

# MYCOTAXON

Vol. VI, No. 1, pp. 181-185

July-September 1977

## NEW TAXA OF CLITOCYBE

HOWARD E. BIGELOW

Department of Botany, University of Massachusetts, Amherst,  
Massachusetts 01003

In the study of specimens for a monograph of the genus *Clitocybe* in North America, a few species have been encountered which do not fit satisfactorily into the established infrageneric taxa of the genus. Thus it has become necessary to erect two new subgenera to accommodate the following new species.

*Clitocybe* subgenus *Mutabiles* Bigelow, subgenus novum

Pileus violaceo-brunneus ad vinaceo-brunneus, hygrophanus, pallescens. Lamellae violaceo-griseae ad violaceo-brunneae vel vinaceo-brunneae. Stipes concolores pileus vel lamellae. Sporae amyloideae, leves, in cumulo candidae. Hyphis fibulatae. Terricolae.

Typus: *Clitocybe mutabilis* Bigelow

*Clitocybe mutabilis* Bigelow, species novum

Pileus 1-3(-4.5) cm latus, primum convexus, margine incurvatus, demum planus, saepe striatus, depressus, glaber vel fibrillosus vel furfuraceus, hygrophanus vel subhygrophanus, vinaceo-brunneus, demum pallescens ut opacus. Odor et sapor nulles. Lamellae adnatae tum decurrentes, angustae vel moderate latae, plerumque subdistantes, arcuatae, primum lilacinae dein vinaceo-brunneae, pallescens et plus incarnatae in vetustate. Stipes 2-3(-5.5) cm longus, 2-6 mm crassus, farctus mox cavus, tenax, glaber tum fibrillosus ad furfuraceus vel pruinosis, cum lamellis concolor vel purpureo-griseus, brunnescens. Sporae (6.5-)7-9(-11) x 4-5.5(-6)  $\mu\text{m}$ , levis, plerumque amyloideis; hyphis fibulatis. Holotypus legit A. H. Smith, n. 64893, Boulder Lake, Valley Co., Idaho, 17 June 1962 (MICH).

Pileus 1-3(-4.5) cm broad, convex at first with the margin incurved, becoming plane, margin often striate, disc often shallowly depressed, in age the margin sometimes uplifted and the disc more deeply depressed, surface glabrous appearing when moist, fibrillose or sometimes furfuraceous when faded, hygrophanous, shades of brown to vinaceous brown or violaceous when moist, paler when faded or in age (dingy buff to alutaceous or "wood brown"<sup>1</sup> and then opaque); context thin, pliant, concolorous with pileus. Odor and taste not distinctive.

Lamellae broadly adnate at first, becoming short decurrent to long decurrent, narrow to moderately broad (up to 3.5 mm), usually subdistant, arched, forked and intervenose at times, violaceous young ("deep dull lavender"), then violaceous brown to vinaceous brown ("light brownish drab" to "vinaceous drab"), finally paler and more flesh tinged ("light vinaceous fawn"), sometimes darkening in age ("snuff brown").

Stipe 2-3(-5.5) cm long, 2-6 mm thick, equal or either end slightly enlarged, fluted and curved at times, tough, stuffed soon hollow, surface glabrous when moist, later fibrillose to scurfy or pruinose, upper portion concolorous with lamellae or darker ("purple drab," "dark purple drab") brown near base or overall in age, base sometimes with pale lilac mycelium and a few white rhizomorphs.

Spores (6.5-)7-9(-11) x 4-5.5(-6)  $\mu\text{m}$ , elliptic to broadly elliptic, sometimes obovate, smooth, amyloid, deposit white. Basidia 33-51 x 6-9  $\mu\text{m}$ , mostly 4-spored, sometimes 1- or 2-spored. Pileus surface subgelatinous appearing in KOH, brownish in KOH at first soon fading to dull vinaceous or brownish pink, finally yellowish, pigment in cell contents or at times very finely encrusted, cutis hyphae cylindrical, 1.5-5.5  $\mu\text{m}$  diam, end cells protruding at times; context hyphae cylindrical, 3-10  $\mu\text{m}$  diam. Hymenophoral trama of undulate-subparallel hyphae, mostly cylindrical, 2-7  $\mu\text{m}$  diam. Oleiferous hyphae occasionally present. Clamp connections present.

Scattered to gregarious. On soil and needles under conifers, occasionally in mountain meadows or at edges of snow banks. June and July, September and October.

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<sup>1</sup>Colors in quotation marks are from Ridgway (1912).

Material examined: Idaho: Bigelow 1950, 1953; Miller 5206, 5309; Smith 5481, 64893 (type), 64983, 65054, 65200, 69100, 71243. Oregon: Smith 18106, 28114. Utah: McKnight F1169. Washington: Bigelow 2086; Imshaug 214. Wyoming: Smith 34304, 34305, 34321, 34332, 34401, 34443, 34448, 34449 (all MICH).

Discussion: *Clitocybe mutabilis* is closely related to *C. cokeri* Hesler which also belongs to subgenus *Mutabiles*. Both species have very similar colors as well as amyloid spores and clamp connections. From *C. cokeri*, *C. mutabilis* differs by the lack of a farinaceous odor and taste. *Clitocybe mutabilis* is generally a smaller species and does not have a silvery white coating of fibrils on the stipe like *C. cokeri*. On present records of distribution, the two appear to be isolated geographically as *C. cokeri* is known only from Tennessee.

