

Abbreviations used in the taxonomic descriptions:—Abbreviations used to describe these fungi are as follows: P.T. = pileal trama, P.S. = pileal surface, L.S. = lamellar surface, S.T. = stipe trama, S.S. = stipe surface, L = length, D = diameter, L-D = length minus the diameter, and L/D = length divided by the diameter.

Measurements were made of ten different spores, basidia, or cystidia and did not include the apiculus of the basidiospores nor the sterigmata of the basidia. The range of the length minus the diameter (L-D) measurements is given from the smallest to the largest of the ten measurements. In all cases averages were obtained by dividing the total length or width of all measurements by ten. The colors enclosed in quotation marks are those of Ridgway (1912). All others are from Kornerup and Wanscher (1961). For example, (6, A, 2-3) indicates the page, row, and column, respectively.

The collections are deposited either in the cryptogamic herbaria of San Francisco State College (SFSC) or of Humboldt State College (HSC).

Nolanea (Fr.) Kummer emend. Largent & Benedict, Madrono 21: 36. 1971.

Species of *Nolanea* can be characterized by the following combination of features: "clamps absent or rare; pileal surface glabrous, dry or lubricous; pileal cuticle of repent hyphae; urea concentration high" (Largent and Benedict, 1971, p. 38-39). *Nolanea* species can be distinguished from some species of *Entoloma* by the pileal cuticle whose hyphae are well differentiated from those of the pileal trama, by the absence or rarity of clamp connections, the less fleshy carpophore, and more reliably by the high urea concentration. *Leptonia*, *Pouzaromyces*, and *Alboleptonia* all differ from *Nolanea* by virtue of the different structure of their pileal cuticle, and their low urea content.

1. *Nolanea* (Fr.) Kummer em. Largent & Benedict, Section *Holoconiotae* sect. nov. Superficies stipitis pruinosa apice. Hyphae cuticulae non incrustatae. Sporae ovata vel elongato-angulatae. Caulocystidia abunda, solitaria, cylindrica.

Typus: *Nolanea holoconiota* Largent & Thiers

Surface of the stipe pruinose for at least the apical half. Hyphae of the pileal cuticle without any external incrustations. Spores ovate- to elongate-angular, not stellate-angular nor prismatic. Caulocystidia abundant, solitary, long, cylindric, and originating from the middle of the surface hyphae of the stipe. Clamp connections absent on the cuticular hyphae of the pileus, present or absent at the bases of the basidia and basidioles or at the crosswalls of the hyphae of the basal tomentum.

Type species: *Nolanea holoconiota* Largent & Thiers.

a. *Nolanea holoconiota* sp. nov.

Pileus 10-80 mm latus, conicus vel convexus vel planus, glaber vel appresso-fibrillosus, sub-brunneus vel fulvus demum pallido-aurantiacus vel griseo-luteus. Lamellae annexae vel ascendenti-adnatae, confertae vel subdistantae, albae vel pallidae demum subroseae. Stipes 35-100 mm longus, 3-7 mm latus, apice pruinosis, glaber vel appressus subter, luteus vel sub-aurantiacus. Sporae 9-13 x 6.5-9 μ , elongato-angulate. Cheilocystidia rostrato-ventricosa, 50-100 x 8-15 μ . Pleurocystidia absentia.

Typum legit D. L. Largent, n. 274, Payette Lakes, Payette Nat'l Forest, June 16, 1962. In herbario Humboldt State College conservatum.

