

Key to Species of Inocybaceae from eastern North America – v7 (17 Jan 2020)

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Note: V7 now incorporates the generic-level taxonomic system proposed by Matheny, Hobbs, & Esteve-Raventós (2020). V7 also added *I. sambucina* confirmed from Massachusetts and an updated entry for *I. subradiata*. V5 (short-lived) and v6 clarified some minor differences between *I. maritimoides* and *I. parvecoacta*. Entries for *I. mixtilis* were updated to *I. occulta* and *I. ceskae* following Esteve-Raventós et al. (2018). *Inocybe acuta sensu* Grund & D.E. Stuntz (1977) is the same as *I. borealis*, and now *I. bufonia* was explicitly incorporated in the key. The present status of *I. praenodulosa* is not clear in that the type needs to be examined to confirm placement of caulocystidia on the lower part of the stipe. *Inocybe grammopodia* was confirmed from New York by Joel Horman and is now included in the key near *I. cincinnata*. *Inocybe tjallingiorum* was included based on samples from northern Canada.

This unpublished key includes treatment of ca. 220 species, varieties, and forms of Inocybaceae documented from eastern North America, including Central America and the Caribbean Basin (172 *Inocybe*, 20 *Inosperma*, 11 *Mallocybe*, 18 *Pseudosperma*; a few combinations remain to be done). The number of species included is based on a survey of the literature but also notes from unpublished type studies by D.E. Stuntz, L.R. Hesler, and myself. Ca. 60 taxonomic synonyms are currently accepted, 11 species are considered doubtful, and 5 species are excluded in other genera. 80 North American species recorded only from western North America are listed at the end of this document. Thus, 300 species of *Inocybe* are presently accepted from North America. However, this is likely an underestimate as regions such as California, the Gulf Coast, and particularly Mexico are understudied. Moreover, detailed molecular studies have not been performed for most species. The protochecklist of North American non-lichenized fungi (Bates et al. 2018) includes 400 taxa of *Inocybe*, but this figure includes infraspecific taxa and does not exclude known taxonomic synonyms.

Note the key is *not* strictly dichotomous. Undoubtedly, future versions and revisions to this key will be necessary as omissions and errors are corrected and as species concepts become better established. For a glossary of terminology (e.g., fulvous, fuscous, necrobasidia, rimose, pleurocystidia), see an online glossary at <http://inocybaceae.org/glossary.html>.

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Key to species of Inocybaceae from eastern North America

Spores smooth, yellowish-brown, and pleurocystidia absent

Pileus tomentose, fibrillose-squamulose or squarrose, *not* rimose; basidia necropigmented or hyaline
Basidiomes small; pileus 3-4 mm wide, reddish-brown; spores subreniform, 9-15 x 6-8 µm

Inosperma tenerrimum (G.F. Atk.) Matheny & Esteve-Rav.

Not as above

Basidiomes medium; pileus 25-40 mm wide, with reddish brown scales appressed against yellow ground color; odor not remarkable; spores ovate-elliptic, 9.5-10 x 5.5-6.5 µm

Pseudosperma squamatum (J.E. Lange) Matheny & Esteve-Rav. (*P. spurium* (Jacobsson & E. Larss.)

Matheny & Esteve-Rav. from Europe and western North America is very similar but differs by more narrow spores 8.5-11 x 4.5-6 µm and more robust basidiomes)

Not as above

Odor usually not remarkable; flesh not reddening; basidia necropigmented; stipe *at times* equal to or shorter than the pileus diameter

Pileus granulose-scaly and stipe fibrillose-squamulose, base of stipe *not* yellow; cheilocystidia >50 µm long, spores 9-11.5 x 4.5-5.5 µm; under hardwoods *Quercus*, *Carya*, *Tilia*

Mallocybe unicolor (Peck) Matheny & Esteve-Rav. (Syn. *I. lorillardiana* Murrill, *I. marmoripes* G.F. Atk., *I. caesariata sensu* Lincoff 1981, *non* Kauffman)

Pileus appressed-scaly, tomentose, to almost smooth, *not* granulose

Cheilocystidia >50 µm long, stipe fibrillose, base of stipe *not* yellow; spores mostly 11-13 x 5-6 µm, under *Pinus*, *Betula*, known only from Highlands, North Carolina

Mallocybe sp. PBM4190

Cheilocystidia, if present, <50 µm long, stipe various

Stipe fibrillose and cheilocystidia <50 µm long, base of stipe *not* yellow; spores long and narrow, 10-13 x 5.5-6 µm; Florida (type), Oklahoma, North Carolina

Mallocybe multispora (Murrill) Matheny & Esteve-Rav.

Stipe fibrillose-squamulose and cheilocystidia <50 µm, stipe base yellow, spores mostly 9-10.x x 5-6 µm; Kansas, Illinois, Indiana, Tennessee (pileus appressed squamulose)

Mallocybe luteobasis Matheny & Kuo ined.

Stipe fibrillose to subglabrous (rarely squamulose); cheilocystidia <50 µm long; stipe base *not* yellow; spores various;

Spores elliptic to phaseoliform or subamygdaliform, Q<2.0

Cortina forming a distinct annular zone, pileus long incurved, stipe solid, under (planted?) *Picea abies*, New Jersey

Mallocybe tomentosula Matheny & Esteve-Rav. (replacement name for *I. tomentosa* Ellis & Everh., *non* Qué. (cf. *I. agardhii* (N. Lund) P.D. Orton under *Salix* in Europe; syn. *M. subdecurrans* (Ellis & Everh.) Matheny & Esteve-Rav. *sensu* Kauffman 1924)

Cortina *not* forming a distinct annular zone, pileus margin decurved, stipe solid or hollow, vegetation various

Lamellae usually sinuate, stipe solid or hollow; alpine, boreal, and arctic in distribution

Mallocybe fibrillosa (Peck) Matheny & Esteve-Rav. (Syn. *I. dulcamara* (Pers.) P. Kumm. *sensu* Am. auct. pl., *I. squamosodisca* Peck, *I. caesariata sensu* Kauffman (= *M. coloradoensis* Kauffman?), possibly same as *M. subdecurrans* below).

Lamellae adnate or subdecurrent, stipe hollow (or unknown)

Under (planted) *Picea abies*

Mallocybe subdecurrans (Ellis & Everh.) Matheny & Esteve-Rav. (Stuntz' study of the isotype demonstrates the absence of any annular zone on the stipe); pileus even, depressed, or umbonate but often without umbo

Under *Quercus*, Florida; pileus with prominent umbo

Mallocybe fulvoumbonata (Murrill) Matheny & Esteve-Rav. (as *I. fulvi-umbonata*)

Spores oblong-elliptic to oblong-phaseoliform, Q>2.0, Florida

Pileus pale isabelline to fulvous, stipe pallid with bulbous base; cheilocystidia slenderly clavate

Mallocybe multispora (Murrill) Matheny & Esteve-Rav.

Pileus isabelline, stipe white, equal; cheilocystidia broadly clavate or short utriform

Inocybe praevillosa Murrill (type study pending for confirmation in *Mallocybe*)

Pileus fulvous, stipe pallid, equal; cheilocystidia utriform to saccate

Mallocybe fulviceps Murrill (Syn. *I. pertomentosa* Murrill, *I. vialis* Murrill)

Odor *often* noticeable – fruity, like bruised Geranium leaves (*Pelargonium*), fishy, green corn, spermatic, or like green corn; flesh reddening; basidia typically *not* necropigmented in temperate taxa; stipe length much longer than the pileus diameter

Stipe surface fibrillose

Odor spermatic, lower part of stipe with green-gray shades; arctic (with *Dryas*) to Nova Scotia (with *Picea*)

Inosperma hirsutum (Lasch) Matheny & Esteve-Rav. sensu Grund & D.E. Stuntz

Odor floral, aromatic, or strong and persistent of green corn, green (or blue) shades absent on stipe

Inosperma subrubescens (G.F. Atk.) Matheny & Esteve-Rav. (= *I. cervicolor sensu* D.E. Stuntz)

Odor like 'old wine' or of 'dank casks', green (or blue) shades absent on stipe

Inosperma cervicolor (Pers.) Matheny & Esteve-Rav. sensu Eur. auct.

Stipe surface with recurved scales or fibrillose-scaly

Blue-green colors inconspicuous or lacking above the stipe base

Inosperma mutatum (Peck) Matheny & Esteve-Rav. (Syn. *I. leptocystella* G.F. Atk.? See 'doubtful species'. Note that *In. apiosmotum* may lack blue-green colors on the stipe but has on odor of ripe pears.)

Blue-green colors conspicuous at the stipe base, sometimes throughout the stipe

Basidiomes large, stipe 55-120 x 6-14 mm

Inosperma maximum (A.H. Sm.) Matheny & Esteve-Rav. (Syn. *I. hirsuta* var. *maxima* A.H. Sm.)

Basidiomes medium, stipe 25-90 x 2.5-6 mm

Odor of green corn

Inosperma mucidiolens (Grund & D.E. Stuntz) Matheny & Esteve-Rav. (Syn. *I. calamistrata* var. *mucidiolens* Grund & D.E. Stuntz)

Odor fishy or fruity

Odor fishy or like bruised Geranium leaves (*Pelargonium*); under conifers (*Abies*, *Picea*, *Tsuga*), widespread in northern parts of North America, west and east coasts

Inosperma calamistratum (Fr.) Matheny & Esteve-Rav.

Odor like ripe pears; under conifers, Massachusetts, Pennsylvania, Nova Scotia (type), North Carolina

Inosperma apiosmotum (Grund & D.E. Stuntz) Matheny & Esteve-Rav. (AU10257 has faint blue-green at stipe base and “odor none”; this would key to *In. mutatum*).

Pileus finely-fibrillose to rimose, *not* squamulose; basidia hyaline

Stipe smooth or somewhat fibrillose but not furfuraceous, some species staining or with noticeable odor, spores often bean-shaped (phaseoliform, subreniform)

Stipe white, slowly red where bruised (pileus turning red), spores 10-13.5 x 5.5-7 µm

Inosperma erubescens (A. Blytt.) Matheny & Esteve-Rav. (Syn. *I. patouillardi* Bres.)

Stipe pinkish or vinaceous, spores smaller than above

Pileus dull red-brown, stipe pinkish, odor oily-spermatoc, spores 8-9 x 4.5-5 µm

Inosperma rosellicaulare (Grund & D.E. Stuntz) Matheny & Esteve-Rav.

Pileus vinaceous-brown, stipe vinaceous, odor sickly sweet to aromatic with a green corn component, spores 9.5-11.5 x 6 µm

Inocybe vinaceobrunnea Matheny & Kudzma (= *I. jurana* (Pat.) Sacc. *sensu* Hesler; transfer to *Inosperma* pending)

Stipe white and/or brunnescent and *not* turning red, spores smaller than in *I. erubescens*

Pileus pale rosy-isabelline, odor spermatoc

Inosperma pallidifolium (Murrill) Matheny & Esteve-Rav. (Syn. *Hebeloma pallidifolium* Murrill)

Pileus yellowish to brownish yellow or orange-brown to tawny, odor of green corn or aromatic with a green corn component

Pileus yellowish to brownish yellow, odor strong of green corn (or spermatoc initially, then like green corn), velipellis present or absent, common; New England, Tennessee, North Carolina, Texas

Inosperma rimosoides (Peck) Matheny & Esteve-Rav.