*Pseudoclitocybe bacillaris* (Pers.) Singer was compared because of its violaceous gills and amyloid spores, but, according to Singer's (1961) examination of the type, Persoon's species has no clamp connections, no encrusting pigments, possibly cheilocystidia, and a long slender stipe. These features are too diverse from *C. mutabilis* to make identity at all likely. *Clitocybe violaceifolia* Murrill was another possibility, but this has nonamyloid spores and was collected on wood.

*Clitocybe* subgenus *Lazulinae* Bigelow, subgenus novum

Pileus et stipes lazulinus. Lamellae cremeae, interdum marginatae. Pigmentum incrustatum. Sporae leves, inamyloideae. Hyphis fibulatis. Terricolae.

Typus: *Clitocybe lazulina* Bigelow

*Clitocybe lazulina* Bigelow, species novum

Pileus usque ad 7 cm latus, late convexus ad plus minusve flabellatus, fibrillosus vel ad centrum velutinum, lazulinus. Lamellae decurrentes, angustae vel sublatae, confertae vel confertissimae, cremeae, interdum lazulino-marginatae. Stipes usque ad 7.5 cm longus, 5-12 mm crassus, subclavatus, eccentricus, superficies sursum diffractus, deorsum fibrillosus, lazulinus. Sporae 6.5-8.5 x 5.5-6(-7)

$\mu\text{m}$ , ellipticae ad subglobosae, leves, inamyloideis. Hyphis fibulatis. Carpophoria subcaespitosa apparenter, in foliis putridis in sylvis praecipue quercines montibusque. Holotypus legit Ruth McVaugh (n. 700), 2 Nov 1960, prope Amacueca, Jalisco, Mexico (MICH).

Pileus up to 7 cm broad, convex with a broadly recurved margin to more or less flabelliform, radiate fibrillose on the margin and inward but disc with a few erect fibrillose points under a lens, grey blue (dried: margin "neutral gray" to "gray, n. 6"; darker grey blue inward, "slate gray," "slate color"), disc blackish blue (dried: "blackish slate"). Odor and taste not known.

Lamellae long decurrent, narrow to moderately broad, close to crowded, forked, not intervenose, probably cream color fresh but drying to "warm buff," edges dark blue marginate in places.

Stipe up to 7.5 cm long, apex to 5 mm thick, base sub-clavate and 12 mm thick, eccentric, surface diffracted scaly at apex, base matted fibrillose, grey blue (dried: "neutral gray" to "slate gray"), apparently solid or stuffed within although presently damaged by larval activity.

Spores 6.5-8.5 x 5.5-6(-7)  $\mu\text{m}$  (excluding apiculus), elliptic to broadly elliptic, sometimes subglobose, smooth, walls thickened at times, inamyloid, acyanophilous. Basidia 29-35 x 6-7.5  $\mu\text{m}$ , 4-spored, siderophilous granules absent, some basidia with rod-shaped incrustations at base, sterigmata up to 8  $\mu\text{m}$  long, somewhat ampullaceous. Cystidia absent. Pileus cutis blue in KOH and water, pigment as scattered granules and rods on surface of cutis hyphae when mounted in Melzer's, cotton blue or water. (In KOH the incrustations dissolve or disperse; walls then appear smooth and pale blue.) Cutis hyphae cylindric or slightly inflated, 6-12.5  $\mu\text{m}$  diam, protruding as groups of end cells in places; context hyaline to pale dingy yellowish in KOH, hyphae cylindric or inflated, 2.5-18  $\mu\text{m}$  diam, walls thin or thickened up to 1  $\mu\text{m}$ , smooth. Hymenophoral trama of undulate-subparallel hyphae, cylindric or slightly inflated, 3.5-14  $\mu\text{m}$  diam, walls thin or thickened, some lamellae with blue areas from incrustated pigment on base of basidia and short adjacent hyphae, subhymenium  $\pm$  dextrinoid. Oleiferous hyphae short, scattered in pileus context and hymenophoral trama.

Subcespitate in humus (presently, one clump of three basidiocarps and two single ones). Known only from the type collection.

Discussion: While it is usually not desirable to describe an agaric from dried specimens, the unusual color of this species seems to justify an exception. The only field notes by the collector are "beautiful grey blue, darker at center of cap top;" the other field characters of the basidiocarp have been determined by observations on the herbarium material. Undoubtedly the dimensions of the pileus and stipe would be larger in fresh specimens than stated in the description.

A search of the literature for a blue *Clitocybe* or *Pleurotus* has not revealed any species at all close to *C. lazulina*. The colors of *C. lazulina* recall *Nolanea* or *Entoloma* as do the marginate lamellae, but there was no indication of angularity or ornamentation to the spores.

#### ACKNOWLEDGMENTS

I am indebted to Dr. Ruth McVaugh, Dr. Alexander H. Smith, and Dr. Robert L. Shaffer, Director, University of Michigan Herbarium, for the opportunity of studying the specimens which provide the basis of this paper. Dr. Smith also kindly loaned me his notes on *Clitocybe mutabilis*. I would like to thank Dr. L. R. Hesler for his kindness in loaning me specimens of *Clitocybe cokeri*.

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