Pileus. 10-80 mm broad, 10 mm high, conic to convex becoming subconic to broadly conic or even plane, apiculate to acutely umbonate at all times; surface glabrous to silky appressed-fibrillose, rarely obscurely fibrillose-scaly on the margin, dry, hygrophanous, appearing atomate or micaceous on fading, at times obscurely wrinkled or corrugate; light brown or yellowish-brown (5-6, C-D, 4-6; "Olive Brown," "Buffy Brown," "Deep Olive Buff," or "Saccardo's Umber") at first, becoming pale orange to grayish orange to grayish yellow (4-5, A-B, 2-3; "Olive Buff," "Warm Buff," "Light Buff," "Cream Buff," "Colonial Buff," to near "Chamois" or "Honey Yellow"), apiculus often brighter than the remaining portion; margin incurved to decurved, at times flared, typically eroded and rimose with age, translucent-striate when moist; context 1-3 mm thick, almost white to "Pale Olive Buff," unchanging; taste unpleasant to slightly bitter, at times not distinctive; odor not distinctive. *Lamellae*: narrowly adnexed or ascending adnate, close to subdistant, at times distant, 3-5 mm broad, 9-15 mm long, white to pallid ("Deep Olive Buff") becoming pinkish ("Vinous Buff,") "Tilleul Buff," "Pinkish Buff," "Light Pinkish Cinnamon," "Wood Brown," to "Drab"); margin entire, concolorous. *Stipe*: 35-100 mm long, 3-7 (-15) mm broad at the apex; equal or tapering in either direction; terete to occasionally compressed and grooved; surface pruinose on the upper two-thirds to one-half, at times completely so, otherwise glabrous to appressed-fibrillose, longitudinally-striate; pale yellow to light yellow or pale orange to light orange (4-5, A-B, 2-3, "Pale Olive Buff," "Deep Olive Buff," "Olive Buff," "Warm Buff," "Pale Ochraceous Buff"); context stuffed then hollow, concolorous with the pileal context, unchanging when bruised; basal tomentum white and abundant.

Spores 9-13 x 6.5-9 μ , average length 10.9 μ , average width 7.8 μ , L/D 2.5-5.5 μ (average 3.1 μ), elongate-angular, 5-6 sided, asymmetrical. Basidia 30-43 x 11-14 μ , average length 36.9 μ , average width 12 μ , average L/D 3.0, clavate, four-spored. Cheilocystidia rostrate-ventricose, somewhat capitate at times, colorless, infrequent to abundant, more obvious near the pileal margin, 50-100 x 8-15 x 4-7 (apex) μ , average length 69.7 μ , average width 10.8 μ , average L/D 6.4. Pleurocystidia absent. Hyphae of the lamellar trama up to 35 μ wide. Pileal cuticle a loosely entangled trichodermium, often obscure, becoming repent away from the disc; terminal cells cylindrical to slightly clavate, colorless, 35-140 x 4-6 μ , average length 83.8 μ , average width 5.0 μ , average L/D 16.8. Cuticle at the apex of the stipe a loosely entangled trichodermium; caulocystidia cylindrical, rarely rostrate-ventricose, most often originating from the middle of the surface hyphae, solitary and abundant, 45-125 x 7-15 x 5-7 μ , average length 86.1 μ , average width 11.1 μ , average L/D 7.8. Stipe trama of more or less parallel hyphae (up to 35 μ wide). Lactifers rare to abundant in the pileal trama. Incrustations absent on all hyphae. Clamp connections absent.

Macrochemical Reactions: Pyrogallol—positive in all parts of the basidiocarp. Guaiac, Guaiacol, alpha-naphthol, PDAB, and Selenium Dioxide negative. Other reagents not studied.

Habit and Habitat: Solitary to scattered in mossy humus or needle humus beneath Douglas Fir, Mountain Hemlock, various Pines, or Western Red Cedar. Often at or above 3000 ft.

TYPE: IDAHO: Valley Co.: Scattered to gregarious in humus of dense mixed coniferous forest, 16 June 1962, *Largent* 274 (HOLOTYPE: HSC), Payette Lake, Payette National Forest.

Additional Material Studied: CALIFORNIA: Alpine Co.: *Thiers* 16575, 16740, 16864; Amador Co.: *Breckon* 418, 443, 459, 460, *Sundberg* 484, 485, *Thiers* 20008, 20026, 20038, 20073, 20077, 20086; Calaveras Co.: *Thiers* 16750, 16797; Fresno Co.: *Thiers* 19459; Mariposa Co.: *Thiers* 19709; Shasta Co.: *Thiers* 12716, 12766, 12832, 12884; Sierra Co.: *Thiers* 12588, 19517; Siskiyou Co.: *Thiers* 19577; Tuolumne Co.: *Thiers* 12652, 19492, 19815, 21012, 21018. IDAHO: Adams Co.: *Largent* 297, 321, 392; Custer Co.: *Largent* 547, 586; Valley Co.: *Largent* 289, 290, 314, 350, 403, 404, 416, 417, 454, 664. WASHINGTON: Island Co.: *Largent* 2627 2654, 2726; King Co.: *Largent* 1680, 1708, 1863; Pierce Co.: *Largent* 1364; San Juan Co.: *Largent* 2554; Snohomish Co.: *Largent* 1392, 1766.