Pileus tawny to fulvous or orange-brown, odor *aromatic* with a green corn component, velipellis inconspicuous, absent, or present as patches

Pileus tawny to fulvous, velipellis patches often *conspicuous*; widespread, including Central America

Inosperma lanatodiscum (Kauffman) Matheny & Esteve-Rav. (*In. fulvum* (Bon) Matheny & Esteve-Rav. is a fulvous European form of *I. lanatodisca*)

Pileus orange-brown or tawny, velipellis inconspicuous or absent, New England, Tennessee

Inocybe curreyi (Berk.) Sacc. sensu Hesler (non *Pseudosperma curreyi* (Berk.) Matheny & Esteve-

Rav.; *Inocybe glabra* Kauffman, originally *I. 'glaber'*, differs by its nauseous or radishy odor, transfer to *Inosperma* pending)

Pileus dark brown, chestnut-brown, or brown (umbrinous), odor, if present, *without* a green corn component

Pileus brown or umbrinous, *with a prominent umbo*, stipe slender, odor *none* (spores per protologue subreniform, 7-9 x 4-5 µm; spores per Stuntz *not* subreniform but rather elliptic, 7.5-9 x 5-5.5 µm)

Inosperma fastigiellum (G.F. Atk.) Matheny & Esteve-Rav. (*Inocybe glabra* Kauffman has an ochraceous-brown to livid-brown (vinaceous-brown) umbonate pileus, nauseous or radishy odor, and subreniform spores 7-9 x 4-5 µm; described under hardwoods, Michigan; odorless forms of *In. neobrunnescens* var. *leucothelotum* (Grund & D.E. Stuntz) Matheny & Esteve-Rav. key here)

Pileus dark brown, chestnut-brown or umbrinous, *without* a prominent umbo, odor *often present* but occasionally absent; spores 8-10 x 4.5-5.5 µm, subreniform

Odor penetrating, definitely not spermatic, but complex with strongly fungoid (like young *Lycoperdon*), pungent aromatic, and raphanoid components

Inosperma maculatum Boud. sensu D.E. Stuntz (differs from *In. lantodiscum* in odor and pileus color; cf. *Inocybe grabra* with an ochraceous-brown to livid-brown pileus)

Odor spermatic, complex aromatic, or none

Pileus with distinct white patches of velipellis

Inosperma neobrunnescens var. leucothelotum (Grund & D.E. Stuntz) (Syn. *I. lanatodisca* var. *phaeoderma* (D.E. Stuntz) Grund & D.E. Stuntz; specimens *without* an odor belong here; Michigan, Nova Scotia, North Carolina)

Pileus lacking distinct white patches of velipellis

Inosperma neobrunnescens (Grund & D.E. Stuntz) Matheny & D.E. Stuntz (Syn. *Inocybe brunnescens* G.F. Atk., *non* Earle; *Inocybe fastigiata* var. *microsperma* Bres. *sensu* A.H. Sm.)

Stipe furfureaceous-pruinose and not staining, odor noticeable or lacking, spores often elliptic but *not* distinctly bean-shaped (phaseoliform, reniform)

Pileus white to pale ivory, pale buff, yellow, grayish brown to pinkish gray, or pinkish brown

Stipe vinaceous-purple at the apex, pileus pale dingy cream with greenish tinges

Pseudosperma vinosistipitatum (Grund & D.E. Stuntz) Matheny & Esteve-Rav.

Stipe without vinaceous colors, pileus without greenish tinges

Stipe, pileus, *and* lamellae yellow; odor none

Pseudosperma holoxanthum (Grund & D.E. Stuntz) Matheny & Esteve-Rav.

Lacking the combination of yellow traits above

Stipe pale ochraceous (pileus yellow but lamellae pale brown), odor none, under *Coccoloba*, Caribbean Basin

Pseudosperma littorale (Pegler) Matheny & Esteve.-Rav.

Stipe white to pallid throughout; odor none or of green corn, under other plant associates, location various

Spores narrow, 8-11.5 x 4-5.5 μm , pileus cream-buff, odor none, under *Inga*, Caribbean Basin

Pseudosperma ingae (Pegler) Matheny & Esteve-Rav.

Spores larger than above, pileus color various, odor none or distinctive, in temperate areas

Stipe abruptly bulbous

Pseudosperma bulbosissimum (Kühner) Matheny & Esteve-Rav. (Syn. *Inocybe fastigiata* f. *alpestris* R. Heim *sensu* Stuntz pro parte; confirmed from Michigan, Colorado, Washington)

Stipe even

Pileus white or pallid ivory, odor none, spores 11-14 x 5.5-7 μm , in mixed woods

Pseudosperma aurora var. inodoratum (Grund & D.E. Stuntz) Matheny & Esteve-Rav. (Syn. *Inocybe fastigiata* f. *subcandida* Malençon *sensu* Grund & Stuntz 1981) [pileus is prominently concio-fastigate]

Pileus yellowish, odor of green corn, spores 11-15.5 x 6-8 μm , under hardwoods or conifers

Pseudosperma sororium (Kauffman) Matheny & Esteve-Rav.

Pileus pallid yellowish buff, grayish brown to pinkish gray, or pale pinkish beige, odor aromatic, spores 10-12.5-15 x 5.5-6-7.5 μm , under conifers (*Picea*, *Tsuga*)

Pseudosperma aurora (Grund & D.E. Stuntz) Matheny & Esteve-Rav. (*Ps. obsoletum* (Romagn.) Matheny & Esteve-Rav. is very similar but slightly genetically distinct; Syn. *Inocybe fastigiata* f. *alpestris* R. Heim *sensu* Stuntz pro parte)

Pileus darker than above – brownish-orange, olivaceous, yellowish-brown, or dark brown, at times with lighter colored margin or center with whitish velipellis

Basidiomes small or slender and fragile, pileus 10-30 mm, conical, stipe 15-55 x 1-4 (-5) mm

Lamellae tinged olivaceous, odor of green corn, pileus yellowish-brown shading isabelline towards the margin, long-rimose, under *Quercus* or in *Quercus-Carya* forests, southeast U.S.

Inocybe friabilis Matheny & Kudzma (transfer to *Pseudosperma* pending)

Lamellae without olivaceous tones; odor of green corn or none, pileus color, surface, and habitat various

Odor of green corn, pileus dark brown to dark grayish brown at the center, shading brown towards the margin, long-rimose, under *Quercus*, *Carya*, *Fagus*, Louisiana

Pseudosperma actinocephalum D.E. Stuntz ex Matheny ined.

Odor none, pileus not as dark towards the margin as above, plant associates and distribution various

Odor none, pileus dark brown shading to *fulvous and brownish yellow* towards the margin, *weakly rimose*, spores 10-11 x 6-5.5 µm, in low elevation woods under *Fagus*, *Quercus*, and *Pinus*, east Texas

Pseudosperma brunneicothurnatum D.E. Stuntz ex Matheny ined.

Odor none, pileus center brown (umbrinous) shading to isabelline towards the margin, rimose, spores 11-13 x 5.5-7 µm, at high elevations under *Betula* and *Abies-Picea*, Tennessee-North Carolina

Pseudosperma sp. PBM2601 (close to *Inocybe friabilis* but differing by the habitat)

Odor none, pileus brownish-orange to pale brown, rimose, spores 12-13 x 5.5-6.5 µm (“with a narrow germ pore”), in tropical rainforest, Yucatan Peninsula, Mexico

Pseudosperma tropicale (Guzmán) Matheny & Esteve-Rav.

Basidiomes larger than above, pileus 20-70 mm, stipe 30-80 x 3-10 mm

Pileus very dark brown to dark brown at the center [darker than type], with acute to obtuse umbo, shading to brown or yellowish-brown towards the margin, long-rimose; lamellae light gray to brown, medium; odor none; spores mostly 9-11.5 x 6-7 µm [somewhat larger than type], cheilocystidia ventricose, clavate, or cylindrical; under *Quercus*, Tennessee-Virginia to Oklahoma and Costa Rica (low-elevation)

Pseudosperma notodryinum (Singer, I. J.A. Aguiar & Ivory) Matheny & Esteve. Rav. (= *Inocybe umbrinella* Bres. *sensu* Kauffman (the American version of *Pseudosperma perlatum* (Cooke) Matheny & Esteve-Rav.)

Pileus mostly yellowish to yellowish brown (*Ps. rimosum* (Bull.) Matheny & Esteve-Rav. complex)

Pileus dull yellow-ocher to rich yellowish-fuscous, at times bister at the center or pale, odor ‘strong and disagreeable’ (spermatocytic most likely), lamellae narrow, whitish but then tinged olivaceous; spores 9-12 x 5-6 µm, cheilocystidia saccate, “in woods”, widespread

Inocybe fastigiata (Schaeff.) Quél. sensu Kauffman (Kauffman’s concept likely was a broad one)

Similar to *Inocybe fastigiata sensu* Kauffman, odor strongly spermatocytic, lamellae olivaceous and narrow; but spores somewhat larger – 11-13 x 6-6.5 µm; cheilocystidia cylindrical, fusiform, or clavate, under hardwoods *Quercus*, *Fagus*, *Betula* mixed with *Pinus strobus*, New England

Pseudosperma parafastigiatum D.E. Stuntz ex Matheny ined.

Similar to *I. parafastigiata* (spore size) but without any odor, lamellae *not* olivaceous, stipe base somewhat enlarged; under *Populus deltoides* or *Quercus* on sandy soil; Oklahoma, Tennessee

Pseudosperma sp. CO4124, PBM4302 [*Ps. rimosum* complex, clade A]

Spores smooth, yellowish-brown, and pleurocystidia present

Stipe pruinose at the apex only or not at all; caulocystidia and cauloparacystidia absent or present on upper half of stipe only (rarely caulocystidioid cells below stipe center)

Pileus and stipe white

Basidiomes turning red after bruising or drying, robust, under conifers

Inocybe pudica (Syn. *I. geophylla* var. *lateritia* (Berk. & Br.) W.G. Sm., *I. geophylla* f. *perplexa* Kauffman)

Basidiomes drying pink, slender, under hardwoods, Tennessee (also Washington under *Populus*)

Inocybe armeniaca Huijsman

Basidiomes not turning red after bruising or drying, slender, widespread, ecology various (species polyphyletic)

Inocybe geophylla (Bull.) P. Kumm sensu lato

Pileus convex... **convex form**

Pileus papillate... **umbonate form**

Pileus and stipe not white

Pileus tinged violaceous in youth, otherwise mouse-gray to dark brown, scaly; lamellae violaceous in youth, stipe apex with violaceous tinges

Inocybe cincinnata (Fr.) Quél. sensu Kauffman (cf. *I. violaceifolia* Peck described with grayish pileus only and white to whitish stipe but with violet lamellae in youth)

Pileus and/or stipe lilac to violaceous or with lilac or pinkish-lavender tinges, *not* scaly; lamellae *not* violaceous in youth

Pileus and stipe lilac or violaceous, odor spermatic

Basidiomes small (stipe 1-3 mm) with persistent dark violet streaks, under pines and hardwoods

***Inocybe lilacina* (Peck) Kauffman**

Basidiomes medium (stipe 3-6 mm), lilac often fading (at times completely), under spruce, Douglas fir

Spores mostly elliptic

***Inocybe sublilacina* Matheny & A. Voitk**

Spores mostly amygdaliform

***Inocybe pallidicremea* Grund & D.E. Stuntz (= *I. lilacina sensu auct. pl.*)**

Pileus *not* lilac or violaceous, stipe with lilac or pinkish-lavender tinges at the apex

Odor of *Pelargonium*, not spermatic

Pileus yellowish brown, basidiomes slender

***Inocybe griseolilacina* J.E. Lange**

Pileus reddish brown with pale brown margin, basidiomes not slender

***Inocybe personata* Kühner**

Odor spermatic or *not* like *Pelargonium*

Pileus pale ochraceous, stipe apex violet but finely white velutious elsewhere, base with a membranous volva

***Inocybe violaceoalbipes* G.F. Atk.**

Pileus dark brown to brown or fuscous

Pileus and stipe brown, *not* virgate, at times subscaly; stipe fibrillose; spores >11 µm long and minimally angular; odor not spermatic; northern in distribution down to spruce-fir zone of North Carolina and Tennessee

