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Crepidotus Notebook 4

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CREPIDOTUS

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Pleurotoid Genera with Colored Spores

A Key

1. Spores print pink or pinkish----------2

1. Spore print not as above----------4

2. Spores angular----------RHODOPHYLLUS (CLAUDOPUS)

2. Spores not angular----------3

3. Spores longitudinally ridged----------CLITOPILUS

3. Spores not so; allantoid----------PHYLLOTOPSIS (4)

4. Spores purple-fuscous to lilac; small, slightly lentiform, with an apical germ pore----------MELANOTUS (141)

4. Spores dark rusty brown, verrucose----------PYRRHOGLOSSUM (158)

4. Spores ~~of~~ paler ~~colors (buff~~, brown to buff or raw umber~~)~~----------5

5. Spores deep rusty-cinnamon brown, and double-walled; veil usually present----------PLEUROFLAMMULA (145)

5. Not as above----------6

6. Spores near spruce-yellow to Inca gold; habit marasmioid----------PHAEOMARASMIUS (152)

6. Spores and habit otherwise----------7

7. Spores cream buff and chamois, or even more toward pinkish----------PLEUROTELLUS (163)

7. Spores clay color to brown or umber----------8

8. Spores raw-umber; veil present----------SIMOCYBE (150)

8. Spores clay-color to yellowish-clay; veil none-CREPIDOTUS (162)

CREPIDOTUS APPLANATUS (Fr.) Kummer sensu Josserand

Key to Taxons in the Applanatus-Complex

1. Pilocystidia none, more or less erect hyphae present on the pileus surface----------Sm-26479 & 57941 (and Tenn. collections)

1. Pilocystidia present----------2

2. Pilocystidia up to 80-90 μ long----------3

2. Pilocystidia shorter (up to 40-60 μ long)----------4

3. Pilocystidia forming a turf----------Sm-41123

3. Pilocystidia scattered to gregarious, not forming a turf----------Sm-54544

4. Cheilocystidia up to 60 μ long, irregularly shaped, apices often truncate----------Sm-13588

4. Cheilocystidia up to 45-50 μ long, clavate to ventricose, apices obtuse or rounded----------C. applanatus var. applanatus sensu Joss. (sensu Joss., Sm-16172, 33679, 53413, 54010)

THE NORTH AMERICAN SPECIES OF THE GENUS CREPIDOTUS

Alexander H. Smith & L. R. Hesler

Key to Subgenera

1. Clamp connections absent on hyphae of the epicuticular hyphae of the basidiocarp, the hyphae of gill trama, or at the base of basidium*----------Subg. CREPIDOTUS

1. Clamp connections present on the hyphae of pileus cutis, the gill tramal hyphae, or at base of the basidium----------2

   2. Spores globose to subglobose----------Subg. SPHAERULA

   2. Spores typically broadly ellipsoid to inequilateral as seen in profile--------Subg. CREPIDOTELLUS

*Clamps may be present on the hyphae of the basal tomentum in this group.

SUBGENUS CREPIDOTUS

Key to Sections

1. Spores distinctly ornamented; pileus with cinnabar red dissolved pigment in hyphae of cutis and hypoderm----------Sect. Cinnabarinae

1. Not as above----------2

2. Spores subfusoid in face view, thin-walled, "pinkish buff" in deposit----------Sect. Tubariopsis

2. Spores not as above----------3

3. Pileus structure duplex, a compactly interwoven basal layer less than half the diameter of the pileus trama and a loosely floccose upper layer-Sect. Stratosus

3. Not with above combination of features----------4

4. Spores globose and ornamented----------Sect. Parvulae

4. Spores typically longer than broad----------5

5. A gelatinous layer present in the pileus cutis of subcutis----------Sect. Crepidotus

5. No gelatinous layers present in or on pileus----------6

6. Pileus white----------Sect. Albidae

6. Pileus colored----------Sect. Bicolor

Section Cinnabarinae

Only one known species----------*cinnabarinus* Pk.

Section Tubariopsis

Only one known species----------C. subfusisporus sp. nov.
(Smith Nos. 51134 and 54060)

Section Stratosus

Only one known species----------C. stratosus sp. nov.
(Smith Nos. 50783 and 54909)

1. Gills narrow; spores globose, 4.5-5.5μ in diameter; ch. not found- - - - -H-20503

1. Gills broad; spore 7.5-10 x 4.5-5.5μ; ch. 40-55 x 2.5-7μ - - - - stratosus sp. nov. (Sm-50783 + 54909)

Section Parvulae*

Only one known species----------Sm-63521

Add: H-8969 which is identical or very close.

*Smith (in his notes) based this Section on C. parvulus. But this species has clamps and belongs in the subgenus Sphaerula. Thus, it is desirable to find a name other than Parvulae for this section.

Section Crepidotus

Key to Species

1. Epicuticular hyphae brownish and incrusted----------2
1. Epicuticular hyphae, if present, not incrusted----------7

2. Pleurocystidia present----------Sm-13455
2. Pleurocystidia absent----------3

3. Tramal cheilocystidia forked or branched---------calolepidoides
3. Tramal cheilocystidia (if any), not forked----------4

4. Pileus white or whitish when dry----------5
4. Pileus becoming (when wet) livid yellowish or ochraceous----------6

5. Spores 7-8.5 (9) x 4.5-5.5 µ; epicuticular hyphae strongly incrusted----------haerens
5. Spores 5.5-7 x 4.3-5 µ; the brown epicuticular hyphae faintly incrusted----------H-19232 subhaerens sp. nov.

6. Gills narrow; pileus [illegible] scattered----------mollis
6. Gills broad; pileus numerous, dense----------fulvotomentosus

7. Epicuticular hyphae none----------alabamensis
7. Epicuticular hyphae present----------8

8. Epicuticular hyphae of two kinds; colorless and brown; spores 7-8.5 x 4.5-5.5 µ; lamellae narrow; pileus margin even----------fraxinicola

8. Epicuticular hyphae colorless only; spores 6-7 x 4.5-6 µ; lamellae broad; pileus margin sulcate-striate----------sulcatus

Section Albidae

Key to Species

1. Spores rough----------2

1. Spores smooth----------3

2. Spores distinctly warty, dark-brown, 4.6-5.5 x 2.8-4 μ----------hepatizon (=Pyrrhoglossum hepatizon)

2. Spores punctate, yellowish-brown, (6) 8-10 x 4.5-5.5 μ----------versutus

2. Spores 4.7-5.9(7) x 4.2-5.7 μ strongly echinulate . . . . leucoabrupus

3. Spores 5 x 3.5 μ, unequally ellipsoid----------albidus

3. Spores larger----------4

4. Spores somewhat lanceolate or pipshaped, 6-8 x 3-4 μ, very pale or nearly colorless---------herbarum (=Pleurotellus herbarum)