Nolanea holoconiota can be recognized by its conic and apiculate, light brown to yellowish brown pileus, pale yellow to pale orange stipe that is pruinose on the apical one-half to two-thirds portion, the rostrate-ventricose cheilocystidia and the cylindrical caulocystidia that often originate from the middle of the surface hyphae.

Several rhodophylloid fungi that resemble *Nolanea holoconiota* in one or more points are listed below.

(1) *Entoloma luteum* Peck has four-sided spores, "Primuline yellow" lamellae, clavate cheilocystidia and clavate-cylindrical caulocystidia that are similar to the pileocystidia.

(2) *Nolanea myceniformis* Peck has cylindrical cheilocystidia (28-33 x 5.5-7 μ), no odor, an "avellaneous" pileus with a darker disc, and a cartilaginous stipe (40 mm long, 1-2 mm broad at the apex).

(3) *Entoloma pallidipes* Hesler has a "Pale Pinkish Buff" pileus, a cartilaginous stipe (30-50 mm long and 1-1.5 mm broad at the apex), and no caulocystidia.

(4) *Nolanea conica* Peck has smaller spores (8-11 x 6-7.5 (-8) μ), cylindro-clavate caulocystidia that do not originate from the middle of the hyphae and no cheilocystidia.

The photograph of *Entoloma strictius* var. *cystidiosum* Hesler (Hesler, 1967) appears similar to *Nolanea holoconiota*. However, *E. strictius* var. *cystidiosum* differs by having a "Snuff Brown" pileus when moist, a white to pallid to dingy brownish stipe, and no caulocystidia.

We feel the distinct caulocystidia and the nature of the stipe surface are sufficient to warrant proposing a new section, *Holoconiotae*, for *Nolanea* with *Nolanea holoconiota* as the type species.

2. *Nolanea* (Fr.) Kummer em Largent & Benedict, Section *Cosmeoexonema* sect nov.

Sporae elongatae vel ovatae, angulatae, pentagonae vel hexagonae. Hyphae cuticulae incrustatae.

Typus: *Nolanea sericea* (Bull. ex Mérat) Orton.

Spores elongate- or ovate-angular (4-) 5-6 sided, not stellate-angular nor prismatic. Hyphae of the pileal trama or pileal cuticle with external incrustations.

Type species: *Nolanea sericea* (Bull. ex Mérat) Orton.

a. *Nolanea bicoloripes* sp. nov.

Pileus 10-35 mm latus, umbonatus vel apiculatus vel papillatus, e fibrilloso glaber, subaurantiacus demum brunneus vel fulvus. Lamellae annexae vel adnatae, confertae vel subdistantes, albae demum subroseae. Stipes 35-95 mm longus, 0.5-3.5 mm latus, subtiliter squamulosus apice, glaber subter, subaurantiacus demum brunneus. Sporae 7-8 x 5.5-7 μ , ovatae, angulatae. Cystidia absentia.

Typum legit D. L. Largent, n. 1574, Snohomish Co., Washington, Sept. 14, 1966; in herbario Humboldt State College conservatum.

Pileus: 10-35 (-40) mm broad, 5-20 mm high, versiform in shape, acutely umbonate or apiculate or papillate, the umbo often lost with age; at first covered by abundant superficial fibrils, often glabrous with age, fades readily, at times zonate; at first pale orange or orange-white to orange-gray or grayish orange (5-6, A-B, 2-4), then darkening to light-brown to dark yellowish brown (5-6, D-E, 2-5), the umbo often lighter; margin incurved then decurved,