***Inocybe lacera* (Fr.) P. Kumm.** (Syn. *I. euthelella* Peck, form with a slight violet stipe apex)

Pileus reddish brown to umbrinous, *not* virgate (that is, without radiating stripes); stipe pruinose at extreme apex, without scattered brown fibrils; spores <11 µm long; paracystidia hyaline; odor strongly spermatic; New York, Europe (under Betulaceae), north Africa

***Inocybe grammopodia* Malençon**

Pileus dark brown to brown, *not* virgate (without radiating stripes); stipe with scattered brown fibrils against a lighter ground color; spores <11 µm long; paracystidia often brown incrustated

***Inocybe cincinnata* (Fr.) Quéf.** (Syn. *I. cincinnatula* Kühner, nom. inval., sensu Grund & Stuntz 1968; cf. *I. retipes* G.F. Atk., *non* Singer)

Pileus fuscous, virgate; stipe with fuscous peronate sheath of fibrils; spores <11 µm long; paracystidia hyaline; odor strongly spermatic; under conifers, Nova Scotia to North Carolina (high-elevation)

***Inocybe fuscicothurnata* Grund & D.E. Stuntz** (*I. virgata* the same but without the lilac stipe apex)

Pileus and stipe without lilac tinges

Pileus *and* stipe squarrose, squamulose, or floccose-squamulose

Scales brown

Pileus and stipe squarrose, spores <11 µm long and amygdaliform, in forests

***Inocybe hystrix* (Fr.) P. Karst.** (a Costa Rican report is a darker independent species, under high-elevation *Quercus*)

Pileus squamulose or squarrose, stipe floccose-scaly (other forms merely densely fibrillose), spores >11 µm long and fusiform or 'boletoid', along roadsides or in disturbed areas

***Inocybe lacera* (Fr.) P. Kumm.** (Syn. *I. infelix* (Peck) Peck, *I. infelix* var. *brevipes* Peck?)

Scales whitish or bright ochraceous, *not* brown

Scales whitish against dull yellowish or dull ochre background, hymenial cystidia hyaline in KOH

***Inocybe griseoscabrosa* (Peck) Earle**

Scales and ground color bright ochraceous, hymenial cystidia bright yellow in KOH

***Inocybe subochracea* (Peck) Peck** (Syn. *I. subochracea* var. *burtii* Peck, which was described to accommodate a variety with a more conspicuous cortina, longer stipe, and more heavily fibrillose pileus margin and stipe surface)

Pileus squamulose, squarrose, floccose, or fibrillose *but* stipe *not* scaly

Pileus squarrose, squamulose, or floccose

Pileus *and* stipe bright yellow-ochre (or ochre and tawny), pleurocystidia *bright yellow* in KOH

***Inocybe subochracea* (Peck) Peck** (Syn. *I. subochracea* var. *burtii* Peck, see above for details)

Pileus and stipe *not* bright yellow-ochre, pleurocystidia hyaline or with yellowish contents in KOH
 Pileus pale ochraceous, ochraceous-tawny, yellow, or warm buff; stipe similarly colored or pale yellow
 Lamellae eventually olivaceous-brown, spores 9-10 x 4-5 µm
 Cystidia 40-63 x 10-15 µm, hyaline

***Inocybe submuricellata* var. *stenospermina* Grund & D.E. Stuntz** (= *I. abjecta sensu* Grund & D.E. Stuntz; eastern version of *I. chondroderma* D.E. Stuntz ex Matheny, Norvell & E.C. Giles)

Cystidia 30-40 x 8-11 µm (color not indicated)

***Inocybe cylindrocystis* G.F. Atk.** (cf. *I. cryptocystis* D.E. Stuntz, which differs by the presence of a bulbous stipe base and fibrillose pileus)

Lamellae *not* olivaceous or pale yellow, spores larger or more broad
 Lamellae white to brown, spores 8-9.5 x 5-5.5 µm, cystidia 60-90 x 12-15 µm, often with yellowish content

***Inocybe ochraceomarginata* Kauffman** (similar to *I. microteroxantha* Grund & D.E. Stuntz but lacking caulocystidia below stipe center)

Lamellae pale yellow, spores mostly 10-11 x 5-6 µm, cystidia 50-70 x 10-15 µm, hyaline

***Inocybe submuricellata* G.F. Atk.**

Pileus darker than above (or lamellae and flesh *reddening*), stipe *not* ochraceous or yellow
 Odor sweet-aromatic (like Matsutake) or like green corn (“meal” or “cornsilks”)

Pileus yellow-ochre or raw sienna, stipe lighter in color, flesh and lamellae reddening, ecology not clear (“in mixed woods”), odor of green corn

***Inocybe rubellipes* G.F. Atk.**

Pileus dark brown at the center, yellowish-brown towards the margin, overlain with pallid superficial fibrils, stipe white, flesh and lamellae reddening, odor aromatic (like Matsutake), in hardwoods mixed with *Tsuga*

***Inocybe dulciolens* Matheny & Kudzma**, (Syn. *I. pyriodora* (Pers.) P. Kumm. *sensu* Am. auct.)

Pileus uniformly dark brown or bister, stipe paler brown – pale umbrinous to cinnamon-buff, flesh *not* reddening, odor aromatic, under *Picea*

***Inocybe scabra* (O.F. Müll.) Qué.** *sensu* Grund & D.E. Stuntz (*sensu* J.E. Lange, M.M. Moser; probably same as *I. nemorosa sensu* Grund & D.E. Stuntz)

Odor spermatic or not remarkable

Stipe base or lower part of stipe dark brown or becoming so

Pileus fibrillose-scaly with small pointed tips, up to 30 mm wide; spores with mean Q-value >2.0, cylindrical, fusiform or ‘boletoid’, pleurocystidia predominantly thick-walled or slightly thick-walled, some apices acute... ***Inocybe lacera* (Fr.) P. Kumm. & varieties** (Syn. *I. infelix* (Peck) Peck)
 Spores 11-12.5 x 4.5-5 µm, near *Fagus*, *Betula*, Nova Scotia

***Inocybe lacera* f. *subsquarrosa* F.H. Møller**

Spores 12-13.5 x 5.5-6 µm, edge of flatwoods pond (under *Pinus?*), Florida

***Inocybe sublongipes* Murrill** (cf. *I. gigantispora* Murrill, spores 11-16 x 5-6 µm, *not* laceroid but oblong-amygdaliform to amygdaliform; pleurocystidia infrequent, thick-walled; under *Quercus*, Florida)

Spores extremely variable in size and shape, in roadside gravel, Nova Scotia

***Inocybe lacera* var. *heterosperma* Grund & D.E. Stuntz**

Pileus appressed fibrillose-scaly, 20-65 mm wide; spores with mean Q-value <2.0, amygdaliform, pleurocystidia thin-walled, apices not acute

***Inocybe melanopus* D.E. Stuntz** (orth. variant *I. melanopoda*)

Stipe base *not* darker than rest of the stipe

Basidiomes very small (pileus <15 mm, stipe 13-25 x 1-2 mm) and pileus dark reddish brown to red-brown or dull umber, Nova Scotia to North Carolina to Mexico with pine, also Europe with aspen and alder

***Inocybe minima* Peck, *non* Killerm.**

Basidiomes larger than above (pileus >15 mm, stipe >25 x 1-2 mm) or pileus not colored as above
 Pileus with coarse recurved scales and low umbo, spores >11 µm long, in sand, Greenland

***Inocybe ursinella* M. Lange**

Pileus lacking coarse recurved scales, or, if squarrose, then with small acute umbo, spores <11 µm long, in temperate forests

Pileus without an umbo, pallid at first becoming a dingy straw color or pale brown, in temperate forests, Michigan to Tennessee

***Inocybe melanopus* D.E. Stuntz** (orth. variant *I. melanopoda*)

Pileus obtusely umbonate, disc brown and shading to yellowish or warm buff towards the margin; stipe apex white, elsewhere yellow (walls of cystidia yellow in KOH), temperate

***Inocybe flocculosa* Sacc.** (Syn. *I. stuntzii* Grund; cf. *I. excoriata* Peck with lacerate-excoriate pileus surface and white stipe, New England and New York; cf. *I. abjecta* (P. Karst. Sacc. *sensu* Grund & Stuntz, which differs by its grayish-umber pileus that is mostly fibrillose and hyaline cystidia)

Pileus with a mammillate or papillate umbo, brown or dull dark brown; stipe pallid or white, walls of cystidia *not* distinctly yellow in KOH (but may be brown)

Pileus squarrose, lamellae edges *brown*, stipe with a white annular belt, under *Quercus*, lowland Costa Rica, tropical

***Inocybe plocamophora* Singer**

Pileus appressed-squamulose or with slightly upraised tips towards the margin, lamellae edges *white*, under conifers or *Corylus*, north temperate

***Inocybe gausapata* Kühner** (spores mostly 8-9 x 5-6 µm, walls of pleurocystidia 3-4 µm thick, under *Tsuga*, Nova Scotia)

***Inocybe pallidipes* Ellis & Everh.** (spores somewhat longer and narrower than in *I. gausapata*, walls of pleurocystidia 4-7 µm thick; note that the protologue does *not* mention a mammillate umbo; under *Corylus*, New Jersey)

Basidiomes not very small (pileus 15-20 mm, stipe 15 x 3-5 mm) and pileus bister or dark brown to dark yellowish brown, margin splitting (stipe pale rosy-isabelline)

***Inocybe ovalispora* Kauffman**

***Inocybe striatiformis* Murrill ?**

Pileus fibrillose

Pileus with green or glaucous tones, stipe base becoming green where cut, odor aromatic

***Inocybe corydalina* Qué.**

Pileus lacking green tones, stipe base *not* becoming green, odor different

Pileus whitish, yellowish, or yellow-ochre, pleurocystidia *often* short (<50 µm long)

Pileus whitish, spores *not* minimally angular

Pileus whitish, dry, margin without veil remnants, lamellae *not* purplish, stipe even, on soil, New York

***Inocybe sambucella* G.F. Atk.**

Pileus pearly-white with a yellowish umbo, margin appendiculate with veil remnants, lamellae with a purplish tint, on dead wood, Xalapa (Mexico)

***Inocybe jalapensis* Murrill**

Pileus whitish to pale ochraceous, spores *minimally angular*, stipe base enlarged or subbulbous but not marginate, pleurocystidia *not* short, on sandy poor soil, Massachusetts

***Inocybe sambucina* (Fr.) Qué.**

Pileus yellow, viscid (with adhering dirt particles), margin without veil remnants, stipe even (pleurocystidia up to 65 µm), spores *not* minimally angular

***Inocybe hebelomoides* Murrill, *non* Kühner** [*Hebeloma floridanum* Murrill 1940, non Murrill 1945 has the same description and type as *I. hebelomoides*; need to confirm. *Inocybe floridana*, however, is already occupied in *Inocybe* by Murrill 1945, possible syn. *I. olpidiocyctis* G.F. Atk.]

Pileus pale yellow, cream-buff, or yellow-ochre, dry, stipe clavate with a bulbous base or with a napiform bulb

Stipe with a napiform bulb, pale yellow shading downward to dull brown, pleurocystidia very short (mostly 30-40 x 12-13 µm), in mixed woods of *Fagus* and *Tsuga*

Inocybe cryptocystis D.E. Stuntz (cf. *I. cylindrocystis* G.F. Atk. but with numerous small fibrillose-scales towards the margin)

Stipe clavate-bulbous, pallid, pleurocystidia larger than above (mostly 45-50 x 13-17 μm), under conifers

Pileus pale yellow, cystidia thick-walled, odor spermatic

Inocybe pallidicremea Grund & D.E. Stuntz (same as faded forms of *I. lilacina sensu auct. pl.*)

Pileus yellow-ochre, cystidia predominately thin-walled (some also thick), odor "farinaceous"

Inocybe kauffmanii (Syn. *I. longipes* Kauffman, non Masee)

Pileus tawny, brown, red-brown, dark brown, or fuscous, pleurocystidia *not* short (>50 μm long)

Fibrils on pileus and lower part of stipe agglutinated *and* spores ovate-elliptic

Pileus and lower part of stipe pale-tawny or fulvous

Inocybe agglutinata Peck (Syn. *I. geophylla* var. *fulva* (Pat.) Sacc. *sensu* Perez Silva?)