4. Spores broader and of different shape----------5

5. Pileus margin sulcate to striate, at least when wet----------6

5. Pileus margin even----------7

6. Pileus striate when wet; stipe present, 4-8 x 2 mm.; with brownish pilocystidia----------tiliophilus (=Simocybe tiliophila)

6. Pileus sulcate-striate; stipe and pilocystidia none----------sulcatus

7. Pileus glabrous; cuticle a cutis, not sharply differentiated----------H-4249 (calolepis?)

7. Pileus and cuticle not as above----------8

8. Pileus villose; lamellae close; cheilocystidia 22-51 x 4-7 μ----------H-8083

8. Pileus minutely pubescent; lamellae subdistant; cheilocystidia 28-35 x 2-3 (apex) x 4-7 μ (base)---Sm-49598

Sectiom Bicolor

Key to Species

1. Pileus testaceous to latericious; stipe none; spores 7-8 x 5-6 μ----------bicolor

1. Pileus dingy-buff (dry); stipe present, 4-8 x 2 mm.; spores 5.5-7 x 4-4.5 μ----------tiliophilus [=Simocybe tiliophila]

SUBGENUS SPHAERULA

Key to Sections

1. Fruiting body with the aspect of a small stipitate Pleurotus ostreatus----------Section Nyssicolae

1. Fruiting body sessile, or with a pseudostipe, or an inconspicuous stipe (stipe lateral in C. stipitatus)----------Section Sphaerosporae

Subgenus SPHAERULA

Section Nyssicola

Key to Species

1. Spores distinctly echinulate; gills narrow and decurrent----------nyssicola

1. Spores faintly punctate; gills broad, broadest behind, narrowed in front----------stipitatus

Section Sphaerosporae

Key to Groups (Keys 1 & 2)

1. Pileus at first glabrous, or if pubescent or fibrillose, the fibrils white or more rarely yellowish----------Key 1

1. Pileus, at least when young, with colored fibrils which may form scales----------Key 2

Section Sphaerosporae

Key 1: Key to Species

(Pileus glabrous; or with white hairs)

1. Pleurocystidia present----------2
1. Pleurocystidia absent----------8

2. Pileus and gills white becoming rosy----------roseus
2. Pileus and gills otherwise colored----------3

3. Pleurocystidia containing dark refractive crystals----Sm-331003
3. Pleurocystidia not as above----------4

4. Lamellae salmon or dull orange; pileus bright orange-tawny----------subnidulans
4. Lamellae and pileus not colored as above----------5

5. Pileus 2.5-6 cm. broad, white, becoming alutaceous in age----------Deegan-81
5. Pileus smaller, color characters not as above----------6

6. Pileus with only colorless epicuticular hyphae-----parvulus
6. Pileus with both colorless and brown epicuticular hyphae----------7

7. Pileus epicutis with some brown, incrusted hyphae-------H-18679 H-12264 H-21441
7. Pileus epicuticular brown hyphae without incrustations----------Sm-32367

8. Pileus white, whitish, grayish-white, or pallid (irrespective of color of fibrils, if any)---------9
8. Pileus distinctly colored (brownish, buff, yellowish)----21

9. Spores 4-5 (5.5) μ in diameter----------10
9. Spores 5.5-7 (8) μ in diameter----------14

10. Lamellae at first pale yellow----------Sm-23940
10. Lamellae at first white or pallid----------11

11. Lamellae becoming yellow-ochraceous, broad, distant; pileus 1-4 mm. broad----------parvulus

11. Lamellae narrow or medium broad, not becoming yellow-ochraceous---12

12. Pilocystidia present and colorless--applanatus sensu Joss.

12. Pilocystidia absent (at times a trichodermium may be present)----------13

13. Pileus tomentose----------harperi

13. Pileus appearing glabrous----------Sm-26479 & Sm-57941

14. Pilocystidia present----------Sm-54010 & Sm-54544

14. Pilocystidia none (more or less erect hyphae may be present)----------15

15. Pileus glabrous----------16

15. Pileus villose or fibrillose----------18

16. Pileus hygrophanous, white, nearly fulvous on drying----------hygrophanus

16. Pileus not drying fulvous----------17

17. Pileus watery white or grayish-white; lamellae white when young, broad----------malachius

17. Pileus white with pallid spots and warm-buff tints; lamellae gray when young----------Beach-29

18. Odor and taste slightly nauseous, disagreeable-----Sm-9553

18. Odor and taste not distinctive----------19

19. Pileus surface bearing loosely tangled, thin-walled hyphae; spores finely punctate----------20

19. Pileus surface bearing thick-walled hyphae; spores conspicuously punctate-warty----------quitensis

20. Cheilocystidia cylindric-subcapitate----------latifolius

20. Cheilocystidia obclavate or flask-shaped, rarely fusoid or cylindric----------praelatifolius

21. Cheilocystidia none----------22

21. Cheilocystidia present----------23

22. Pileus watery-brown, glabrous, deeply sulcate------aquosus

22. Pileus dingy, tomentose----------putrigenus

23. Cheilocystidia up to 50 μ or more in length----------24

23. Cheilocystidia 40 μ or less in length----------27

24. Pileus buff or yellowish----------25

24. Pileus pallid or dingy----------26

25. Pilocystidia 30-60 x 8-12 μ, colorless; pileus tilleul buff to pale vinaceous-buff----------Sm-13558

25. Pilocystidia none (more or less erect hyphae present); pileus pale honey-yellow----------Sm-63513

26. Pileus pallid becoming dull brown----------Sm-41123

26. Pileus pallid, margin gradually staining pinkish buff to cinnamon buff----------Sm-53413

27. Pileus glabrous in front----------28

27. Pileus fibrillose or pubescent, at least at first----------29

28. Pileus yellowish to whitish, glabrous but often villose behind, the basal hyphae often incrusted----------nephrodes

28. Pileus brownish----------29

29. Cuticle of 3-5 layers of repent hyphae; pileus cuneate----------cuneiformis

29. Cuticle bearing a trichodermium behind----------H-14171

30. Pileus trama duplex: the lower zone compact, the upper very loosely organized; pilocystidia none----------Sm-16956

30. Pileus trama not as above; cuneate; pilocystidia similar to cheilocystidia (Sm-49609, H-17552)--~~cuneiformis~~ ?

Section Sphaerosporae

Key 2: Key to Species

(Pileus, at least when young, with colored fibrils which may form scales)

