

# CLITOCYBE SPECIES FROM THE WESTERN UNITED STATES<sup>1</sup>

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(WITH 4 FIGURES)

The species of *Clitocybe* described herein were collected in many parts of the western United States in the course of collecting materials for a manual of the higher fleshy fungi of the region. The forested regions of the western part of the United States are covered mostly by conifer forests, and, since *Clitocybes* are abundant under conifers, the genus is exceptionally well represented throughout the region. The open forests of ponderosa pine and lodgepole pine are exceptionally favorable habitats during years that are warm and wet, although the heaviest fruiting often comes at the end of the fall season just a week or two before the first heavy snow. A second favorable fruiting period is during the spring and early summer as the snow melts.

The present contribution is the first of a series. The genus is a large one and it is evident to us that there are many endemic species in the area. The taxonomic problems are perplexing because for the most part the species lack contrasting features that can be effectively described.

For aid in the field work upon which this study is based, we are pleased to acknowledge financial aid from the Faculty Research Fund of the University of Michigan and from the National Science Foundation. No field program of consequence could be carried on in our western forests without help and advice from the men of the United States Forest Service. This has been freely given and has been of great value. We wish also to acknowledge the support received from the National Park Service. Our National Parks, besides functioning as recreation areas for the nation's vacationer, also function in a valuable scientific way by maintaining natural areas of sufficient extent to preserve a good segment of the flora and fauna inhabiting the whole area before the "Caucasian Invasion."

## ***Clitocybe albirhiza* Bigelow & Smith, sp. nov.**

FIG. 1.

Pileus 2.5–10 cm latitudine, primum convexus tum planus, nonnumquam depressus vel umbonatus, raro gibbus, demum infundibuliformis, ad marginem saepe

<sup>1</sup> Paper from the Department of Botany, University of Massachusetts, Amherst, Mass. and the University Herbarium and Department of Botany, no. 1140, the University of Michigan, Ann Arbor, Michigan.

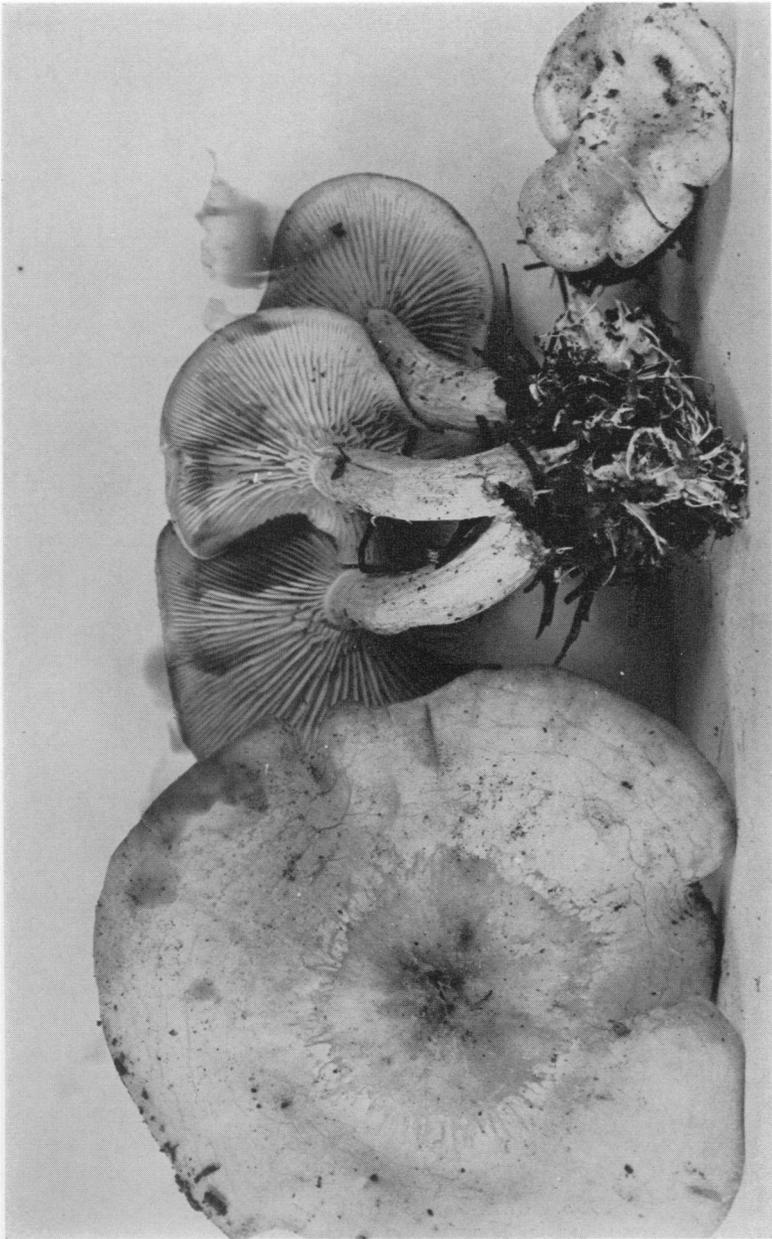


FIG. 1. *Clitocybe albivirgata* Bigelow & Smith. X 1.

undulatus vel incisus, glaber, raro rivulosus vel albido-canus, non hygrophanus, brunneus vel alutaceus; sapor ingratus; lamellae adnatae demum decurrentes, confertae, angustate vel latae, pallide alutaceae vel pileo concolor; stipes 3-8 cm longitudine, apicem 5-20 mm crassus, basi mycelio-rhizoideo, farctus dein cavus, glaber vel canescens, demum fibrilloso-striatus, pileo concolor; spores 4.5-6  $\times$  2.5-3.5  $\mu$ , in cumulo albae.