Pileus and lower part of stipe fuscous

Inocybe fuscodisca (Peck) Masee (spore apices bluntly pointed, occ. obtuse; cf. *I. virgata* G.F. Atk.)

Fibrils on pileus and lower part of stipe *not* agglutinated, spores elliptic, cylindric, or amygdaliform

Pleurocystidia thin-walled and pileus some shade of red-brown

Basidiomes more robust than below; stipe 30-60 x 2-6 mm, pallid or tinged dingy pinkish; spores 7-10 x 5-6 μm , in hardwood stands or mixed stands

Inocybe leptocystis G.F. Atk.

Basidiomes more slender than above; stipe 15-60 x 0.5-3 mm, pinkish; spores 9.5-12 x 5-6 μm , in swampy areas under hardwoods

Inocybe rufidula Kauffman

Pleurocystidia slightly thick-walled (0-1.5 μm) or thick-walled (>1.5 μm)

Pileus very dark brown, bister, or sepia

Pileus streaked very dark brown, similar to lower part of stipe

Inocybe virgata G.F. Atk. (similar to *I. fuscicothurnata* Grund & D.E. Stuntz but without the lilac apex; *I. striatiformis* Murrill has stiff upturned fibrils on pileus and pale rosy-isabelline stipe)

Pileus and stipe not as above

Spores 10.5-14.5 x 4.5-5.5 μm , narrowly cylindric or with slight irregular outline (similar to *I. lacera*), pileus context whitish but turning slightly reddish brown, velipellis present, basidiomes stout overall, under *Salix* or *Populus*, Greenland and Montana

Inocybe longispora M. Lange

Spores <11 μm , amygdaliform, basidiomes *not* stout, velipellis present or absent, stipe surface and context rubescent or not, under conifers or *Fagus*

Stipe with faint pinkish floccules that *become red* where handled, context slightly *rubescent*; pileus with a dingy brown velipellis; spores 7-9 x 5-6 μm ; under *Picea*, Nova Scotia

Inocybe erythrospilota Grund & D.E. Stuntz (original spelling 'erythospilota')

Stipe *and* context *not* rubescent, velipellis absent; spores mostly 9-11 x 6 μm , under conifers or *Fagus*

Inocybe nemorosa (R. Heim) Grund & D.E. Stuntz (cf. *I. pseudodestructa* Stangl & J. Veselský)

Pileus red-brown, dark reddish brown or lighter than above – brown (umbrinous or tawny-olive), grayish brown, isabelline, or bicolorous

Pileus bicolorous – tawny at the center, dull yellow towards the margin

Inocybe semifulva Grund & D.E. Stuntz [cf. *I. phaeodisca* Kühner, which differs by the pallid stipe with incarnate context and thin-walled pleurocystidia]

Pileus red-brown or dark reddish-brown

Pileus 10-20 mm, dark reddish brown, silky fibrillose; lamellae brown tinged olive; stipe base *bulbous* (12 mm), brownish incarnate; spores 7-9.5 x 4.5-5.5 μm ; pleurocystidia thin-walled (0.5-1.5 μm), in mixed hardwoods and conifers, Nova Scotia

***Inocybe obscurobadia* (J. Favre) Grund & D.E. Stuntz *sensu* Grund & D.E. Stuntz** (*I. furfurea sensu* Favre from Europe is similar but has an entirely pruinose stipe)

Pileus 30-50 mm, red-brown, surface at length somewhat lacerate or excoriate; lamellae white to brownish-gray or avellaneous; stipe even, *not* bulbous, white or whitish; spores 7-9 x 4.5-5.5 μ m; pleurocystidia thick-walled, hyaline, “in ground in woods”, Mass. and New York

***Inocybe excoriata* Peck** (cf. *I. rimosa* (Bull.) P. Kumm. *sensu* Kauffman but with spores 9-11 x 4.5-6 μ m, New York)

Pileus 25-40 mm, brown (dark brown) to reddish brown, with patches of grayish velipellis, *not rimose*, at times slightly scaly around the center; lamellae without olivaceous tones; stipe even, whitish to pale yellowish buff, at times with pinkish tints at the apex, spores 9-11 x 5.5-6.5 μ m, cystidia thick-walled; under hardwoods and conifers, New York (based on PBM2442)

***Inocybe griseovelata* Kühner** (cf. *I. rimosa sensu* Kauffman with similar spores, also New York but with rimose pileus and subbulbous stipe base)

Pileus umbrinous, light brown, grayish brown, yellowish brown, or isabelline

Odor none, spores small – 6-7 x 4 μ m, under *Quercus*, Florida

***Inocybe glabripes* Ricken** (Syn. *I. parvispora* Murrill)

Odor often spermatic, spores larger than above, plant associates various

Spores 9.5-11.5 x 4-4.5 μ m, narrowly oblong-elliptic or fusiform (like *I. lacera*), mean Q: 2.5

***Inocybe cylindrospora* Murrill** (on a lawn under *Pinus palustris*, Florida)

Spores not as long and narrow as above, often amygdaliform, mean Q < 2.0

Spores 7-9.5 x 4.5-5 μ m; pileus grayish-umber or light brown with a pallid persistent

velipellis, the margin with few broad flat scales; in woods including *Tsuga*, Nova Scotia

Inocybe submuricellata* var. *stenospermina (Syn. *I. abjecta sensu* Grund & D.E. Stuntz, *non* P. Karst.)

Spores 8.5-10 x 4.5-5 μ m, pileus uniformly isabelline, velipellis absent, under *Pinus*, Florida

***Inocybe praenucleata* Murrill**

Spores 9-10 x 5-5.5 μ m, pileus uniformly umbrinous (tawny-olive) to cinnamon, velipellis absent; pleurocystidia *slender* (subfusiform, sublageniform, subcylindric) and with only slightly thickened walls

***Inocybe pallidobrunnea* Kauffman**

Spores >10 μ m, pileus umbrinous, without a velipellis, stipe with pinkish tinges;

pleurocystidia ventricose and thick-walled

Spores 9-11 x 4.5-5.5 μ m

***Inocybe subdestricta* Kauffman** (cf. *I. griseovelata* Kühner with distinct grayish velipellis and wider spores)

Spores 9-12.5 x 5.5-6 μ m

***Inocybe nitidiuscula* (Britzelm.) Lapl.** (= *I. descissa* var. *macrospora* R. Heim *sensu* D.E. Stuntz)

Stipe pruinose below the stipe center but sometimes this may not be obvious; caulocystidia and cauloparacystidia present on lower part of stipe

Basidiomes reddening

Under *Quercus*, Florida, Oklahoma, Arizona; odor absent, lamellae pink [per protologue stipe is *not bulbous*]

***Inocybe roseifolia* Murrill**

Under conifers, Michigan; odor strongly spermatic, lamellae pallid to olivaceous but spotted or stained reddish, stipe base bulbous

***Inocybe godeyi* Gillet *sensu* D.E. Stuntz** (in Europe *I. godeyi* occurs under hardwoods)

Basidiomes *not* reddening

Basidiomes very small (pileus <10 mm), pileus with whitish or grayish strigose hairs

***Inocybe comatella* (Peck) Sacc.** (Syn. *I. agordina* Bizio)

Basidiomes larger than above, pileus without strigose hairs

Lower part of stipe fuscous (becoming sepia or very dark brown)

Young lamellae yellow, pileus warm reddish brown on the disc

***Inocybe luteifolia* A.H. Sm.**

Young lamellae white, pileus sepia on the disc

***Inocybe tenebrosa* Quél.** (Syn. *I. atripes* G.F. Atk.)

Lower part of stipe *not* fuscous (occasionally brunnescent)

Odor of bitter almonds

***Inocybe hirtella* Bres.**

Odor not as above

Basidiomes robust, pileus up to 60-70 mm wide, stipe (3-) 5-10-15 mm wide

Pileus *viscid* when moist, pale clay brown but darker at the center; stipe 10-12.5 mm wide, white; spores 9-12 x 5-6 μm , New York

***Inocybe olpidiocyctis* G.F. Atk.** (Syn.? *I. hebelomoides* Murrill, if caulocystidia below stipe center).

Pileus *dry* or with persistent sand grains attached

Pileus whitish tinged brownish at center, yellowish towards margin; stipe 6-15 mm wide, white; spores *large* (10-16 x 6-8 μm), on sandy shores, sand dunes (cf. *I. vulpinella* below)

***Inocybe serotina* Peck** (Syn. *I. bulbosa* Peck, *I. ammophila* G.F. Atk., *non* Hongo & Matsuda; cf. *I. praefarinacea* Murrill under *Quercus*, Florida)

Pileus colored different than above or spores smaller (7-11 x 5-6 μm), in forests or under trees

Pileus uniformly brown or orange brown towards the margin

Pileus *dry*, uniformly brown (umbrinous) or somewhat darker at the center, stipe 5-8 mm wide, white or pallid, at times flushed with yellow tones; spores 8-11 x 5-6 μm ; in mixed woods often under *Picea*, Nova Scotia

***Inocybe phaeoleuca* Kühner**

Pileus with adhering sand grains, brown to dark brown around the center, orange brown to ochraceous-brown towards margin, coarsely tomentose-fibrillose with initial grayish cobwebby velipellis; stipe 20-75 x 2-9 mm, clavate to submarginately bulbous, yellowish brown to orange brown above, dark brown above the base, bulb white; spores 12-18 x 7-9 μm ; in sand dunes or woods under *Salix*, *Populus* (Europe), or on mine wastes, Ontario

***Inocybe vulpinella* Bruyl.** (Syn. *I. immigrans* Malloch but less brightly colored than samples from Europe; cf. *I. similis* Bres., which differs by presence of a cortina and with caulocystidia restricted to the stipe apex).

Pileus lighter in color than above, at least when young

Pileus whitish at first, becoming straw yellow to dingy ocher with age, at first floccose-fibrillose; stipe 4-9 mm wide, white or whitish with a submarginate bulb; spores 8-10 x 5-6 μm , pleurocystidia 60-80 x 15-20 μm , in forests under conifers or hardwoods, throughout eastern states

***Inocybe sindonia* (Fr.) P. Karst. *sensu* Kauffman**

Pleurocystidia shorter than above

Pileus cream to chamois or isabelline, fibrillose-scaly becoming long-rimose; stipe more or less equal or enlarged toward the base, 4-10 mm wide, same color as the pileus or paler; spores 8-10 (-12) x 5-6 μm ; pleurocystidia 45-50 x 12-16 μm , in coniferous woods, Michigan (also western states)

***Inocybe kauffmani* A.H. Sm.** (Syn. *I. longipes* Kauffman)

Pileus dull whitish to pinkish-buff at first or tinged cinereous, becoming cinnamon-buff to clay color, occasionally darker and more tawny, stipe 3-8 mm wide, white turning sordid brownish below with a subbulbous base; spores 7-9 x 5-6 μm , pleurocystidia short (<50 μm long), under *Picea*

***Inocybe langei* R. Heim *sensu* A.H. Sm.**

Basidiomes *not* robust, pileus up to 35-45 (-50) mm wide, stipe up to 6 mm wide

Pileus brown (umbrinous) or reddish brown, often darker at the center

Spores 11-13 x 7.5-9 μm , noticeably thick-walled, stipe whitish at apex and at the base but yellowish-brown elsewhere, odor indistinct, in alpine zone under *Dryas*, *Salix* (known only from arctic areas of North America)