1. Colored fibrils on the pileus incrusted----------2
1. Colored fibrils not incrusted----------6
2. Pileus reddish-yellow; lamellae ~~broad~~ yellow------dorsalis
2. Pileus whitish or of other colors----------3
3. Lamellae orange, or with orange-tints----------4
3. Lamellae white then brownish----------5
4. Spores frequently flat-sided----------crocophyllus
4. Spores not flat-sided; taste bitterish----------Sm-18316
5. Cuticular hyphae brown and repent, few or none erect----------nephrodes
5. Cuticular hyphae brown, more or less erect and forming squamules----------H-12264 H-18679
6. Spores smooth; pileus bright orange-tawny, fibrillose----------H-21441 H-21451 subnidulans
6. Spores rough (punctate, echinulate)----------7
7. Lamellae broad ~~to very broad~~----------Sm-32369 ~~lapsifolius~~
7. Lamellae narrow to medium broad----------8
8. Cheilocystidia short (6.6-)16.5 μ; lamellae orange, becoming ochraceous-buff----------Beach-28
8. Cheilocystidia longer (25-40 μ)----------9
9. Lamellae "ochraceous-orange", becoming avellaneous; taste bitter----------Sm-18316
9. Lamellae whitish, becoming pale clay to brownish----------10
10. Spores 4.5-6 μ in diameter; basidia 22-27 x 5-7 μ----------fulvifibrillosus
10. Spores 6-7 μ in diameter; basidia 30-34 x 7-8 μ----------Potter 3087

= nephrodes

SUBGENUS CREPIDOTELLUS

Key to Sections

1. Pleurocystidia present----------Section Cystidiosi
1. Pleurocystidia absent----------2
    2. Pileus colored, or with colored fibrils over cap at least when young (pale yellowish species go in the next choice)----------Section Fulvidi
    2. Pileus white to pallid or finally yellowish----------3
3. Spores bean-shaped in side view----------Section Phaseoli
3. Spores distinctly inequilateral in side view-Section Fusisporae
3. Spores elliptic to slightly inequilateral in side view--------4
    4. Spores smooth under oil----------Section Betulae
    4. Spores appearing ornamented under oil----------5
5. Spores typically less than or up to 6 μ long----------Section Microsporae
5. Spores 6.5 or longer----------6
    6. Growing on wood of conifers----------Section Resinosae
    6. Growing on hardwood----------Section Crepidotellae

Section Cystidiosi

Key to Species

1. Spores elongate-drop-shaped in KOH; pleurocystidia mucronate and often with a highly refractive granulose content in KOH----------Sm-40178

1. Spores ellipsoid----------2

2. Pleurocystidia fusoid to clavate-appendiculate---3. puberulus (=Pleuroflammula puberula (Pk.) Sing.)

3. Pleurocystidia fusoid-ventricose, with rounded apices----4

4. Cystidia with hyaline content----------Sm-16682

4. Cystidia with orange content----------Beach-200

Pl. usually appendiculate. - - - - - - - - - - - - 4

4. Spores 6-8μ long. - - - - - - - - - - H-3658

4. Spores 8-10μ long. - - - - - - - - - - puberulus (= Pleuroflammula puberula (PK.) Sing.)

Section Fulvidi

Key to Species

1. Spores 10-14 x 7-9 μ, smooth; pileus distantly sulcate-striate; gills very distant; stipe eccentric----------distans (=Phaeomarasmius distans)

1. Spores much smaller----------2

2. Pileus ferruginous-orange, reddish-orange, or rusty-orange, tomentose-squamulose; spores smooth----------flammeus

2. Pileus otherwise colored----------3

3. Epicuticular hyphae incrusted----------4

3. Epicuticular hyphae not incrusted----------6

4. Cuticle a brown zone bearing colorless trichodermial hyphae; surface fibrils giving an alveolate appearance----------Sm-49595

4. Cuticle not as above----------5

5. Cheilocystidia of two types: (1) filamentous, 50-80 x 5-7 μ, (2) clavate, fusoid-ventricose, 28-40 x 6-10 μ----------Sm-9550

5. Cheilocystidia of one type, 36-48 x (3) 9-11 μ---------Sm-50893

6. Spores 6.5-8.5 x 4.5-5.5 μ, ellipsoid; cheilocystidia 26-40 x 5-10 μ; pilocystidia none---Sm-58531

6. Spores 5-6 μ and globose, or at times subglobose to ovoid and 5-7 x 5.5 μ; pilocystidia scattered or forming a turf----------Sm-54330

reverse order

Section Phaseoli

(Spores bean-shaped in side view)

Only one species----------Kelly-158

Section Fusisporae

(Spores subfusoid in front view)

1. Spores smooth; lamellae broad----------Sm-49680

1. Spores faintly punctate; lamellae narrow----------Sm-63587

Section Betulae

Key to Species

1. Stipe eccentric----------2

1. Stipe none----------4

2. Spores 10-14 x 7-9 μ; lamellae very distant---------distans (=Phaeomarasmius distans)

2. Spores smaller----------3

3. Spores 8-9 (10) x 5.5-6.5 (7) μ; lamellae close----haustellaris (=Naucoria haustellaris)

3. Spores 5.3-6 x 4-5 μ, with a smooth, colorless plage----------eccentricus (=Melanotus eccentricus)

4. Lamellae narrow and crowded, and dark fuscous to nearly purplish----------fumosifolius (=Melanotus fumosifolius)

4. Lamellae not with the above combination of characters-----5

5. Cuticle a gelatinous layer (zone) causing a gelatinous or viscid pileus----------6

dussii here →

5. Cuticle not as above----------8

6. Pileus 4-13 cm. broad; lamellae purplish where bruised----------maximus sp. nov.

6. Pileus smaller (up to 2 cm. broad)----------7

7. Pileus white, villose-felted; lamellae crowded----------betulae

7. Pileus chrome-yellow, glabrous; lamellae distant---------dussii (=Pleuroflammula dussii)

8. Spores 10.5-12.5 x 7-9 μ, with a germ-pore; pileus dark red; lamellae distant, broad; epicuticular hyphae brown, incrusted--------rufolateritius (=Phaeomarasmius rufolateritius)

