

Cortinarius albidolilacinus Ammirati, Bojantchev, Beug, Liimat., Niskanen and Garnica, sp.nov.**IF551203**

Pileus 37-77 mm diam, hemispheric to obtuse becoming plane or uplifted, margin incurved to decurved becoming irregular expanded, edge enrolled, surface faintly streaked on margin, dry to viscid, with some white mycelium patches centrally, color a mixture of white, whitish lilac, pale lilac, pale pinkish lilac or sometimes lavender to deep lavender, especially if remaining covered by leaves or not exposed, on exposed areas often developing buff, brownish to ochraceous tawny colors. Lamellae adnexed, narrow to moderately broad, crowded, moderately thin, edges uneven, at first pale- to light lavender or lilac, gradually brownish, sometimes retaining lavender tones. Stipe 50-63 mm long, 13-20 mm thick above, base up to 35 mm thick, variable in shape, with poorly formed slightly marginate bulb or more distinctly marginate bulb with a rim, base short, basal mycelium white to ochraceous, surface shiny, white to pale lilac, apex white or very faintly blue, rim of bulb with white to pale lilac or pale lavender veil tissue in places, basal mycelium white to discolored ochraceous. Context white to dingy pale yellowish white in pileus and stipe base, remainder of stipe mostly white with lavender, pale lilac or gray lilac in cortex above, broken areas of context discolored yellowish. Odor and taste mild. Reaction with 40 % KOH on pileus surface bright ochraceous, brownish, or slightly pinkish or slightly reddish then brownish, on pileus and stipe context yellowish to ochraceous, sometimes slightly pinkish in stipe base, negative or slightly yellowish on basal mycelium, on lilac veil on bulb rim pinkish (veil material on the pileus surface may account for the occasional pinkish to reddish reaction there). Basidiospores 9.5-12 (12.5) x (5.5) 6-7.5 µm, moderately verrucose, amygdaloid to broadly amygdaloid, sometimes with smooth, extended apex. Basidia 4-spored. Pileipellis simplex; gelatinous surface layer well developed, composed of interwoven, cylindrical hyphae, 2.5-5.5 µm wide, colorless or with yellowish pigment, not encrusted; hyphae of epicutis ascending into gelatinous layer above, more radially arranged below, 3-14 µm wide, cylindrical to broadly cylindrical, colorless to yellowish, some with yellow pigment or granules, with some scattered yellow refractive pigment masses (yellow pigmented hyphae more common near pileus trama), not encrusted. Clamp connections present. Remarks: Distinguishing features include lilac to white colors of the basidiomata, the lilac to lavender colors of the pileus that fade quickly to pale lilac or white with exposure, the distinct lilac to lavender lamellae and yellow reaction of context with KOH. ITS sequence (GenBank KR674106, holotype) distinct from the other members of section Calochroi and deviating from *C. lilacinovelatus* Reumaux & Ramm (GenBank EU655668) in the ITS region by 12 substitutions and indel positions. Ecology and distribution: To date known from western North America, under *Quercus garryana*, Washington, USA. Additional specimens: USA. Washington, Klickitat County, Columbia Gorge: JFA13297 (WTU), GenBank no. KR674105, JFA13636 (WTU), GenBank no. KR674104, JFA13639 (WTU), GenBank no. KR674103, JFA13667 (WTU), GenBank no. KR674102 Etymology: The name refers to the white and lilac colors of the basidiomata.

Holotype USA, Washington, Klickitat County, Syncline Winery, under *Quercus garryana*, 22 Nov 2008, J. F. Ammirati 13292 (WTU), GenBank no. KR674106.

Cortinarius anetholens Ammirati, Garnica, Bojantchev, Beug, Liimat. & Niskanen, sp.nov.**IF551204**