***Inocybe ohenojae* Vauras & E. Larss.**

Spores <10 µm long *or* <7 µm wide, *not* noticeably thick-walled, stipe cinnamon brown or incarnate, more widespread than above, Arctic, or in more southerly regions

Pileus dark brown to brown or ochraceous brown, *not* hygrophanous; stipe whitish to pale ochraceous all over when young, even, odor not very distinctive, spores 7.5-10 x 5-6 µm; with *Salix* in far north regions (Arctic), also Europe (= *I. ovalispora* sensu Kühner)

***Inocybe tjallingiorum* Kuyper**

Pileus dark brown at the center, brown elsewhere *not* hygrophanous; stipe pale cinnamon-brown, even, odor spermatic, spores mostly 8-9 x 5-5.5 µm; in sandy soil under conifers, Nova Scotia (also Washington)

***Inocybe brunneolipes* Grund & D.E. Stuntz**

Pileus chestnut-brown (reddish brown), diffracted-scaly at the margin, *not* hygrophanous, stipe white at apex, tinged rufous elsewhere, base subbulbous or marginate; odor none or faintly spermatic; spores 6-7 x 5-6 µm, ovate to subglobose; in hardwoods, Michigan and New York (spores reported by Kauffman 1924 are slightly wider than by Kuyper 1986)

***Inocybe ovalispora* Kauffman** (Syn. *I. albomarginata* Velen. but Stuntz' type notes indicate the absence of caulocystidia on the lower part of the stipe in *I. ovalispora*)

Pileus dark brown at the center, elsewhere reddish brown to dingy yellowish-brown, at times uniformly reddish brown, *hygrophanous* in appearance; stipe incarnate, equal or (sub)bulbous; odor none or faintly spermatic; spores 9-11.5 x 5.5-7 µm; in mixed hardwood forests or under *Salix* in arctic-alpine, Michigan, Canada, Greenland (also in western montane conifer forests and alpine areas under conifers or *Salix*)

***Inocybe leioccephala* D.E. Stuntz** (cf. *I. subbrunea* Kühner under western conifers, Wyoming to Mexico, spores with obtuse apices; cf. *I. brunnea* Quél. *sensu* Perez Silva, Mexico)

Pileus tawny, yellowish brown, isabelline, dull honey color, or whitish to pale ochraceous
Basidiomes short and stout (pileus 30-35 mm, stipe 25 x 7 mm), pileus isabelline and stipe white, spores >10 µm long, Florida

***Inocybe subconnexa* Murrill**

Basidiomes *not* short and stout

Velipellis absent or indistinct, pileus whitish to pale ochraceous, *lower half of stipe with caulocystidiod cells only*, spores *minimally angular* in outline, odor not remarkable, under hardwoods or conifers but on sandy acidic soils, confirmed from Massachusetts, also Europe

***Inocybe sambucina* (Fr.) Quél.**

Velipellis absent, pileus center fulvous (tawny), margin yellow, scaly with age; spores *amygdaliform*, odor faintly spermatic or none, under hardwoods or mixture of hardwoods and conifers; Nova Scotia, Michigan (type), and Tennessee

***Inocybe microteroxantha* Grund & D.E. Stuntz** (close to *I. ochraceomarginata* Kauffman but the latter is pruinose only at apex of stipe) [phylogenetically part of *I. hirtella* group]

Velipellis present, spores *not* minimally angular in outline, odor strongly of green corn or spermatic, under conifers (*Tsuga*, *Pinus*)

Odor strongly spermatic, lamellae dull yellowish brown with olivaceous tinge, stipe pale dull yellow

***Inocybe chalcodoxantha* Grund & D.E. Stuntz**

Odor strong of green corn but becoming spermatic, lamellae grayish pallid with faint yellowish cast, becoming darker brown, stipe pallid or with slight tinge of brown

***Inocybe melleiconica* Grund & D.E. Stuntz** [phylogenetically part of *I. hirtella* group; confirmed from Ontario, type Nova Scotia]

Spores angular, nodulose, stellate, or spinose and yellowish brown; pleurocystidia present (but see *I. leptophylla*)

Stipe pruinose at the apex only *or* not at all (caulocystidia, if present, restricted to stipe apex)

Pileus *and* stipe squarrose to squamulose or fibrillose-scaly to floccose-scaly

Pileus dark grayish-olive or fuscous-olivaceous, in degraded xerophytic forest, Guadeloupe

***Inocybe viridumbonata* Pegler**

Pileus reddish brown, dark purplish-fuscous, brown, or dark brown, in temperate or boreal forests, widespread

Basidiomes red to reddish brown *or* dark purplish-fuscous, at least some spores cruciate

Basidiomes red to reddish brown, under *Abies* in spruce-fir zone, North Carolina

***Inocybe carolinensis* Matheny & Kudzma**

Basidiomes dark purplish-fuscous, in mixed hardwood forests throughout eastern North America

***Inocybe tahquamenonensis* D. E. Stuntz** (Syn. *I. stellatospora* (Peck) Massee *sensu* Kauffman, *non* Peck)

Basidiomes dark brown to brown

In *Sphagnum* under conifers, spores 10-12.5 x 7.5-10 µm, coarsely nodulose about an elliptic outline with 11-20 nodules; Great Lakes region

***Inocybe teraturgus* M.M. Moser**

On soil or rotten wood in coniferous forests; if spores as large as above, then pleurocystidia absent, more widespread than above

Pleurocystidia absent, on rotten wood, spores >10 µm long

***Inocybe leptophylla* G.F. Atk.** (Syn. *I. leptophylla* var. *cystomarginata* G.F. Atk., *I. casimiri* Velen.)

Pleurocystidia present, on soil or rotten wood, on soil, spores <10 µm long

Basidiomes small, pileus 7-13 mm wide, stipe 10-30 x 1-2 mm, spores weakly nodulose

***Inocybe diminuta* Peck**

Basidiomes medium, larger than above; spores with 8-14 distinct nodules

Pleurocystidia thin-walled and elongate (>50 µm long)

***Inocybe stellatospora* (Peck) Massee** (Syn. *I. longicystis* G.F. Atk., *I. lanuginosa* (Bull.: Fr.) P. Kumm. *sensu* Euro. auct., *non* Kauffman)

Pleurocystidia thick-walled and short-obovate to pyriform (<50 µm long)

***Inocybe lanuginosa* (Bull.) P. Kumm. *sensu* Amer. auct.** (Syn. *I. nodulospora* (Peck) Sacc., *I. ovatocystis* Boursier & Kühner, *non* Perez Silva)

Pileus fibrillose or scaly, stipe not scaly

Young lamellae and/or stipe grayish-lavender, basidiomes small

Pileus 8-10 mm, obtusely umbonate, squarrose at the center, uniformly reddish umber, lamellae at first grayish lavender becoming pale grayish olivaceous beige; stipe 20 x 1-1.5 mm, grayish lavender, spores 8-10 x 6-7 µm with about 7-8 prominent obtuse nodules; on soil under *Betula*, *Fagus*, Nova Scotia, temperate

***Inocybe fulvella* Bres. *sensu* Grund & D.E. Stuntz** (*non* D.E. Stuntz 1947)

Pileus 15-17 mm, with small papillate umbo, reddish brown (Mars Brown), appressed fibrillose-squamulose, lamellae light violet gray becoming grayish-ocher; stipe 27-30 x 2.5-4 mm, robust, pale buff becoming brown below; spores 8.5-11.5 x 6-7.5 µm, ovate with 11-14 small nodules; in xerophytic forest, Guadeloupe, Caribbean Basin

***Inocybe ianthinofolia* Pegler**

Young lamellae or stipe *not* grayish-lavender, basidiome size various

On logs or rotten wood *and* pileus hygrophanous

***Inocybe tubarioides* G.F. Atk.**

On soil, pileus *not* or rarely hygrophanous

Spores mostly oblong and smooth to irregular in outline, 12-15.5 x 4.5-6.5 µm, some with a few basal nodules, under *Pinus*

***Inocybe texensis* Thiers**

Spores nodulose or angular, shorter than above, habitat various

Stipe base distinctly bulbous

Pileus with a prominent acute umbo, spores 6-8 x 4-6 µm, nodules not very distinct, "on ground in woods"

***Inocybe prominens* Kauffman** (Syn. *I. umboninota* Peck 1910, *non* 1885 (type); *I. prominens* f. *longistriata* Kauffman; cf. *I. sphagnophila* with similar sized-spores but with 8-11 distinct nodules and a widened stipe base, not distinctly bulbous, under conifers)

Pileus with an obtuse umbo, if present, on ground under conifers

Pileus *viscid* to *subviscid*, umbrinous with a pale ochraceous or yellow umbo; stipe flavescent, white-mycelioid at the base, odor not recorded; spores 7-9 x 4-7 μm , irregularly angular with rather distinct obtuse nodules; cystidia often thin-walled or slightly thickened, under *Pinus*, Massachusetts

***Inocybe davisiana* Kauffman**

Pileus *dry*, pileus darker than above or uniform in color; stipe *not* flavescent, odor none or indistinctive; spores various; cystidia thin-walled or slightly thickened, under conifers

Stipe base napiform, spores 8-10.5 x 6-7.5 μm , angular-nodulose with 6-10 coarse nodules, under *Tsuga*

***Inocybe napipes* J.E. Lange**

Stipe base marginate, spores 7-9.5 μm in diam, subquadrate, subtrianangular or subrectangular to subglobose, with coarse obtuse nodules, in coniferous woods (e.g., *Abies*)

***Inocybe nodulosa* Kauffman**

Stipe base swollen to somewhat bulbous but not napiform or marginate, cortina white and conspicuous, spores 6.5-9 x 4.5-7 μm , at times (sub)isodiametric, with 8-11 prominent obtuse nodules, in high elevation coniferous woods (*Abies*, *Picea*), North Carolina and Tennessee

***Inocybe sphagnophila* Bandini & B. Oertel**

Stipe base with an ovate bulb, spores 6-9 x 5-6 μm , coarsely nodulose about a globose to elliptic outline, under *Pinus* or in mixed woods, Florida

***Inocybe subnodulosa* Murrill**

Stipe even or swollen below, base not distinctly bulbous

Pileus and stipe yellow; spores somewhat angular-nodulose, 6-9 x 5-6 μm ; cystidia mostly thin-walled, less often -1.5 or 2 μm thick; in hardwood or mixed forests, Nova Scotia, Massachusetts, New York, North Carolina

***Inocybe ventricosa* G.F. Atk.**

Pileus pinkish buff (light ochraceous-salmon) with a brownish center, stipe pale brown to almost white at the base (subbulbous but not marginate), spores 8-10 x 6.5-8 μm with 10-14 nodules, in degraded xerophytic forest, Guadeloupe, Caribbean Basin

***Inocybe paralanuginosa* Pegler**

Pileus vivid reddish brown (Sanford's Brown), lamellae ochraceous-orange, apricot-buff or ochraceous-tawny, stipe pinkish to light orange, base enlarged but not bulbous or marginate; spores 6.5-8 x 4-5.5 μm with 10-12 nodules, in woods under *Quercus* and *Coccoloba*, Florida to lowland Costa Rica (type), also Tennessee and Texas under *Quercus*

***Inocybe neotropicalis* Singer**

Pileus dark brown, reddish brown, brown, or grayish brown, stipe *not* yellow or light orange; spores various; arctic, boreal, or temperate in distribution, widespread

Pileus reddish brown at the center, paler towards the margin

Pileus with a low or mammilate umbo, lamellae tinged olivaceous, stipe often pale brown; spores 8-9.5 x 5.5-6.5 μm , polyhedral with 7-10 coarse nodules; mostly with *Picea*, *Betula*, boreal to arctic

***Inocybe borealis* J.E. Lange** (Syn. *I. heterochrominea* Grund & D.E. Stuntz; *I. acuta sensu* Grund & D.E. Stuntz 1977)

