

NEW MARASMIOID FUNGI FROM CALIFORNIA¹

DENNIS E. DESJARDIN²

*Department of Biological Sciences, San Francisco State University,
San Francisco, California 94132*

ABSTRACT

Three new species of marasmioid fungi from California are described, illustrated, and compared with related taxa: *Micromphale sequoiae* (Section *Perforantia*), *Micromphale arbuticola* (Section *Micromphale*) and *Marasmius applanatipes* (Section *Chordales*).

Key Words: taxonomy, *Marasmius*, *Micromphale*, California.

Three new species of agarics have been discovered during the course of preparing a taxonomic report on the Marasmieae and Collybieae (*sensu* Singer, 1975) from California. Two new species of *Micromphale*, both possessing an alliaceous taste, grow on substrates unusual for the genus. *Micromphale sequoiae*, similar to *M. perforans* (Hofm.:Fr.) Sing., is restricted to leaves of *Sequoia sempervirens* (D. Don) Endl., while *Micromphale arbuticola*, which resembles *M. foetidum* (Sow.:Fr.) Sing., is restricted to the scale bark of *Arbutus menziesii* Pursh. A third taxon with an alliaceous taste, herein described as *Marasmius applanatipes*, is similar to *Marasmius epidryas* Kühn., but *M. epidryas* lacks the alliaceous taste and grows on living *Dryas* species, rather than on duff of coniferous species. Other important macroscopic and microscopic differences between the new taxa and closely related ones are reported in the discussions following the descriptions.

All macroscopic descriptions are taken from characteristics of fresh material. Color terms and notations are those of Kornerup and Wanscher (1978). Microscopic descriptions are derived from features of dried material reconstituted in 95% ethanol followed by distilled water. Separate microscopic examinations were made in distilled water, Melzer's reagent, 3% KOH, and 3% KOH plus Phloxine. Hyphal colors are given as they appear in distilled water.

Micromphale sequoiae Desjardin, sp. nov.

FIGS. 1, 3–5

Pileus 6–12 mm latus, e convexo plano-convexus, ruguloso-striatus, glaber, hygrophanus, primo pallido-brunneus, in aetate disco immutabilis, margine griseolo-aurantius. Odor mitis, sapor mitis demum alliaceus. Lamellae adnatae, confertae vel subdistantes, angustae, griseolo-aurantiae. Stipes 20–43 mm longus, 0.75–1.5 mm crassus, teres, aequalis, insititius, pruniosus vel pubescens, apice griseolo-aurantius, base atrobrunneus; rhizomorphae paucae et subevoluae. Sporae 6.5–7.5 × 3–3.7 μm, ellipsoideae, laeves, inamyloideae, in cumulo albae. Cheilocystidia 27–33 × 4.8–6.6 μm, ventricosa, apicibus acutis praedita; pleurocystidia simularia. Caulocystidia versiformia, 21–110 × 6–12 μm, clavata, cylindrica vel strangulata, glabra, brunnea. Trama pilei laxae intertextae, non gelatinosa. Epicutis pilei ex hyphis intertextis, gelatinosis composita. In foliis *Sequoiae sempervirentis*. Holotypus: D. E. Desjardin 1740, Jackson State Forest, Mendocino Co., Calif., 13 Nov. 1982. (SFSU)

Pileus 6–12 mm broad, when young, convex to campanulate, often with a short, acute umbo, in age becoming broadly convex to plano-convex with or without a central papilla, occasionally plane with a shallow central depression; margin when young decurved or slightly incurved, even, entire, in age becoming straight, wavy, crenate, rugulose-striate to rugulose-sulcate $\frac{3}{4}$ of the distance to the disc; surface dry to moist, dull, glabrous, hygrophanous; at first light brown (7D4-5) overall, rarely with disc reddish brown (8E5-7), in age disc remaining light brown or fading to brownish orange (6C3-4), margin in age fading to brownish orange, greyish orange (6B2-3) or orange white (5A2), in age rarely colored buff

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² Present address: Department of Botany, University of Tennessee, Knoxville, TN 37996.