Diagnosis: Pileus 52-80 mm, convex to plano-convex, with low umbo, margin incurved to decurved, edge enrolled, surface viscid to glutinous, with small brownish patches on disc and inner margin, margin yellow to pale olive yellow to grayish yellow, soon developing ochraceous tawny to orange-brown colors, around disc more brownish yellow, disc darker, dark orange-brown or tinted with yellowish brown. Lamellae adnexed, narrow, broadest towards base, thin to moderately thin, more or less crowded, dull pale lilac beneath pale brown tones, or pale- to light brownish to brownish olive, with some areas pale grayish green or olive buff (near pileus edge). Stipe 50-82 mm long, 13-19 mm thick above, base 24-38 mm thick, marginate bulbous, pale greenish yellow, yellowish or greenish white, mottled with grayish green or dull streaks (gray), discolored olive yellowish in places, viewed at an angle the cortex beneath the surface grayish (almost blue gray), margin of bulb yellow to ochraceous or watery greenish yellow to brownish, basal mycelium whitish to yellowish or ochraceous, discoloring brownish. Context to 8 mm on disc, solid and firm throughout, yellowish with gray streaks or pale yellowish green white mottled with olive yellow, yellowish to greenish yellow under pileus cuticle, watery gray olive over lamellae, white (faint purple hue in places) to whitish in pileus above stipe apex, in base yellowish to sordid yellowish buff. Odor of anise. Taste mild, fungoid or not distinctive. Reaction with 40 % KOH vinaceous on all places, but paler reaction in pileus context, strong elsewhere. Basidiospores 10.8-12.8 x 6-7.3 µm, amygdaloid to limoniform, very coarsely ornamented, apex more or less snout-like, smooth. Basidia 4-spored. Pileipellis simplex; gelatinous surface layer well developed, hyphae interwoven, cylindrical, 2.4-5.6 µm wide, slightly pinkish, yellowish to yellow-brown or colorless, some slightly encrusted; hyphae of epicutis interwoven and ascending adjacent to gelatinous layer, interwoven and radially arranged adjacent to pileus trama, cylindrical, 2.4-12.8 µm diam, pale vinaceous pink to colorless. Clamp connections present. Remarks: Distinguishing features include the ochraceous brown to orange brown colorations of mature pilei, strong vinaceous color reaction of basidiomata with KOH, and anise odor. ITS sequence (GenBank KR674108, holotype) distinct from the other members of section Laeticolores and deviating from *C. saxamontanus* Fogel (GenBank KF732421) in the ITS region by 20 substitutions and indel positions. Ecology and distribution: Known from California and Washington in western North America, under *Quercus garryana* or *Q. garryana* and *Pinus ponderosus*. Additional specimens: USA. Washington, Klickitat County, Columbia Gorge: JFA13298 (WTU), GenBank no. KR674107; California, Del Norte County, Gasquet, JFA11849 (WTU), GenBank no. EU057031, MM95/648 (IN). Etymology: The name refers to the anise odor.

Holotype USA, Washington, Klickitat County, Syncline Winery, under *Quercus garryana*, leg. J. Mantone, 20 Nov 2010, JFA13670 (WTU). GenBank no. KR674108.

Cortinarius aurescens Ammirati, Bojantchev, Garnica, Beug, Liimat. & Niskanen, sp.nov.

IF551205

Diagnosis: Pileus 3-13 cm diam, obtuse-convex to convex then plano-convex to irregular-convex, sometimes broadly umbonate, margin incurved to decurved, sometimes becoming uplifted, edge enrolled, surface dry or less commonly viscid to glutinous, surface often finely, innately rivulose with pale watery grey, olive, pale brownish, buff, yellowish or ochraceous streaks, basic color of margin whitish, grayish, faintly bluish to bluish or faintly dull lilac (these pale colors are not always so apparent), becoming yellowish in places, center pale to slightly ochraceous, with some patches of white mycelium. Lamellae adnexed with decurrent line, broad, irregular, moderately thick, close to subdistant, whitish or with slight pinkish reflection, pale lavender, pale grayish lavender, very pale gray lilac or grayish, becoming pale brown to brown, edges white. Stipe 38-113 mm long, 11-23 mm thick above, base 22-48 mm thick, clavate-bulbous to rounded with a slight rim or marginate bulbous, basal mycelium white, surface shiny, white, when young faintly bluish to slightly lavender above, developing yellowish to brownish yellow discoloration in age, veil white, membranous on rim or extending somewhat above the base, discoloring brownish. Context firm to hard, in pileus whitish to watery yellowish, in central stipe white, in cortex above bluish to slightly lavender to watery gray, in stipe base yellowish to ochraceous, developing yellowish colors in pileus with age or in stipe, flesh where broken or damaged becoming ochraceous-golden yellow. Odor pleasant, mild. Taste mild, fungoid. Reaction with 40 % KOH on pileus surface distinctly yellow, ochraceous yellow, orange ochraceous or brownish (sometimes the reaction is less distinctive or can be faintly pinkish to somewhat brownish), on context of pileus and stipe base always strongly ochraceous to yellow or orange ochraceous, on basal mycelium negative to slightly yellowish, sometimes reddish brown on rim of bulb. Basidiospores (9) 10 -11 x 5.5 - 6.5 (7) μm , ellipsoid to amygdaloid, moderately to coarsely verrucose. Basidia 4-spored. Pileipellis simplex; gelatinous surface layer moderately developed, hyphae interwoven, mostly radially arranged, cylindrical, 2.5 - 7 μm wide, some encrusted, colorless or containing yellowish pigment; hyphae of epicutis radially oriented, interwoven, 3.5 - 16 μm wide, cylindrical to somewhat broadly cylindrical, adjacent to pileus trama some shorter and broader, colorless or slightly yellowish, some slightly encrusted; with distinct yellow pigment layer beneath pileus epicutis (dried material in KOH). Clamp connections present. Remarks: Distinguishing features include the pale coloration of basidiomata, strong yellow to ochraceous discolorations and similar color reaction of the context with KOH, and yellow pigment layer beneath pileus epicutis (dried material in KOH). Cannot be clearly placed in a described section. ITS sequence (GenBank KR674110, holotype) differs by more than 23 substitutions and indel positions from the closest species *C. coerulescentium* Henry s. *Cortinarius* Flora Photographica (GenBank AY669515) (sect. *Caerulescentes*) and *C. patrickensis* (M.M. Moser) Niskanen, Liimat., Kytov., Bojantchev & Ammirati (GenBank KF732307) (sect. *Arguti*). Ecology and distribution: Known from western North America, under *Quercus garryana* or *Q. garryana* and *Pinus ponderosus*, Washington, USA. Additional specimens: USA. Washington, Klickitat County, Columbia Gorge: JFA13294 (WTU), GenBank no. KR674109, JFA13662 (WTU), GenBank no. KR674111. Etymology: The name refers to the yellow color change in age and where damaged.