Pileus with prominent conical umbo, lamellae pallid to brownish, stipe white; spores angular, 7-9 x 4-5 μm ; under *Quercus*, Florida

***Inocybe subprominens* Murrill**

Pileus dark brown, brown, light brown, or grayish brown

Pileus with an acute umbo (pale brown at margin), cystidia without acute apices

Spores 7.5-10 x 5.5-7 μm , polyhedral with mostly 7-10 moderate-sized nodules, under *Betula* or *Picea*, Quebec, British Columbia, Alaska

***Inocybe bufonia* Kokkonen & Vauras**

Spores 9-12 x 6.5-9 μm , mostly 11-12 x 7-8 μm , polygonal-nodulose with 10-15 very prominent nodules ("star-shaped" per Esteve-Raventós 1987), "mossy ground in woods"

***Inocybe umboninota* (Peck) Sacc. *sensu* Peck 1885, *non* Peck 1910**

Pileus with a low obtuse umbo or *not* umbonate; if acutely umbonate, then cystidia with acute apices

Pileus scaly (squamose or squamose)

Pileus squarrose to squamose at the center, dark umbrinous or sepia; stipe slightly bulbous, with pallid fibrils over dark brown ground color; spores 6.5-10 x 4.5-5 μm , irregularly polygonal with few nodules; pleurocystidia ventricose above a slender pedicel, thin-walled to slightly thick-walled (-1.5 μm), apices bluntly pointed to broadly rounded; under *Picea*, *Tsuga*

***Inocybe maritimoides* (Peck) Sacc.**

Pileus often scaly at the center or appressed-scaly throughout, umbrinous or tawny; stipe even, pallid above, brown below, spores 9-12 x 5-6.5 μm , trapeziform with 6-10 moderate to small nodules; pleurocystidia with long slender basal pedicel and (sub)acute apices, thick-walled (-2.5 μm); often under planted hardwoods or *Pinus*

***Inocybe curvipes* P. Karst.** (Syn. *I. decipientoides* Peck, *I. radiata* Peck, *I. astoriana* Murrill, *I. jamaicensis* Murrill, *I. ochraceoscabra* G.F. Atk.; *I. rennyi* (Berk. & Broome) Sacc. is an unusually elongated-spored form)

Pileus fibrillose, not scaly

Spores >10 μm long; pileus bicolorous with a very dark brown (bister to sepia) disc, brown towards the margin; spores 9-13 x 7-11 μm , substellate; cystidia *without* acute apices; at high elevation forests under *Picea*, *Abies*, *Tsuga*, *Betula* in North Carolina and Tennessee

***Inocybe pseudoasterospora* Kühner & Boursier**

Spores >10 μm long, trapeziform in outline; cystidia *with* acute apices; at low elevations under planted hardwoods or pine

***Inocybe curvipes* P. Karst.**

Spores <10 μm long; pileus, spores, or habitat not as above

Pileus with a thin felty brown superficial layer, otherwise dark brown (“Mummy Brown”), not rimose, *odor aromatic*, stipe even (not bulbous), *not darkening with age*, lower part peronate with felty superficial layer; spores 6.5-9 x 4.5-6 μm , angular-nodulose with 4-7 large nodules or at times only angular; pleurocystidia *thin-walled*, utriform above a slender pedicel, apices rounded or subcapitate; under *Picea*

***Imnocybe parcecoacta* Grund & D.E. Stuntz** (*I. subcarpta* Kühner & Boursier is somewhat similar but has a squamulose pileus, no distinctive odor, and somewhat larger and much more nodulose spores; compare carefully with *I. maritimoides*)

Pileus at times with pale velipellis at the center, otherwise dark brown to blackish brown, reddish brown to brown towards the margin, often rimose, odor indistinct or weakly acidulous; stipe even to subbulbous, *nigrescent* or becoming dark brown, blackish brown, or blackish red-brown below; spores 8-9.5 x 5.5-7 μm , with 6-8 distinct nodules; in gravelly soil or dry sandy habitats in mixed forests under *Betula*, *Picea*, *Larix*, *Populus*, *Pinus*

***Inocybe ericetorum* Vauras & Kokkonen**

Pileus without a thin felty brown superficial layer, rimose, odor *not aromatic*, stipe swollen or subbulbous, *not nigrescent*, spores 7-10 x 5.5-8 μm with 8-12 small but distinct nodules, under conifers

***Inocybe assimilata* Britzelm.** (Syn. *I. umbrina* Bres, *non* Masee, *I. castaneoides* Peck)

Pileus with grayish remnants of velipellis at center when young, rimulose to rimose, odor *none* or slightly spermatic, *not nigrescent*, spores 6.5-9 x 4.5-7 μm with 8-11 distinct rounded nodules, in *Sphagnum* under *Picea* (recorded at Mt. Love, near Clingmans Dome, Tennessee and Mt. Mitchell State Park, North Carolina)

***Inocybe sphagnophila* Bandini & B. Oertel**

Pileus dark brown, no velipellis, fibrillose-finely scaly, rimulose near margin, odor *not noticeable*, *not nigrescent*, spores 7-10 x 4-6 μm and angular like an *Entoloma*, under conifers (Washington, North Carolina)

***Inocybe alpigenes* (E. Horak) Bon** (= *I. tetragonospora*)

Stipe pruinose below the stipe center or with caulocystidia and cauloparacystidia present below the stipe center

Stipe even or tapered downward

Spores globose or elliptic with bifid or multicornate saddle-shaped nodules or spinose

Spores globose to elliptic with numerous blunt, wedge-shaped, or truncate nodules, these often bifid or saddle-shaped *or* multicoronate

Spores 12-14.5 x 10-12 μm , nodules multicoronate, cheilocystidia metuloid (thin-walled per the protologue), under *Picea*, Nova Scotia, boreal

***Inocybe multicoronata* A.H. Sm.**

Spores 8-10.5 x 7-9 μm , nodules bifid, wedge-shaped or crested, cheilocystidia thin-walled, under hardwoods, Guadeloupe (type Venezuela, also reported from Guyana but with larger spores), Caribbean Basin

***Inocybe lasseri* Dennis *sensu* Pegler**

Spores spinose, nodules *not* bifid; under hardwoods

Pileus squarrose-scaly, dark reddish brown, spores globose (9-12 μm diam), hymenial cystidia not rare

***Inocybe calospora* Quél. (Syn. *I. rigidipes* Peck)**

Pileus appressed-scaly, cinnamon (umbrinous) to ochraceous-tawny (fulvous), spores subelliptic to subglobose (10-13.5 x 9-11 μm), hymenial cystidia rare

***Inocybe subfulva* Peck** (Syn. *I. calospora sensu* Grund & D.E. Stuntz, *I. echinocarpa* Ellis & Everh., *I. praeechinulata* Murrill, *I. subfulviformis* Murrill; cf. *I. pseudocoronata* Matheny, nom. prov. with a *bulbous* stipe base and spines that are occasionally bifid or multicoronate)

Spores angular-nodulose or nodulose, *not* spinose

Temperate in distribution, basidiomes stout and robust, pileus ivory yellow, pale yellow, to light yellowish brown, subsmooth; stipe pure white, spores 9-10 x 7-7.5 μm , under planted *Quercus* mixed with *Pinus*

***Inocybe aff. fibrosa* (Sowerby) Gillet**

Temperate in distribution, basidiomes *not* stout and robust, pileus white or light silvery-gray, stipe white or yellowish

Basidiomes white; spores mostly 7.5-8 x 5 μm

***Inocybe paludinella* (Peck) Sacc.** (cf. *I. infida* (Peck) Masee, which has a *bulbous* stipe base)

Pileus light silvery-gray, stipe yellowish; spores 8-10 x 4-5 μm , many elongate-trapeziform in outline and with few nodules or corners, some with up to 9 nodules; pleurocystidia often fusiform to ventricose, thick-walled

***Inocybe alabamensis* Kauffman**

Tropical in distribution *or* pileus and stipe darker than above

Martinique (Caribbean Basin), likely associated with Nyctaginaceae or *Coccoloba*

Pileus chestnut brown (reddish-brown) or darker, fibrillose-rimose

***Inocybe antillana* Pegler**

Pileus ochraceous-tawny, ochraceous or pale yellowish brown, surface fibrillose-squamulose

Spores 7.5 x 5.5-7.5 μm , cystidia 40-55 μm long, odor strongly spermiatic

***Inocybe crassicystidiata* Pegler**

Spores 8-11 x 5-7.5 μm , cystidia 45-70 μm long, odor not described

***Inocybe martinica* Pegler**

Boreal or temperate in distribution (eastern Canada and U.S.A.), associated with conifers or temperate hardwoods

Pileus uniformly cinnamon brown to umbrinous (tawny-olive) *or* with a brownish-black disc *and* spores 6.5-8 x 4.5-5.5 μm , under hardwoods or conifers, also in *Sphagnum*

Pileus uniformly cinnamon brown to umbrinous (tawny-olive)

***Inocybe petiginosa* (Fr.) Gillet**

Pileus colored as above but with a brownish black disc

***Inocybe nigrodisca* Peck**

Pileus reddish brown or chestnut-brown *and* spores <8 μm long, under conifers or in mixed conifer-hardwood stands

Pleurocystidia lanceolate, spores 5-7 x 4-6 μm with variable number of nodules (0, 3-4, or 8-10), under conifers

***Inocybe castanea* Peck, *non* Velen.**

Pleurocystidia ventricose or jug-shaped, spores 6-8 x 5-6 μm with 10 or more small rounded nodules, in swampy places or among mosses under conifers or in mixed conifer-hardwood stands

***Inocybe subexilis* (Peck) Sacc.**

Pileus pale brown to brown (umbrinous) and spores >8 µm long, under conifers (but see *I. praenodulosa*)

Stipe brown with pinkish tinges, with a distinct odor, in *Picea* forests

Pileus umbonate; odor penetrating and unpleasant, not spermatic; spores with 5-8 low obtuse nodules

***Inocybe acriolens* Grund & D.E. Stuntz** [may be a form of *I. albodisca* with an even stipe; cf. *I. grammata*]

Pileus not distinctly umbonate, odor spermatic, spores with 6-10 distinct nodules

***Inocybe jacobi* Kühner**

Stipe brown or white, lacking pinkish tinges, odor unknown, in *Pinus* forests or habitat unknown

Pileus not umbonate, stipe brown, spores with 5-8 low obtuse nodules, in sandy *Pinus* forests, Carolinas

***Inocybe sabuletorum* (Berk. & M.A. Curtis) Sacc.**

Pileus umbonate, stipe white, spores coarsely nodulose, Florida (plant associates unknown)

***Inocybe praenodulosa* Murrill**

Stipe base bulbous with a marginate, rounded, turbinate, or napiform bulb

Spores spinose (spines occasionally bifid or multicoronate), stipe base napiform (or turbinate); pleurocystidia 40-50 x 11-15 µm, broadly clavate, utriform, or obovate; under *Pinus* and *Quercus*, Texas (Gulf Coast)

***Inocybe pseudocoronata* Matheny ined.**

Spores stellate, stipe base marginate, pleurocystidia >50 µm long; ecology various, more widely or northerly distributed

Basidiomes staining greenish blue where bruised, odor aromatic but with spermatic component

***Inocybe insignis* A.H. Sm.**

Basidiomes not staining greenish blue where bruised, odor other than above

Pileus chestnut-brown to cinnamon-rufous, stipe tinged rufous or with red, odor spermatic

***Inocybe asterospora* Qué. sensu Kauffman**

Pileus light brown or mixed more with yellowish shades or reddish amber to orange-yellow, stipe yellow becoming dull brown or white or faintly tinged with yellow, odor none

Pileus light brown or mixed more with yellowish shades, stipe yellow becoming dull brown

***Inocybe intricata* Peck**

Pileus reddish amber to orange-yellow (raw sienna), duller in age, stipe white or faintly tinged with yellow