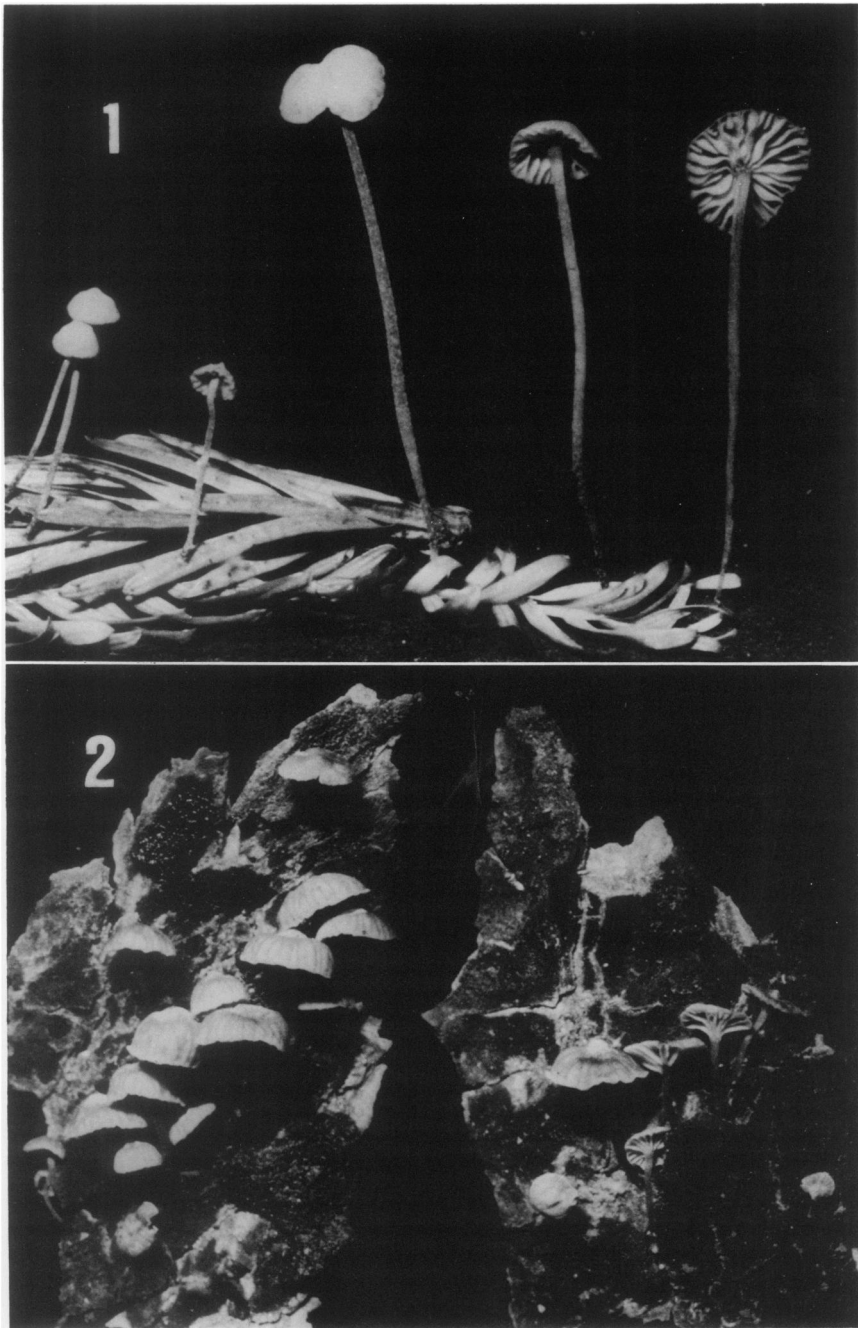
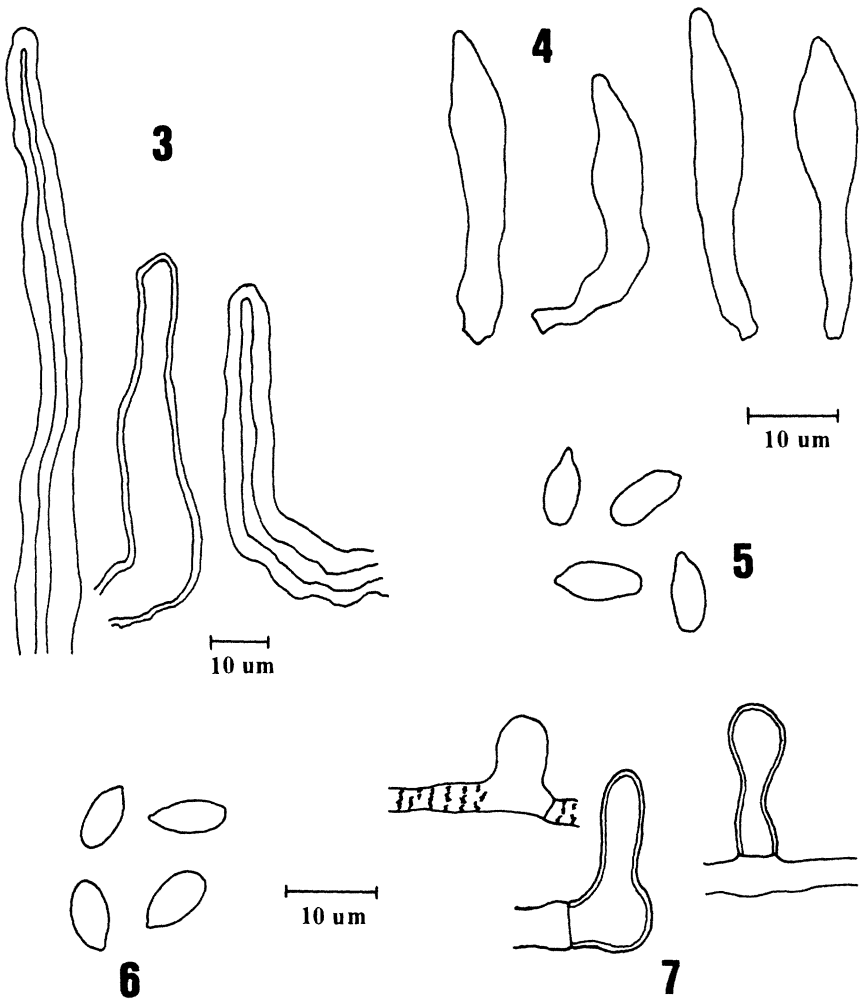


