing single or clustered, erect or repent *caulocystidia* (Fig. 4), 1632 x 5-7 μm , variously shaped but similar to end cells of pileipellis with many subcapitate cells present. *Clamp connections* absent in all tissues.

Habit, habitat, fruiting period and distribution: Gregarious in soil in primary forest. June. Thailand.

Material examined: THAILAND, Khao Yai National Park, Tad Tha Phu site, 25 June, 1999, collected by D.E. Desjardin and N. Hywel-Jones, DED 7019 (**holotype:** BIOTEC; **isotype,** SFSU).

Notes: *Clitopilus chalybescens* belongs in Sect. Scyphoides due to its central stipe and its short ellipsoid basidiospores with more than six longitudinal ridges (Singer, 1986). This new species is similar to a group of Old World taxa such as *C. orientalis* T.J. Baroni and Watling, *C. peri* (Berk. and Broome) Petch, *C. crispus* Pat. and *C. apalus* (Berk. and Broome) Petch (Baroni and Watling, 1999). However, *C. chalybescens* is clearly different



Fig. 5. SEM of basidiospores of *Clitopilus chalybescens* (from holotype). Bar = 5 μ m.

from all of these taxa. The distinguishing features of *C. chalybescens* are the greyish blue discolorations of the pileus and stipe with age, the production of subcapitate end cells in the pileipellis, and the relatively large basidiomata (some pileus diam. reaching 90 mm). Several other features also help distinguish *C. chalybescens* from the smaller, non-discolouring taxa listed above. *Clitopilus orientalis* is one of the larger members of this section with basidiomata producing pileus diam.s up to 40 mm; however, this taxon does not turn bluish when bruised, it produces scattered septate cheilocystidia, and the basidiospores have the highest Q-value of all members in this Section with a Q = 1.65 (holotype: E!). *Clitopilus apalus* var. *apalus* is readily separated from *C. chalybescens* by its nearly subglobose basidiospores (4.5-7 x 3-5.5 μ m), with a Q = 1.35 (range = 1.04-1.76), by forming septate versiform caulocystidia, and pileus diam.s that are generally less than 30 mm broad (holotype: K!). *Clitopilus apalus* var. *macrosporus* Baroni and Watling from Uganda can have pileus diam.s reaching to 70 mm, however this variety also produces the distinctive subglobose basidiospores (6-7 x 4.8-6.4 μ m; Q= 1.21) that are typical for the species (holotype: K!). *Clitopilus peri*, a smaller and more delicate taxon that is infundibuliform and snow white in colour, should not be confused with the larger bluing *C. chalybescens*. *Clitopilus peri* has pileus diam.s of 8-22 mm, it forms basidiospores with a slightly larger Q

value ($Q = 1.57$), and the pileipellis terminal cells are not subcapitate (holotype: K!). *Clitopilus crispus* clearly differs from *C. chalybescens* by its brownish colorations over the disc of the pileus, and by the margin of the pileus which is distinctly lacerate-cripsed (holotype: FH!).

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