8. Spores up to 10 μ long, usually smaller----------9

9. Pileus ochraceous, crenate-sulcate----------pecten

9. Pileus white to watery-white----------10

10. Lamellae distant or medium distant----------11

10. Lamellae close or crowded----------12

11. Taste bitter at once----------amarus

11. Taste not distinctive----------albissimus

12. Cuticle a turf of colorless filaments, 30-150 x 4-6 μ----------Sm-14051

12. Cuticle not bearing a turf----------13

13. Cuticle bearing a loosely tangled trichodermium of crooked hyphae----------Imshaug-1293

13. Cuticle repent, at times with a few more or less erect colorless hyphae----------antillarum (=cinchonensis)

Section Microsporae

Key to Species

1. Spores tuberculate-warty; pileus rufous----------pyrrhus
(=Pyrroglossum pyrrhus=P. laceratum=substipitatus)

1. Spores punctate----------2

1. Spores smooth - - - - - Melanotus flavolivens

2. Pileus white; spores 4-6 x 2.5-3.5 μ----------variabilis

2. Pileus colored----------3

3. Pileus and lamellae warm-buff or yellowish when young; spores (4.4) 5.2-7 x 4-5 μ, 6-sided--------croceitinctus

3. Pileus, lamellae, and spores not as above----------4

4. Pileus pale brown, glabrous (villose behind); lamellae becoming brown----------H-14171

4. Pileus dull white, flushed cinnamon, fibrillose; lamellae becoming cinnamon to dark reddish-brown----------Sm-53816

Section Resinosae

Key to Species

1. Spores ovate to drop-shaped; pileus surface unpolished-Sm-35821

1. Spores not as above----------2

2. Pileus white or whitish at least when young and fresh----------3

2. Pileus colored at first----------8

3. Lamellae distant; spores 8-10 x 5-5.5 μ----------Sm-63607

3. Lamellae close to subdistant----------4

4. Cuticular hyphae repent; cheilocystidia 9-13 μ broad----------H-Sm-14198

4. Cuticle with more or less erect hyphae; cheilocystidia more narrow----------5

5. Cuticular hyphae loosely tangled, 4-8 μ broad----------Sm-14612

5. Cuticular hyphae more numerous and forming a tangled mass (trichodermium)—the hyphae more narrow----------6

6. Spores 7-9 x 5-6 μ; pileus white; becoming brown as the spores mature----------Cooke-18448

6. Spores 5.7-7.5 μ long; pileus white, unchanging----------7

7. Lamellae white, becoming light pinkish cinnamon; gill trama hyphae 3-6 μ broad----------Sm-54061

7. Lamellae pallid, becoming vinaceous fawn; gill trama hyphae 6-10 (12) μ broad----------Sm-56652

8. Pileus dingy clay color; lamellae white at first; cheilocystidia 5-9 μ broad----------Sm-58396

8. Pileus dingy honey color to pallid-yellowish; lamellae pallid or gray at first; cheilocystidia 4-5 μ broad at the narrowest point----------Sm-34451

Section Crepidotellae

Key to Species

1. Gill-edges and cheilocystidia gelatinous; cheilocystidia long (33-60 x 6-9 μ)----------Sm-20398

1. Gill-edges and cheilocystidia not gelatinous----------2

2. Cuticle with a turf of coiled to conspicuously curved hyphae----------3

2. Cuticle hyphae, if forming a turf, not conspicuously coiled----------5

3. Pileus yellowish----------Sm-22054

3. Pileus white, at least at first----------4

4. Lamellae narrow, close----------Sm-57092 (=Kelly-936)

4. Lamellae broad, subdistant----------Sm-49812

5. Spores 5-7 μ long----------6

5. Spores longer (7-10 μ)----------8

6. Pileus pale brown, with a trichodermium----------H-14171

6. Pileus white, at least at first----------7

7. Pileus white, soon wood brown or dull rusty brown; cuticle repent or with a few more or less erect, colorless hyphae----------Sm-63557

7. Pileus white, unchanging; cuticle bearing a tangled turf----------Sm-47698

8. Taste disagreeable----------Sm-49599

8. Taste mild----------9

9. Spores reniform or subreniform in profile; lamellae very broad, close; pilocystidia colorless or brownish, often in clusters----------reniformis Berk. & Rav. (=C. paxilloides Singer)

9. Spores not as above----------10

10. Spores more warty-rugulose than punctate----------Sm-28588

10. Spores punctate----------11

11. Cheilocystidia of two types: (a) cylindric to clavate; (b) napiform or sphaeropedunculate; stipe present----------Sm-10963

11. Cheilocystidia not as above----------12

12. Pileus glabrous or becoming so----------13

12. Pileus silky, pubescent, or fibrillose----------16

13. Pileus white, becoming cinnamon buff----------14

13. Pileus not as above----------15

14. Pileus striate; lamellae broad; spore wall thin----H-17709

14. Pileus even; lamellae narrow, broadening at maturity; spore wall thick----------Sm-50938

15. Pileus white, unchanging, with a diffuse trichodermium----------Sm-50875

15. Pileus pallid when dry, pale watery gray when wet, with only a few more or less erect hyphae---------Sm-50945

16. Lamellae broad----------17

16. Lamellae narrow or medium broad----------18

17. Lamellae close; pileus white, finally dingy buff; spores 8.5-12 μ long, slightly punctate----------Sm-51947

17. Lamellae subdistant; pileus white, unchanging; spores 7-9 μ long, distinctly although finely punctate----------Sm-52852

18. Cheilocystidia, at least some of them, with an apical prolongation, many branched at the apex----Sm-49806

18. Cheilocystidia lacking an apical prolongation----------19

19. Pileus margin plicate and/or lobed----------submollis (and Sm-19444)

19. Pileus margin even and smooth----------Sm-33692 (and Sm-33693)

CREPIDOTUS

Key to Groups

1. Spores globose, subglobose, or ovoid; 1 μ or less longer than broad.....2

1. Spores ellipsoid, ovoid, subamydaliform; more than 1 μ longer than broad.....3

2. Spores smooth (non-punctate).....GROUP I

2. Spores punctate, often minutely so.....GROUP II

3. Spores smooth (non-punctate).....GROUP III

3. Spores punctate, often minutely so.....GROUP IV

CREPIDOTUS: GROUP I

Spores globose, subglobose, or ovoid, smooth; clamp connections present

Key to Species

1. Pileus orange-tawny, fibrillose-tomentose; lamellae salmon-color or dull-orange; pileus with fuscous pilocystidia.....*subnidulans* Overh. (*Phyllotopsis*?)