FIG. 1. *Micromphale sequoiae* (DED 2526), $\times 1.5$. FIG. 2. *Micromphale arbuticola* (DED 2643), $\times 1.5$.

overall with a slightly darker disc. Context light brown to brownish orange, soft, up to 1 mm thick. *Odor* mild or rarely slightly fetid when old and wet. *Taste* strongly alliaceous after 1–2 minutes. *Lamellae* adnate, free in age or rarely attached to a partial collar, close to subdistant, narrow to medium broad (up to 1



FIGS. 3–5. *Micromphale sequoiae* (DED 1740). 3. Caulocystidia (stipe hairs) from base of stipe. 4. Hymenial cystidia. 5. Basidiospores. FIGS. 6, 7. *Micromphale arbuticola* (DED 1839). 6. Basidiospores. 7. Caulocystidia.

mm), rarely anastomosing or intervenose; at first pale greyish orange (6B2), fading in age to pale orange white (5-6A2), typically concolorous with the pileus margin at maturity; edges even, entire, concolorous. Lamellulae in 1–2 series. Stipe 20–43 mm long, 0.75–1.5 mm broad, terete or rarely apically compressed and cleft, equal or tapered downward, hollow, cartilaginous, insititious, context concolorous with stipe surface; apex pruinose, pubescent below and often with a furfuraceous base; when young, apical portion pale greyish orange (6B2), central portion light brown (7D4-6), base dark brown (7F5-7), in age apex becoming pale brownish orange (7C3), central portion becoming brown (7E4-5), base becoming dark brown (7-8F4-8), or occasionally dark brown overall in age. *Rhizomorphs* short, thin, black, poorly developed, scattered; sterile stipes rare. *Basidiocarps* pliant, marcescent, reviving.