Typum legit H. E. Bigelow, n. 1650, Payette Lake, Valley Co., Idaho, June 27, 1954, in Herb. Univ. Mich. conservatum.

Pileus 2.5-10 cm broad, convex at first, expanding to plane with the disc flat to slightly umbonate or shallowly depressed, gibbous at times, margin broadly decurved to horizontal, finally infundibuliform with the margin elevated, often undulate or incised, surface not truly hygrophanous but sometimes appearing so when water-soaked, glabrous when wet, at times with areas of whitish canescence, sometimes rivulose, color when water-soaked: "cinnamon buff" to "clay color," color in dry weather: "pinkish buff," "light buff," "warm buff"; flesh thin except on the disc, firm, concolorous with the surface, odor slight, disagreeable, taste disagreeable and bitter.

Lamellae adnate to short-decurrent, close, narrow to rather broad (up to 9 mm), forked at times, often intervenose, faces of lamellae venose at times, color pale buff ("tilleul buff" to "pale pinkish buff") or concolorous with the pileus, edges even and undulate.

Stipe 3-8 cm long, 5-20 mm thick at apex, equal or tapering either way, base with dense mass of white rhizomorphs embedded in needles, stuffed becoming hollow, compressed or fluted at times, usually central, surface glabrous or canescent when wet, fibrillose-striate in dry weather, concolorous with pileus.

Spores 4.5-6  $\times$  2.5-3.5  $\mu$ , elliptical, smooth, not amyloid, white in mass; basidia 20-30  $\times$  3.5-5  $\mu$ , usually 2- or 4-spored, occasionally 1-spored, sterigmata sometimes germinated; cystidia not differentiated; pileus tissue: cuticular hyphae cylindrical, 2-4(-6)  $\mu$  in diam; trama thick, hyphae cylindrical to somewhat inflated, 2-9(-14)  $\mu$  in diam, clamp connections present; gill trama regular, hyphae mostly cylindrical, 3-6(-10)  $\mu$  in diam.

Scattered to gregarious or cespitose. Under spruce (usually Engelmann spruce), at times under larch and pine.

Material examined: IDAHO: Payette Lake, Valley Co., June 25, 1954, Bigelow 1617, 1618, 1619, 1620, June 26, 1954, Bigelow 1638, June 27, 1954, Bigelow 1650 (TYPE), June 30, 1954, Bigelow 1683, July 1, 1954, Bigelow 1702, 1703; Lake Fork Creek, Valley Co., June 28, 1954, Bigelow 1655, July 4, 1958, Smith 58548; Brundage Lookout, McCall, Valley Co., July 6, 1954, Bigelow 1735; Boulder Lake, McCall, Valley Co., July 6, 1958, Smith 58733; Hell's Canyon, Adams Co., July 23, 1954,

Bigelow 1803; WYOMING: French Creek, Medicine Bow Mts., June 22, 1950, Smith 34318; University of Wyoming Science Camp, Medicine Bow Mts., June 27, 1950, Smith 34367, 34368, June 29, 1950, Smith 34396; Mullen Creek, Medicine Bow Mts., June 30, 1950, Smith 34411; Headquarters Park, Medicine Bow Mts., July 3, 1950, W. G. Solheim 2834; Pole Mt., July 12, 1950, Smith 34752, July 22, 1950, Smith 35042; Haskins Creek, Sierra Madre Mts., July 13, 1950, Smith 34808; Lost Creek Area, Medicine Bow Mts., July 13, 1950, H. D. Thiers 79.

This species is quite abundant in certain localities from 5000 ft to 10,000 ft altitude in the Rocky Mountains. Frequently, *C. albirhiza* forms arcs or rings near the base of conifers, indicating possible mycorrhizal relationships. A fruiting has been found as late as July 23, but most collections were made in June or early July shortly after the disappearance of the snow cover.

The extensive rhizomorphic development at the base of stipe is characteristic of *Clitocybe albirhiza* and is very striking in the field. One is reminded somewhat of the *C. vermicularis* group by the rhizomorphs, but *C. albirhiza* is distinct from these species and appears to be undescribed in the literature. The relationships are not entirely clear, but probably *C. albirhiza* is more closely associated with sections *Candicantes* or *Disciformes* than with the *C. vermicularis* group of section *Infundibuliformes*. The colors of *C. albirhiza* and the canescent-rivulose surface of pileus when wet recall *C. rivulosa* of the *Candicantes*. However, the thickness of flesh and general stature are like that of several robust species in the *Disciformes*.

CLITOCYBE ALEXANDRI (Gillet) Konrad, Bull. Soc. Myc. Fr. **45**: 189. 1927. FIG. 2

*Lepista alexandri* Gillet, Les Hyménomycètes, p. 196. 1874.

*Paxillus alexandri* Fries, Hymenomyces Europaei, p. 401. 1874.

Pileus 5–10 cm broad, plane with the margin decurved at first, sometimes incurved, becoming horizontal, rarely costate, in age sometimes undulate or sinuate or elevated and arched, disc finally shallowly depressed, surface generally dry and unpolished, finely matted-fibrillose to canescent-appearing under a lens, occasionally with watery spots or areas, rivulose about the disc at times, color pale brownish, grayish, or grayish-brown (alutaceous, “avellaneous,” “vinaceous buff,” “wood brown”), cracks darker brown when present (“olive brown”); flesh thick, rather soft, whitish, odor and taste not distinctive.

Lamellae decurrent, often forming a collar on the stipe apex, close or more rarely subdistant, broad (7–10 mm), occasionally forked, not