Holotype USA, Washington, Klickitat County, Syncline Winery, under *Quercus garryana*, 22 Nov 2008, J. F. Ammirati 13295 (WTU), GenBank no. KR674110.

Cortinarius beugii Ammirati, Bojantchev, Liimat., Niskanen and Garnica, sp.nov.

IF551206

Pileus 70-76 mm diam, plano-convex to uplifted, edge enrolled, margin decurved to upturned, glutinous to viscid, color a mixture of yellow, tan and greenish shades, margin often light yellow, finely innately streaked, becoming brownish to pinkish brown, center brownish to slightly pinkish brown or grey vinaceous brown, granular or with small patches. Lamellae adnexed, crowded, rather narrow, edges uneven, thin, pale brown to light brown, all mature. Stipe 97-110 mm long, above 13-16 mm thick, clavate or with rounded bulb 20-26 mm thick, with slight rim or rounded without rim, basal mycelium whitish to yellowish, stipe above creamy yellow, pale yellow or light dingy sordid yellow, with dark brown veil fibrils mid-stipe, basal area with watery red discolorations. Context solid, firm, whitish to yellowish white or sordid yellowish to dingy pale yellow. Odor and taste mild to none, odor slightly of cut grass. Reaction with 40 % KOH on pileus surface blackish green, dark green, greenish yellow or grayish, grey on context of pileus and stipe base pale green to green, on basal mycelium blackish to greenish black. Basidiospores 11.8-14 x 6.7-7.4 μm , narrowly to broadly amygdaloid, moderately to very coarsely verrucose. Basidia 4-spored. Pileipellis simplex; gelatinous surface layer well defined, hyphae interwoven, $\hat{A}\pm$ cylindrical, 2.5-7.4 (10) μm wide, colorless or a few containing vinaceous brown, brown or gray brown pigment (KOH), thin-walled to thicker walled and encrusted; epicutis composed on interwoven to radially arranged cylindrical to enlarged hyphae 4.5-18.5 μm wide, colorless but more commonly containing vinaceous brown, brown or gray brown pigment (KOH), more commonly thicker walled and encrusted; in Melzer's Reagent the pileipellis hyphae have abundant encrusting materials (likely dissolved in KOH mounts). Clamp connections present. Remarks: Distinguishing features include the coloration of the basidiocarps, a mixture of yellow, greenish and brown colors, green color change of fresh basidiomata with KOH, and large spores. Cannot be clearly placed in a described section. Closest to *C. pseudocephalix* Bidaud & Moenne-Loec. (Sect. *Elastici*) but over 30 differences with and *C. patrickensis* (M.M. Moser) Niskanen, Liimat., Kytov., Bojantchev & Ammirati (Sect. *Arguti* (Brandrud & Melot) Liimat., Ammirati, Niskanen, Dima & C. Cripps, in press). Ecology and distribution: Known from western North America, under *Quercus garryana* and *Pinus ponderosus*, or in oak woodland, Washington, USA. Additional specimen: USA. Washington, Klickitat County, Columbia Gorge: 04MWB11510 (WTU), GenBank no. KR674113. Etymology: It is named for Michael W. Beug.

Holotype USA, Washington, Klickitat County, Beug Farm, under mixture of *Quercus*, *Pseudotsuga* and *Salix*, 20 Nov 2010, JFA13675 (WTU), GenBank no. KR674112.