Spores 6.5–7.5 × 3–3.7 µm, ellipsoid to lacrymoid, hyaline, smooth, inamyloid, white in deposit. *Basidia* 25–29 × 6–7.2 µm, clavate, hyaline, two-spored and four-spored, with sterigmata up to 4.8 µm long. *Cheilocystidia* common, 27–

33 × 4.8–6.6 μm, ventricose to cylindrical with acute apices, occasionally mucronate or strangulate, hyaline and thin-walled, projecting up to 11 μm beyond the basidia. *Pleurocystidia* common, similar to the cheilocystidia. *Caulocystidia* from apex of stipe versiform, 21–48 × 6–12 μm, clavate, elongate, irregularly lobed or strangulate, smooth, with pale ochraceous walls up to 0.6 μm thick. Caulocystidia (stipe hairs) from base of stipe versiform, irregular in outline with obtuse apices, up to 110 μm long with brown, evenly pigmented walls up to 1.2 μm thick. *Pileus cuticle* up to 60 μm thick, composed of repent, interwoven, smooth hyphae up to 3.6 μm broad, with hyaline to ochraceous, inamyloid walls up to 0.5 μm thick, imbedded in a gelatinous matrix. *Pileus trama* composed of loosely interwoven, smooth, non-gelatinized hyphae 4.2–7.2 μm broad, with hyaline to pale yellowish, inamyloid walls up to 1.5 μm thick, with numerous interhyphal spaces. *Lamellar trama* interwoven, composed of smooth, thin-walled, hyaline, inamyloid, non-gelatinized hyphae 2.7–3.6 μm broad. *Stipe cortical layer* up to 60 μm thick, composed of parallel, thin-walled hyphae, wavy in outline, smooth or with scattered granular pigment incrustations, with hyaline to ochraceous, inamyloid walls. *Stipe trama* composed of parallel to subparallel, smooth hyphae up to 11.5 μm broad with hyaline, inamyloid walls up to 0.6 μm thick. *Clamp connections* present.

HABIT, HABITAT, AND DISTRIBUTION: Scattered to gregarious, insititious on stems and leaves of *Sequoia sempervirens*. Commonly associated with scattered mixed hardwoods. Oct.–Feb.

MATERIAL EXAMINED: U.S.A., CALIFORNIA, Mendocino Co.: D. E. Desjardin 480, 561, 1674, 1740 (HOLOTYPE: Jackson State Forest, 13 Nov. 1982), 1767, 1791, 2526, 2575, H. D. Thiers 8399, 8730, 35325 (all SFSU).

Micromphale sequoiae is characterized by the combination of a light brown to flesh-colored, rugulose pileus, concolorous subdistant lamellae, a mild odor, a latent garlic taste, and a greyish orange to brown pubescent stipe insititious on leaves of *Sequoia*. The lack of a *Rameales*-structure in the pileus cuticle and the presence of gelatinized cuticular hyphae, coupled with a pubescent stipe and poorly developed rhizomorphs are characters which place this taxon in *Micromphale* section *Perforantia* (*sensu* Singer, 1975). This new species is similar to *M. perforans* which has a pale pileus, a strongly fetid odor and a black, velutinous stipe that is insititious on leaves of *Picea* and *Abies*. *Micromphale sequoiae* differs by having a darker pileus, a mild odor and a paler and merely pubescent stipe. The type of caulocystidia at the base of the stipe provides a distinctive microscopic difference between these two taxa. In *M. perforans*, the stipe base is corticated by a dense layer of narrowly cylindrical caulocystidia that have dark brown walls and apices that often contain a heavy concentration of pigment. In contrast, *M. sequoiae* has scattered, broader, and paler brown caulocystidia that lack the apical concentration of pigment. Furthermore, the substrate preference of *M. sequoiae* for leaves of *Sequoia* is an important diagnostic character. *Micromphale sequoiae* has never been collected on leaves of *Picea* or *Abies* (the typical substrate for *M. perforans*), even in habitats where the three tree genera are sympatric.

Micromphale sequoiae might be confused with *Marasmius pallidocephalus* Gilliam or *M. androsaceus* (L.:Fr.) Fr. which have been collected occasionally on *Sequoia*, but these latter species possess black, glabrous, bristle-like stipes, copious, long, black rhizomorphs and have epicuticular layers composed of diverticulate, non-gelatinized hyphae. See Gilliam (1975, 1976) for complete descriptions of *Marasmius pallidocephalus* and *M. androsaceus*.

***Micromphale arbuticola* Desjardin, sp. nov.**

FIGS. 2, 6–7

Pileus 4–9 mm latus, e campanulato planus cum papillis centrabilis, ruguloso-sulcatus, disco glaber vel granulosus, primo atrobrunneus, in aetate disco pallido-brunneus, margine pallidior. Odor