1. Pileus white; lamellae white or pallid.....2

   2. Taste very bitter at once; stipe always present, eccentric; pileus pulverulent.....*amarus* Murr.

   2. Taste mild; stipe none; pileus glabrous....*albidus* E. & E.

CREPIDOTUS: GROUP II

Spores globose, subglobose, or ovoid, punctate; clamp connections usually present, at least on the tomentum at the pileus base; pileus not viscid, often fibrillose, tomentose, or scaly

Key to Species

1. Pileus reddish-yellow or rosy.....2

1. Pileus white, or colored other than above.....3

2. Pileus reddish-yellow, fibrillose-scaly; lamellae broad, white, then yellow, finally brownish; spores faintly 5-6-sided in end-view.....crocophyllus (Berk.) Sacc. (=dorsalis Pk.)

2. Pileus silky to glabrous, pink; lamellae narrow, pinkish; spores not as above.....roseus Sing.

3. Pileus glabrous, or the surface ornamented behind only.....4

3. Pileus floccose, pubescent, fibrillose, tomentose, finely hispid; at times squamulose or fibrillose-scaly.....8

4. Lamellae very narrow, close or crowded.....applanatus (Fr.) Kummer

4. Lamellae broad to medium broad, or narrow in front only.....5

5. Spores often ovoid, more or less 6-angled; pileus yellowish.....croceotinctus Pk.

5. Spores not angled; pileus white, yellow, grayish or brownish, striate.....6

6. Lamellae close; pileus "cinnamon buff"....cuneiformis Pat. (=aquosa Murr. & No. 17552)

6. Lamellae subdistant.....7

7. Pileus pale-brown; spores 5-7 x 4.5-5.5 μ, subglobose to ovoid.....No. 14171

7. Pileus white, or at times yellow, or even tinted grayish; spores (4.5) 5-7 μ, globose.....nephrodes (B. & C.) Sacc. (=hygrophanus Murr.)

Hygrophanus (some cell.) here

8. Pileus fibrillose-scaly.....9

8. Pileus fibrillose, tomentose, or floccose, but not scaly.....10

9. Pileus striate; lamellae narrow or moderately so; pleurocystidia none.....fulvifibrillosus Murr.

9. Pileus even; lamellae broad or moderately so; pleurocystidia present, 27-40 (60) x 3-7 μ.....No. 18679

10. Stipe present, distinct (10-20 x 5 mm.); pileus white to cremeous or pale purple with dark purple lines, finely hispid.....nyssicola (Murr.) Sing.

10. Stipe absent, or rudimentary and usually observed only in young carpophores.....11

11. Lamellae very broad to broad.....12

11. Lamellae narrow to medium broad.....13

12. Pileus striate when wet or dry.....latifolius Pk. (=praelatifolius Murr.)

12. Pileus even; lamellae distant.....quitensis Pat. (=parvulus Murr.)

13. Lamellae subdistant; pileus lubricous, from the thick gelatinous trams.....No. 20503

13. Lamellae close; pileus dry, trama not gelatinous. harperi Sing.

CREPIDOTUS: GROUP III

Spores ellipsoid, smooth; pileus often viscid

Key to Species

1. Pileus when fresh white or whitish; if hygrophanous, the pileus may be either watery-white, grayish, or dingy-white (in C. uber the pileus dries ochraceous).....2

1. Pileus colored from the first.....10

2. Pileus glabrous; the surface may be ornamented (fibrillose, etc.) behind only.....3

2. Pileus ornamented (silky, fibrillose, pulverulent, etc.).....6

3. Pileus dry; spores short-ellipsoid to globose (5-6.8 x 4.8-6 μ); the cuticle a cutis.....albidus E. & E.

3. Pileus viscid; spores distinctly ellipsoid; the cuticle an ixocutis, or the pileus context gelatinous.....4

4. The cuticle scarcely differentiated above the gelatinized trama; lamellae broad or medium broad; in tropical or subtropical zones.....uber (B. & C.) Sacc. (=sulcatus Murr.)

4. The cuticle well-developed; lamellae narrow to medium broad; in temperature zones (North Florida and northward).....5

5. The gelatinous zone of the pileus occupying the upper half or more.....mollis (Fr.) Kummer (=alabamensis Murr. & fraxinicola Murr.)

5. The gelatinous zone of the pileus occupying one-fourth or less.....haerens (Pk.) Sacc.

6. Pileus viscid.....betulae Murr.

6. Pileus dry.....7

7. Lamellae distant, becoming red; spores pale red in deposits.....multiformis Murr. (=Phyllotopsis?)

7. Lamellae white, becoming tinted brown by the spores; spores brown.....8

8. Taste promptly very bitter; lamellae distant; stipe always present; spores short-ellipsoid to globose.....amarus Murr.

8. Taste mild; lamellae crowded or subdistant; stipe none.....9

9. Spores 7.5-10 x 5-7 μ; pileus striate; lamellae crowded.....antillarum (Pat.) Sing.

9. Spores 6.8-7.3 x 4-4.7 μ; pileus even; lamellae subdistant.....albissimus Murr.

10. Pileus glabrous or subglabrous, pale brick-red to dark brick-red, and dry; lamellae ochraceous-ferruginosus, distant.....bicolor Murr.

10. Pileus fibrillose-scaly, yellowish or tawny; lamellae close or crowded.....11

11. Pileus honey-yellow to chamois; spores 7.5-10 x 5.5-7 μ.....calolepis (Fr.) Quel. (=calolepidoides Murr.)

11. Pileus tawny; spores 6-8 x 4.5-5.5 μ.....No. 2442

CREPIDOTUS: GROUP IV

Spores ellipsoid or ovoid, punctate, at times faintly so; pileus usually (always?) dry; clamp connections present in most species