***Inocybe intricata* var. *pallidistipitata* Grund & D.E. Stuntz**

Spores angular-nodulose or nodulose

Pileus white, pallid, cream, ivory, tinged straw-colored, or dull pale yellow

Pileus up to 30 mm wide, stipe 30-55 x 3.5-6 mm (base -12 mm), spores <10 µm long

Stipe solid, spores mostly 7-9 x 5.5-6.5 µm, odor spermatic or disagreeable in eastern populations

***Inocybe umbratica* Qué.** (Syn. *I.alachuana* Murrill, *I.floridana* Murrill, *I.suaveolens* D.E. Stuntz, *I.abundans* Murrill sensu Grund & D.E. Stuntz)

Stipe hollow, spores mostly 9-10 x 6.5 µm

***Inocybe fallax* Peck**

Pileus 40-100 mm wide, stipe 40-100 x 6-20 mm, spores 9-12 x 5-7 µm

***Inocybe fibrosa* (Sowerby) Gillet** (cf. *I.fibrosa* var. *trivialis* J.E. Lange sensu Perez Silva, Mexico)

Pileus 35-50 mm wide, stipe 40-80 x 7-8 mm, spores 7-8 x 5-6 µm, odor strong of green corn, under hardwoods (*Quercus*, *Carya*) on calcareous ground

***Inocybe leucocaulis* Matheny ined.** (= *I.aff. fibrosoides* Kühner)

Pileus bicolorous due to whitish disc or honey yellow, yellowish brown, brown, reddish brown, or with very dark brown disc

Pileus bicolorous due to whitish disc, margin avellaneous or brownish

Under mixture of conifers and/or *Betula*

Inocybe grammata* Quél. *sensu stricto (Syn. *I. albodisca* Peck, *I. permucida* Grund & D.E. Stuntz *pro parte*; northerly extending south to Tennessee; west coast '*albodisca*' differs by shorter spores; cf. *I. acriolens*, which is very similar but has non-bulbous stipe and unpleasant odor, ITS 98% similar)
Under *Quercus*, *Fagus* (New York, Tennessee, extending south into Central America)

Inocybe* aff. *grammata (cf. *I. aff. angustifolia* (Corner & E. Horak) Garrido *sensu* Singer, spores 6-8.5 x 5-5.5 μm with 8-10 moderate-sized nodules, under *Quercus*, lowland Costa Rica)
Pileus honey yellow, yellowish brown, brown, reddish brown, or with very dark brown disc
Spores <10 (-10.5) μm long

Pileus lubricous or viscid when moist

Pileus honey yellow, stipe white, odor spermatic, spores mostly 9-10 x 6-6.5 μm , angular in outline with 9-10 rather prominent nodules; cystidia thick-walled, widespread and in varied habitats including mixed *Tsuga* forests, low-elevation *Pinus taeda* forests, high-elevation *Pinus*, *Abies*, *Quercus* forest, Rocky Mountain alpine; Nova Scotia southwards to North Carolina and at high-elevations in Mexico; also in western North America, including alpine settings with *Salix*

***Inocybe occulta* Esteve-Rav, Bandini, B. Oertel & G. Moreno** (Syn. *I. mixtilis* (Britzelm.) Sacc. *sensu* Am. auct. p.p.; *I. trechispora* (Berk) P. Karst.)

Same as above but with somewhat smaller spores mostly 7-7.5-8 x 5.5-6 μm and 5% divergence at the ITS locus, sympatric with *I. occulta* in Nova Scotia, also Alaska, B.C., Oregon, California, Europe and east Asia

***Inocybe cesakae* (Britzelm.) Sacc.** (Syn. *I. mixtilis sensu* Am. auct. p.p.)

Pileus avellaneous-isabelline; stipe white, odor not recorded, spores est. 6-8 x 5-6 μm with mostly 4-7 small nodules or corners (orig. reported as "5-6 x 3-4" μm), cystidia thick-walled, in sandy soil, Florida

***Inocybe minutispora* Murrill**

Pileus dry

Pileus becoming brownish-red with age or upon drying, the umbo often darker, forming scales; stipe reddish or brownish below apex, Missouri

***Inocybe desquamans* Peck** (Syn. *I. repanda* (Bull.: Fr.) Quél. *sensu* Kauffman)

Pileus *not* discoloring brownish-red, scales absent; stipe without red, distribution various

Pileus margin cream-buff to chamois, *not* reddish brown or dark brown; stipe white, resembling *I. geophylla* in habit (small, slender, white, and typically with an umbonate pileus)

***Inocybe infida* (Peck) Massee** (cf. *I. paludinella* (Peck) Sacc., which has an even stipe)

Pileus darker than above, *not* resembling *I. geophylla*

Odor disagreeable, strong, or spermatic

Pileus umbrinous to pale brown, at times bicolorous with dark brown disc; stipe cream buff or light ocher buff, odor spermatic; spores 9-10 x 7-8.5 μm with 10-12 moderate-sized nodules; pleurocystidia saccate, broadly clavate or fusiform, thick-walled; under *Quercus* or *Pinus strobus* in urban or forest settings; Tennessee, Texas, Florida

***Inocybe* aff. *oblectabilis* (Britzelm.) Sacc.**

Pileus isabelline; stipe pallid above, dull brownish-yellow below, odor "rather strong fungous", spores with mostly 7-8 moderate to small nodules, pleurocystidia fusiform, thick-walled; caulocystidia slenderly fusiform to cylindric, in woods, New York City

Inocybe abundans (dry forms of *I. mixtilis* would key here; per Smith (1939) same as *I. mixtilis*; note Murrill described the presence of an evanescent veil in the protologue but caulocystidia are present below the stipe center in the type; *I. abundans sensu* Grund & Stuntz = *I. umbratica*)

Pileus light buff with brownish margin, stipe white to pale buff, odor strong spermatic, in xerophytic tropical forest under *Coccoloba*, Guadeloupe (Caribbean basin)

***Inocybe xerophytica* Pegler**

Odor none or not remarkable

Pileus pale ochraceous-tawny to light pinkish-tan, dry; stipe white or pallid, odor none; spores with numerous (10-12) small nodules; pleurocystidia and caulocystidia thick-walled, broadly lageniform; in mixed woods, Alabama to Tennessee

***Inocybe earleana* Kauffman**

Pileus yellowish-brown or clay color, with a prominent umbo, stipe white and hollow, odor not described; spores with scattered indistinct nodules; pleurocystidia thin-walled; in mixed woods under *Picea*, *Fagus*, New York

***Inocybe paludosella* G.F. Atk.**

Pileus reddish brown (castaneous) to dark brown

Pileus 20-40 mm; stipe 25-70 x 3-7 mm, with conspicuous marginate bulb 7-13 mm wide, white with pinkish tinges; odor none; spores 9-11 x 6.5-8 µm, mostly *angular in outline* with 8-10 *coarse prominent nodules*; under hardwoods, Nova Scotia (pileus umbrinous and under conifers in Washington)

***Inocybe decemgibbosa* (Kühner) Vauras (Syn. *I. oblectabilis* f. *decemgibbosa* Kühner)**

Pileus 10-25 mm; stipe 15-60 x 1.5-5 mm with a marginate bulb -8 mm wide, rosy-isabelline; odor not remarkable; spores 9-10(-11) x 6-8 µm, mostly *elliptic in outline* with 11-12 *small conical nodules*; under *Quercus* in lawns and rest areas, Florida (type), Tennessee, Oklahoma

***Inocybe subradiata* Murrill**

Spores >10 µm long

Stipe drying ashy-gray or black

Pileus 15–30 mm, *finely squamulose*, not distinctly rimose towards the margin, grayish brown; stipe pruinose at apex, slightly villose below, pallid becoming dark or black (bone-brown to fuscous) when dried; spores 9–11 x 7–10 µm; pleurocystidia *large* (55–96 x 13–23 µm), subhyaline or tinted brownish, New York

***Inocybe nigrescens* G.F. Atk.** (*cf. I. xanthomelas* Bournier & Kühner with the pileus never scaly and pleurocystidia with distinct yellow walls; *cf. I. umbrinescens* Murrill with stellate spores)

Pileus –30 mm, not distinctly rimose on the outer half; with small scales around the umbo; stipe distinctly pruinose throughout, pale yellow, becoming gray; spores 9–12 x 7–9 µm; pleurocystidia *not large* (45–72 x 15–25 µm); 12–17 µm); under *Tsuga*, Nova Scotia

***Inocybe xanthomelas sensu* Grund & D.E. Stuntz, *non* Boursier & Kühner**

Pileus 20–40 mm, not distinctly rimose on the outer half; stipe distinctly pruinose throughout, flesh and stipe surface turning *ashy gray to dark gray* on aged specimens or after drying; spores 9–13 x 6.5–10 µm; pleurocystidia *large* (65–100 x 12–25 µm); under conifers, *Salix* (in alpine and boreal forests of N.A., Europe)

***Inocybe phaeocystidiosa* Esteve-Rav., G. Moreno & Bon (= *I. praetervisa* Quél. *sensu auct. p.p.*)**

Stipe *not* drying ashy-gray or black, but may dry brown or not at all

Pileus pale fulvous to light yellowish brown or yellowish brown (stipe may dry brown)

Pileus 15–20 mm with a prominent umbo, stipe 2.5 mm wide; spores 8–10 (–12) x 5–6 (–7) µm, in mixed woods under *Picea*, *Fagus*, New York)

***Inocybe paludosella* G.F. Atk.**

Similar to above (pileus -30 mm wide) but pileus without prominent umbo and spores mostly 9–11 x 7.5–8.5 µm, under *Pinus strobus* or mixed hardwoods including *Pinus strobus*, New England to western North Carolina

***Inocybe* aff. *straminipes* Romagn.**

Pileus 30–60 mm wide, conical when young, distinctly rimose throughout; stipe 4–10 mm wide wide, not distinctly pruinose on lower half; spores on average >10 µm long, yellowish intracellular pigment present in some hymenial cells; under conifers, *Betula*, or alpine-arctic, slightly acidic soils, Canada, Europe)

***Inocybe praetervisa* Quél. group (= *I. glabrodisca* *sensu* Kropp & Matheny 2004)**

In forests under conifers, spores mostly 10-10.5 x 6.5-7 µm on average

***Inocybe praetervisa* Quél.**

In forests under *Betula*, spores mostly 10.5-12.5 x 7-8 µm on average

***Inocybe rivularis* Jacobsson & Vauras**

In alpine or arctic systems, spores mostly 11-11.5 x 7-7.5 µm on average

***Inocybe favrei* Bon, *non* Nespiak (= *I. taxocystis* (J. Favre) Senn-Irlet)**

Pileus disc very dark brown, margin umbrinous

***Inocybe cicatricata* Ellis & Everh.**

Pileus reddish brown

Stipe with pinkish tinges

***Inocybe decemgibbosa* (Kühner) Vauras**

Stipe pallid to very pale yellow

***Inocybe obtusiuscula* Kühner (Syn. *I. rufofusca* (J. Favre) Bon)**

Spores nodulose and hyaline; pleurocystidia present

One species - basidiomes entirely white, similar to *I. paludinella* but spores nodulose about a subangular to subelliptic outline (*Lanuginosa*-like) with 9-12 distinct conical nodules, 8.5-10.5 x 6.5-8 µm; pleurocystidia thick-walled, hyaline; caulocystidia present below stipe center?

***Inocybe pernivosa* (Murrill) Matheny ined. (Syn. *Entoloma pernivosum* Murrill)**

Doubtful taxa

Inocybe eutheloides (Peck) Peck, *N.Y. St. Mus. Bull.* 1: 13. 1888 (*Agaricus eutheloides* Peck, *Ann. Rep. N.Y. St.*

Mus. 32: 29. 1879). No published data on the type exist to my knowledge. In Peck's protologue, the spores are described as "even, uninucleate, gibbous or unequally elliptical". Until the type is examined, I would consider application of this name (e.g., Hesler 1936) as doubtful. Kauffman (1924), however, treated *I. eutheloides* as a smooth-spored species near *I. pallidipes*. It's not clear if his treatment is based on the type.