Key to Species

1. Pileus cinnabar-red; spores 7-9 (10) x 5-6 μ; clamp connections none.....*cinnabarinus* Pk.

1. Pileus otherwise colored, or white.....2

   2. Pleurocystidia present, 24-39 x 5-9 μ.....No. 3658

   2. Pleurocystidia absent.....3

3. Pileus glabrous, although villose behind.....4

3. Pileus ornamented (fibrillose, silky, villose).....5

   4. Pileus yellowish, moist; spores more or less 6-angled in end view.....*croceitinctus* Pk.

   4. Pileus pale brown, dry; spores not angled.....No. 14171

5. Pileus "cinnamon-buff", striate; spores 8-10 x 5-6 μ. No. 17709

5. Pileus white, or whitish-discolored.....6

   6. Pileus sulcate or plicate; spores 7-9.5 x 4.5-5.5 μ, finely punctate.....*submollis* Murr.

   6. Pileus even.....7

7. Lamellae white becoming pink; spores small, 5.5-7 x ~~3.5-4.5~~ 2.8-3.5 μ.....*variabilis* (Fr.) Kummer

7. Lamellae white then brownish; spores longer or broader.....8

   8. Spores 6-8 x 5-6 μ.....No. 14198

   8. Spores 7-11 x 4.5-6 μ.....*versutus* (Pk.) Sacc.

CREPIDOTUS

Key to Groups

1. Spores globose, subglobose, or ovoid; 1 μ or less longer than broad.....2

1. Spores ellipsoid, ovoid, subamydaliform; more than 1 μ longer than broad.....3

2. Spores smooth (non-punctate).....GROUP I

2. Spores punctate, often minutely so.....GROUP II

3. Spores smooth (none punctate).....GROUP III

3. Spores punctate, often minutely so.....GROUP IV

CREPIDOTUS: GROUP I

Spores globose, subglobose, or ovoid, smooth; clamp connections present

Key to Species

1. Pileus orange-tawny, fibrillose-tomentose; lamellae salmon-color or dull-orange; pileus with fuscous pilocystidia.....*subnidulans* Overh. (*Phyllotopsis*?)

1. Pileus white; lamellae white or pallid.....2

    2. Taste very bitter at once; stipe always present, eccentric; pileus pulverulent.....*amarus* Murr.

    2. Taste mild; stipe none; pileus glabrous....*albidus* E. & E.

CREPIDOTUS: GROUP II

Spores globose, subglobose, or ovoid, punctate; clamp connections usually present, at least on the tomentum at the pileus base; pileus not viscid, often fibrillose, tomentose, or scaly

Key to Species

1. Pileus reddish-yellow or rosy.....2
1. Pileus white, or colored other than above.....3

    2. Pileus reddish-yellow, fibrillose-scaly; lamellae broad, white, then yellow, finally brownish; spores faintly 5-6-sided in end-view.....crocophyllus (Berk.) Sacc. (=dorsalis Pk.)

    2. Pileus silky to glabrous, pink; lamellae narrow, pinkish; spores not as above.....roseus Sing.

3. Pileus glabrous, or the surface ornamented behind only.....4
3. Pileus floccose, pubescent, fibrillose, tomentose, finely hispid; at times squamulose or fibrillose-scaly.....8

    4. Lamellae very narrow, crowded.....applanatus (Fr.) Kummer

    4. Lamellae broad to medium broad, or narrow in front only.....5

5. Spores often ovoid, more or less 6-angled; pileus yellowish.....croceotinctus Pk.
5. Spores not angled; pileus white, yellow, grayish or brownish, striate.....6

    6. Lamellae close; pileus "cinnamon buff"....cuneiformis Pat. (=aquosa Murr. & No. 17552)

    6. Lamellae subdistant.....7

7. Pileus pale-brown; spores 5-7 x 4.5-5.5 μ, subglobose to ovoid.....No. 14171
7. Pileus white, or at times yellow, or even tinted grayish; spores (4.5) 5-7 μ, globose.....nephrodes (B. & C.) Sacc. (=hygrophanus Murr.)

8. Pileus fibrillose-scaly.....9

8. Pileus fibrillose, tomentose, or floccose, but not scaly.....10

9. Pileus striate; lamellae narrow or moderately so; pleurocystidia none.....fulvifibrillosus Murr.

9. Pileus even; lamellae broad or moderately so; pleurocystidia present, 27-40 (60) x 3-7 μ.....No. 18679

10. Stipe present, distinct (10-20 x 5 mm.); pileus white to cremeous or pale purple with dark purple lines, finely hispid.....nyssicola (Murr.) Sing.

10. Stipe absent, or rudimentary and usually observed only in young carpophores.....11

11. Lamellae very broad to broad.....12

11. Lamellae narrow to medium broad.....13

12. Pileus striate when wet or dry.....latifolius Pk. (=praelatifolius Murr.)

12. Pileus even; lamellae distant.....quitensis Pat. (=parvulus Murr.)

13. Lamellae subdistant; pileus lubricous, from the thick gelatinous trama.....No. 20503

13. Lamellae close; pileus dry, trama not gelatinous.harperi Sing.

CREPIDOTUS: GROUP III

Spores ellipsoid, smooth; pileus often viscid

Key to Species

1. Pileus when fresh white or whitish; if hygrophanous, the pileus may be either watery-white, grayish, or dingy-white (in C. uber the pileus dries ochraceous).....2

1. Pileus colored from the first.....10

2. Pileus glabrous; the surface may be ornamented (fibrillose, etc.) behind only.....3

2. Pileus ornamented (silky, fibrillose, pulverulent, etc.).....6

3. Pileus dry; spores short-ellipsoid to globose (5-6.8 x 4.8-6 μ); the cuticle a cutis.....albidus E. & E.

3. Pileus viscid; spores distinctly ellipsoid; the cuticle an ixocutis, or the pileus context gelatinous.....4

4. The cuticle scarcely differentiated above the gelatinized trama; lamellae broad or medium broad; in tropical or subtropical zones.....uber (B. & C.) Sacc. (=sulcatus Murr.)

4. The cuticle well-developed; lamellae narrow to medium broad; in temperature zones (North Florida and northward).....5

5. The gelatinous zone of the pileus occupying the upper half or more.....mollis (Fr.) Kummer (=alabamensis Murr. & fraxinicola Murr.)

5. The gelatinous zone of the pileus occupying one-fourth or less.....haerens (Pk.) Sacc.

6. Pileus viscid.....betulae Murr.

6. Pileus dry.....7

7. Lamellae distant, becoming red; spores pale red in deposits.....multiformis Murr. (=Phyllotopsis?)

7. Lamellae white, becoming tinted brown by the spores; spores brown.....8

8. Taste promptly very bitter; lamellae distant; stipe always present; spores short-ellipsoid to globose.....*amarus* Murr.

8. Taste mild; lamellae crowded or subdistant; stipe none.....9

9. Spores 7.5-10 x 5-7 μ; pileus striate; lamellae crowded.....*antillarum* (Pat.) Sing.

9. Spores 6.8-7.3 x 4-4.7 μ; pileus even; lamellae subdistant.....*albissimus* Murr.

10. Pileus glabrous or subglabrous, pale brick-red to dark brick-red, and dry; lamellae ochraceous-ferruginosus, distant.....*bicolor* Murr.

10. Pileus fibrillose-scaly, yellowish or tawny; lamellae close or crowded.....11

11. Pileus honey-yellow to chamois; spores 7.5-10 x 5.5-7 μ.....*calolepis* (Fr.) Quel. (=*calolepidoides* Murr.)

11. Pileus tawny; spores 6-8 x 4.5-5.5 μ.....No. 2442l

CREPIDOTUS: GROUP IV

Spores ellipsoid or ovoid, punctate, at times faintly so; pileus usually (always?) dry; clamp connections present in most species

Key to Species

1. Pileus cinnabar-red; spores 7-9 (10) x 5-6 μ; clamp connections none.....*cinnabarinus* Pk.

1. Pileus otherwise colored, or white.....2

   2. Pleurocystidia present, 24-39 x 5-9 μ.....No. 3658

   2. Pleurocystidia absent.....3

3. Pileus glabrous, although villose behind.....4

3. Pileus ornamented (fibrillose, silky, villose).....5

   4. Pileus yellowish, moist; spores more or less 6-angled in end view.....*croceitinctus* Pk.

   4. Pileus pale brown, dry; spores not angled.....No. 14171

5. Pileus "cinnamon-buff", striate; spores 8-10 x 5-6 μ. No. 17709

5. Pileus white, or whitish-discolored.....6

   6. Pileus sulcate or plicate; spores 7-9.5 x 4.5-5.5 μ, finely punctate.....*submollis* Murr.

   6. Pileus even.....7

7. Lamellae white becoming pink; spores small, 5.5-7 x 3.5-4.5 μ.....*variabilis* (Fr.) Kummer

7. Lamellae white then brownish; spores longer or broader.....8

   8. Spores 6-8 x 5-6 μ.....No. 14198

   8. Spores 7-11 x 4.5-6 μ.....*versutus* (Pk.) Sacc.

Synonomy in Crepidotus

Alphabetical List of Species with synonyms. Accepted species name is underlined. (According to Singer: Lilloa 13:59-95. 1947.) See also Singer, Agar.

Species Name	Synonym
alabamensis Murr.	mollis (Bull. ex Fr.) Quel.
albidus E. & E.	—
alveolus (Lasch) Karst. sensu Britz	—
amarus Murr.	—
applanatus (Pers. ex Fr.) Quel. sensu Josserand	fulvifibrillosus Murr. (?)
aquosus Murr.	cuneiformis Pat.
Betulae Murr.	—
Brunswickianus Speg.	—
calolepioides Murr.	—
calolepis (Fr.) Karst.	fulvotomentosus Pk.
cesatii (Rab.) Sacc.	—
Cinchonensis Murr.	Antillarum (Pat.) Sing.
cinnabarinus Pk.	—
Citri Pat.	uber (B. & C.) Sacc. sulcatus Murr.
croceotinctus Pk.	—
crocophyllus (Berk.) Sacc.	dorsalis (Pk.) Sacc.
cuneiformis Pat.	aquosus Murr.
Eucalypti (Torrend) Sing.	(Claudopus Eucalypti Torrend)
Forsteri Speg. (?)	(type not found)

Species Name	Synonym
fragilis Josserand	autochthonus Lange
fraxinicola Murr.	mollis (Bull. ex Fr.) Quel. (?)
fulvifibrillosus Murr.	applanatus (Pers. ex Fr.) Quel. (?)
fulvotomentosus Pk.	calolepis (Fr.) Karst.
haerens (Pk.) Sacc.	mollis (Bull. ex Fr.) Quel.*
herbarum (Pk.) Sacc.	(Excluded; same as Claudopus commixtus = Hewrotellas herbarum (Pk.) Bres.) Singer
hygrophanus Murr.	nephrodes (B. & C.) Sacc.
latifolius Pk.	praelatifolius Murr.
leucochrysus (B. & C.) Sacc.	nephrodes (B. & C.) Sacc.
luteolus (Lambotte) Sacc.	___
malachius (B. & C.) Sacc.	nephrodes (B. & C.) Sacc.
malachius var. plicatilis Pk.	nephrodes (B. & C.) Sacc.
Molfinoi Speg.	(type not found)
mollis (Bull. ex Fr.) Quel.	alabamensis Murr. fraxinicola Murr. haerens (Pk.) Sacc.*
nephrodes (B. & C.) Sacc.	hygrophanus Murr. leucochrysus (B. & C.) Sacc. malachius (B. & C.) Sacc. malachius var. plicatilis Pk. palmularis (B. & C.) Sacc. putrigenus (B. & C.) Sacc.
nyssicola (Murr.) Sing.	(Pleuropus nyssicola Murr.)
palmularis (B. & C.) Sacc.	nephrodes (B. & C.) Sacc.
parvulus Murr.	quitensis Pat.
praelatifolius Murr.	latifolius Pk. (Type lost)
pubescens Bres.	submollis Murr.
putrigenus (B. & C.) Sacc.	nephrodes (B. & C.) Sacc.

*Smith and Hesler disagree (Elisha Mitch. Jour. 56:310.)

Species Name	Synonym
quitensis Pat.	parvulus Murr.
reniformis (Berk. & Rav.) Sing.	Paxillus reniformis B. & R.
roseus Singer	—
sepiarius Pk.	(Type lost)
sphaerosporus (Pat.) Sing.	Claudopus variabilis Fr.
submollis Murr.	pubescens Bres.
sulcatus Murr.	uber (B. & C.) Sacc. Citri Pat
uber (B. & C.) Sacc.	Citri Pat. sulcatus Murr.
variabilis (Pers. ex Fr.) Quel.	Claudopus variabilis (Fr.) Quél.
versutus (Pk.) Sacc.	—

Excluded species, see pp. 81-87)

CREPIDOTUS

Singer, Lilloa 13:89-93, in his Key, indicates clamps, as follows:

Clamp Connections Present	Clamp Connections Absent
albidus	alveolus
amarus	calolepiodes
Antillarum	calolepis
applanatus	cinnabarinus
Betulae	mollis
Brunswickianus	uber
Cesatii	versutus
croceitinctus	
crocophyllus	
cuneiformis	
Eucalypti	
fragilis	
fulvifibrillosus	
luteolus	
nephrodes	
nyssicola	
praelatifolius	
quitensis	
reniformis	
roseus	
submollis	

KEY TO CREPIDOTUS SPECIES

of Southeastern United States

by

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LIST OF SOUTHEASTERN SPECIES OF CREPIDOTUS

(Numbers refer to those used in the accompanying key)