Inocybe fulvelliceps Murrill, *Quart. J. Florida Acad. Sci.* 8: 186. 1945. Data on the stipe covering are lacking. Murrill described the stipe as bulbous, white, and smooth. The spores are nodulose with 7-12 moderate-sized conical nodules about a subelliptic to subangular outline and less than 10 µm long. The thick-walled pleurocystidia appear rather short and fusiform to broadly so or utriform. Basidia are 4-sterigmate. The species was described by Murrill under *Quercus* in Florida. If the stipe is pruinose and bears caulocystidia the entire length, the species would be close to *I. abundans*, the latter close to, if not conspecific with, *I. mixtilis*.

Inocybe leptocystella G.F. Atk., *Am. J. Bot.* 5: 212. 1918. The type was designated by Atkinson as CUP19844. Kauffman and Stuntz concluded the data presented in the protologue were derived from other specimens not CUP19844 given the large spores of the latter. Kauffman considered CUP19844 as the same as *In. mutatum*, but again the spores are much too large. In my opinion, Atkinson's protologue is consistent with that of *In. mutatum*, but CUP material that match this species have not been located.

Inocybe murinolilacina Ellis & Everh., *J. Mycol.* 5: 25. 1889. Stuntz, in his unpublished notes, considered this a species of *Cortinarius* due to the presence of punctate-roughened spores in the isotype.

Inocybe nucleata Murrill, *Quart. J. Florida Acad. Sci.* 8: 188. 1945. Stuntz' unpublished notes on the type indicate the absence of caulocystidia on the lower part of the stipe. Murrill, however, described the stipe as equal and whitish-pulverulent, especially above. More data from the type, including the spore morphology, are necessary to include it in the key.

Inocybe scabella P. Kumm. sensu Kauffman (1918, 1924). The overall gross morphology and ecology would suggest *I. lacera*, but Kauffman (1918, 1924) described the spores as "almond-shaped" or "ellipsoid-almond-shaped". Material was not studied by Smith (1939). *Inocybe scabella* var. *rufa* is described in Kauffman (1918) and distinguished by its pale rufous to sordid brick color, more slender stipe (50-60 x 1-2 mm), and common occurrence in swampy or mossy wet places on rich soil in cedar and hemlock forests (Kauffman 1918). No one to my knowledge has re-assessed the taxonomy of these taxa.

Inocybe strigosa (Peck) Peck, *Bull. N.Y. St. Mus.* 131: 116. 1909 (*Paxillus strigosus* Peck, *Bull. Buffalo Soc. Nat. Sci.* 1: 56. 1873). In the protologue the pileus is described as brittle, strigose with scattered stiff hairs, whitish, the lamellae as subdecurrent and at times forked, the stipe pruinose, the spores subglobose. Peck also mentions the lamellae are not easily removed from the pileus, and suggests a morphological similarity with *Clitocybe* and *Lepista*. The species was originally described in *Paxillus*. Without a modern assessment based on a study of the type, the species is doubtfully *Inocybe*.

Inocybe subeutheloides Murrill, *Mycologia* 33: 282. 1941. The pileus is small (up to 25 mm wide) and described as finely hispid-squamulose and slightly rimose-lacerate with age. The color of the pileus is not clear (isabelline but with a subfuliginous umbo). The stipe is 25-30 x 3-4 mm, equal, subsmooth, and white.

Pleurocystidia are ostensibly present, and the spores are described as smooth about 9 x 4.5 µm. The type is recorded under in woods of *Quercus* and *Pinus*, Florida. I have not studied the type, and Stuntz' unpublished notes only indicate the presence of lageniform caulocystidia at the stipe apex mixed with shorter clavate cells. The species appears to key most closely to the *I. flocculosa* group. Aside from the white stipe, it shares many affinities with *I. stuntzii* (= *I. flocculosa*) per Grund & Stuntz (1975).

Inocybe subroindica Banning & Peck, Ann. Rep. N.Y. St. Mus. 44: 182. 1892 [1890]. "Pileus at first campanulate, obtuse, dry, cracked longitudinally, glossy, fleshy at the disk, then at the margin, flesh white or slightly pinkish; lamellae adnate, close, forked, lanceolate, cream color, turning brownish ochre; stem nearly regular, twisted, marked with reddish fibrils, stuffed, hard, brittle. In open places in woods. August and September." A plate (Pl. 61) is indicated but is not included in the 1985 reprint of Peck's reports. The species was described from Maryland, however, it may conform better with *Entoloma* than with *Inocybe*. No unpublished data on the type are present among Stuntz' works.

Inocybe rubroindica Banning & Peck, Ann. Rep. N.Y. St. Mus. 44: 70. 1891. Saccardo (1895) makes reference to the epithet "*rubroindica*" in the 44th report, but such a reference cannot be found. The epithet is also not present in Stuntz' note card library. I can only speculate that "*subroindica*" was in error and meant to be "*rubroindica*".

Inocybe tuberosa Clements, Bot. Surv. Neb. 2: 40. 1893. In Saccardo (1895) the pileus is described as 30 mm wide, squamose, fleshy, and brown; the stipe 40 mm long, 7-10 mm wide, bulbous or "tuberoso", gilvous; and the lamellae as brown; spores obtuse ovoid-ellipsoid, 6 x 4 µm. The species was described from Sioux County, in northwest Nebraska with an affinity to *I. insequenti* (Britzelm) Sacc. Likely plant associates could have included *Pinus*, Salicaceae, or possibly *Pseudotsuga*. The type was not studied by Kauffman (1924), and I could find no mention of it in Stuntz' unpublished notes.

Excluded taxa

Inocybe angustispora Bessette & Fatto (*Cortinarius aureifolius*)

Inocybe ferruginosa A.H. Sm. (*Cortinarius uliginosus* var. *nauseosus*, *C. ferruginosus*)

Inocybe sterlingii Peck (*Hebeloma sterlingii* (Peck) Murrill)

Inocybe taedophila Murrill (*Cortinarius aureifolius* Peck)

Inocybe weberi Murrill (This is a species of *Cortinarius* – in need of replacement name?)

Western North American taxa of Inocybaceae not treated here (80 total)

Inocybe acystidiosa (Kauffman 1924)

Inocybe alpinomarginata (Cripps et al. 2020)

Inocybe amblyspora (Nishida 1989)

Inocybe anomala (Murrill 1913, Kauffman 1924)

Inocybe appendiculata (Matheny, unpubl.)

Inocybe arctica (Cripps et al. 2020)

Inocybe auricoma (Nishida 1989)

Inocybe bakeri (Kropp et al. 2010)

Inocybe bresadolae (Nishida 1989)

Inocybe brunnescens (Earle 1904, Kauffman 1924, *non brunnescens* G.F. Atk. 1918; spores phaseoliform)

Inocybe californica (Kauffman 1924)

Inocybe candidipes (Kropp & Matheny 2004)

Inocybe cf. *candidipes* (Larsson et al. 2017)

Inocybe chelanensis (Stuntz 1947, Nishida 1989, Kropp & Matheny 2004)

Inocybe chondroderma (Matheny et al. 2013; = *I. viscidula* sensu D.E. Stuntz)

Inocybe chrysocephala (Nishida 1988, 1989)

Inocybe cinnamomea (Nishida 1989)

Inocybe cystidiosa (Smith 1941 as '*Tricholoma cystidiosum*')

Inocybe eutheles sensu A.H. Sm. (Smith 1939)

Inocybe fulvella sensu D.E. Stuntz, *non* Grund & Stuntz (Stuntz 1947)

Inocybe fuscescentipes (Larsson et al. 2014)

Inocybe geophylla var. *lilacina* sensu Nishida (Nishida 1989, *I. ionocephala* Matheny & Swenie 2018)
Inocybe giacomii (Cripps et al. 2020; as *Inocybe boltonii* ssp. *giacomii* Miller 1987)
Inocybe hemileuca (Nishida 1988)
Inocybe hotsoniana (Stuntz 1947)
Inocybe ionocephala (Matheny & Swenie 2018)
Inocybe insinuata (Kauffman 1924, Nishida 1989)
Inocybe laetior (Smith & Stuntz 1950)
Inocybe lemmi (Larsson et al. 2017)
Inocybe leonine (Cripps et al. 2020)
Inocybe lucifuga sensu D.E. Stuntz (Stuntz 1947, Perez Silva 1967)
Inocybe menthigustans Nishida (Nishida 1988, 1989)
Inocybe monticola Kropp & Matheny (Kropp et al. 2010)
Inocybe mutifolia (Braaten et al. 2014)
Inocybe multifolia f. *cryptophylla* (Braaten et al. 2014)
Inocybe muricellata (Nishida 1989)
Inocybe murina (Cripps et al. 2020)
Inocybe mytiliodora (Matheny unpubl.)
Inocybe oblectabilis (Nishida 1989)
Inocybe obscura var. *rubens* (Stuntz 1947)
Inocybe obscura var. *obscura* (Stuntz 1947, Perez Silva 1967)
Inocybe olida (Nishida 1989)
Inocybe olympiana (Smith 1938)
Inocybe paragiacomii (Cripps et al. 2020)
Inocybe phaeocomis var. *major* (Nishida 1989, Cripps 1997)
Inocybe phaeodisca (Nishida 1989)
Inocybe picrosma (Smith & Stuntz 1950)
Inocybe praecox (Kropp et al. 2010)
Inocybe prominens f. *longistriata* (Kauffman 1925)
Inocybe pseudodistricta (Bandini et al. 2019; =*I. glabrescens* sensu B.C. auct.)
Inocybe purpureobadia (Cripps et al. 2020)
Inocybe pusio (Perez Silva 1967, Nishida 1989)
Inocybe pyrotricha (Smith & Stuntz 1950)
Inocybe rainierensis (Smith & Stuntz 1950, Kropp & Matheny 2004)
Inocybe rufoalba sensu Lange (Miller 1987)
Inocybe sierrensis (Kropp & Matheny 2004 as “*sierraensis*”)
Inocybe siskiyouensis (Kauffman 1929, Smith 1939)
Inocybe splendens sensu Nishida (Nishida 1989)
Inocybe subgiacomii (Cripps et al. 2020)
Inocybe subporospora (Seres et al. 2015, Alaska, north-western Canada)
Inocybe vaccina (Nishida 1989)
Inocybe venustissima Bandini & B. Oertel (Bandini et al. 2019; =*I. auricoma* sensu B.C. auct.)
Inocybe viscidula sensu Stuntz (Stuntz 1947; this is *I. chondroderma*)
Inocybe volvata (Stuntz 1947)
Inosperma adaequatum sensu Nishida (Nishida 1989)
Inosperma quietiodor (Nishida 1989)
Mallocybe agardhii (Nishida 1989, Matheny 2003)
Mallocybe arthrocytis (Cripps et al. 2010)
Mallocybe coloradoensis Kauffman 1924 (= *I. caesariata* sensu Kauffman)
Mallocybe pygmaea (Miller 1987)
Mallocybe leucoblema (Cripps et al. 2010)
Mallocybe leucoloma (Cripps et al. 2010)
Mallocybe substraminipes (Cripps et al. 2010)
Mallocybe terrigena (Matheny 2003)

Pseudosperma breviterincarnatum (Kropp et al. 2013)
Pseudosperma aestivum (Kropp et al. 2013)
Pseudosperma cercocarpi (Kropp et al. 2013)
Pseudosperma flavellum sensu Cripps (Cripps 1997)
Pseudosperma niveivelatum (Kropp et al. 2013)
Pseudosperma occidentale (Kropp et al. 2013)
Pseudosperma spurium (Cripps 1997 as *I. squamata*; Kropp et al. 2013)

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