24 alabamensis Murr.
27 albissimus Murr.
13 amarus Murr.
2 applanatus (Fr.) Kummer
22 betulae Murr.
21 calolepis (Fr.) Karst.
14 cinnabarinus Pk.
17 croceotinctus Pk.
10 crocophyllus (Berk.) Sacc.
5 cuneiformis Pat.
25 flammeus Murr.
3 fulvifibrillosus Murr.
28 herbarum (Pk.) Sacc.
23 mollis (Fr.) Kummer
6 neprodes (B. & C.) Sacc.
4 pecten (B. & C.) Sacc.
7 praelatifolius Murr.
1 roseus Singer
19 variabilis (Fr.) Kummer
16 versutus (Pk.) Sacc.
20 No. 9718
26 No. 11458
12 No. 13860
9 No. 14171
18 No. 14198
15 No. 17709 (sp. nov.)
11 No. 18679
8 No. 21441

CREPIDOTUS

Key to Groups

1. Spores globose, subglobose, or short-ovoid..... GROUP I

1. Spores ellipsoid or ellipsoid-ovoid..... GROUP II

GROUP I: Key to Species

1. Spores rough..... 2
1. Spores smooth..... 12

2. Lamellae narrow..... 3
2. Lamellae broad or medium-broad..... 5

3. Pileus and lamellae pink; spores ellipsoid to subglobose, 6-7.5 x 5.5-6 μ..... 1. roseus Singer
3. Pileus not pink; spores globose, 4.5-6 (7) μ in diameter..... 4

4. Pileus white, glabrous, base ~~somewhat~~ often villose- to tomentose ~~or~~ fibrillose..... 2. applanatus (Fr.) Kummer
4. Pileus dull-white with tawny, fibrillose scales, base strigose..... 3. fulvifibrillosus Murr.

5. Spores 6.8-8 μ in diameter..... 6
5. Spores 7 μ or less in diameter..... 7

6. Pileus flabelliform, ochraceous, tomentose, margin crenate-sulcate; lamellae umbinrous at maturity..... 4. pecten (B. & C. Sacc.
6. Pileus cuneate at the base, pale brown, glabrous, margin striatulate; lamellae brownish at maturity..... 5. cuneiformis Pat.

7. Pileus white (at times tinged yellow in C. neprodes)..... 8
7. Pileus colored..... 10

8. Pileus white, or tinged yellow, glabrous in front..... 6. neprodes (B. & C.) Sacc.
8. Pileus white, no yellow, pubescent, fibrillose, or scaly..... 9

9. Pileus 1-5 mm. broad, white, with white pubescence; lamellae very broad and extending beyond the margin of the pileus..... 7. praelatifolius Murr.
9. Pileus 10-25 mm. broad, white, with brownish, fibrillose scales; lamellae normal (not as above)..... 8. No. 21441

10. Pileus pale brown, glabrous in front, villose behind..... 9. No. 14171
10. Pileus yellow to chamois..... 11

11. Pileus maize yellow, with tawny, fibrillose scales; lamellae yellow, becoming buffy-brown; pleurocystidia none..... ..... 10. crocophyllus (Berk.) Sacc.
11. Pileus chamois, brownish fibrillose or squamulose; lamellae white becoming pinkish-buff; pleurocystidia sometimes present..... 11. No. 18679

12. Pileus drying smoky, with coarse, strigose scales; pleurocystidia and cheilocystidia none; spores very pale (under 'scope)..... 12. No. 13860
12. Pileus white, not as above..... 13

13. Taste promptly very bitter; lamellae distant, broad at base; short, eccentric stipe present; spores 6.5-7.3 (8.3) x 5.5-6.3 (6.6) μ..... 13. amarus Murr.
13. Taste not bitter; lamellae crowded, narrow; stipe none; spores 5-6 μ in diameter..... 3. fulvifibrillosus Murr.

GROUP II: Key to Species

1. Spores rough..... 2
1. Spores smooth..... 9

2. Spores (7) 8 μ or more in length..... 3
2. Spores 5-8 μ long..... 5

3. Pileus cinnabar-red..... 14. cinnabarinus Pk.
3. Pileus not so colored..... 4

4. Pileus cinnamon-buff, at least when dried, margin striate..... 15. No. 17709 (sp. nov.)
4. Pileus white, margin even..... 16. versutus (Pk.) Sacc.

5. Pileus yellow or ochraceous..... 6
5. Pileus not with these colors..... 7

6. Pileus yellowish, glabrous in front, white-villose behind; lamellae white, becoming dull safron, then ferruginous..... 17. croceotinctus Pk.
6. Pileus ochraceous, tomentose, margin crenate-sulcate; lamellae umbrinous at maturity..... 4. pecton (B. & C.) Sacc.

7. Pileus pale brown, glabrous in front, villose behind..... 9. No. 14171
7. Pileus white..... 8

8. Lamellae close, white, becoming brownish; spores 6-8 x 5-6 μ..... 18. No. 14198
8. Lamellae subdistant, white becoming pinkish; spores 5.5-7 x 3.5-4.5 μ..... 19. variabilis (Fr.) Kummer

9. Pileus viscid or gelatinous..... 10
9. Pileus not viscid..... 14

10. Pileus 4-13 cm. broad, white or whitish, becoming tinged "light ochraceous-buff"; gill-trama with a broad mediostrate; subhymenium a well-defined zone of narrow, more or less parallel, gelatinous hyphae..... 20. No. 9718
10. Pileus much smaller (2 cm. or less); gill-trama and subhymenium not as above..... 11

11. Lamellae broad..... 12
11. Lamellae narrow..... 13

12. Spores 8-10 μ long; pileus honey yellow to chamois, dry brownish fibrilloso to scaly; surface hyphae with spiral markings..... 21. calolepis (Fr.) Karst.
12. Spores 6-8 μ long; pileus white, villose-felted..... ..... 22. betulae Murr.

13. Pileus striatulate when wet; lamellae white becoming brown..... 23. mollis (Fr.) Kummer (=alabamensis Murr. & haerens (Pk.) Sacc.)
13. Pileus margin even; lamellae pale-isabelline, darker at maturity..... 24. alabamensis Murr. (=haerens (Pk.) Sacc. & mollis (Fr.) Kummer)

14. Pileus yellowish, becoming ochraceous-tawny to rusty-orange, tomentose-squamulose; taste bitter; lamellae yellowish then brownish..... 25. flammeus Murr.
14. Pileus white or grayish-white..... 15

15. Taste bitter; stipe present, eccentric..... 13. amarus Murr.
15. Taste mild; stipe none..... 16

16. Pileus grayish-white; lamellae grayish-buff; cheilocystidia none..... 26. No. 11458
16. Pileus white; lamellae not as above; cheilocystidia present..... 17

17. Lamellae white, unchanging in age or on drying..... ..... 27. albissimus Murr.
17. Lamellae white, becoming ochraceous at maturity..... ..... 28. herbarum (Pk.) Sacc.