

Key to Species of Inocybaceae from eastern North America – v15 (16 May 2022)

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Taxa to add to key v14: *Inocybe vaccina* (NC), *Inocybe digitula* (S Jacob, New York), *Inocybe scolopacis* (based on soil sample KC966278), *I. oetziana* (as *I. cf. friesii* Canada, GU180296 ECM USA, and “*sindonia*” BC), *I. lampetiana* (BC samples as “*I. cf. griseoilacina*” and “*I. glabrescens*”), *I. plurabellae* from Canada and US). Need to add *I. caprimulgi* from New York and *I. pseudodestructa* from New York. Substituted *I. ochroalba* for *I. langei* sensu A.H. Sm. Need to add bona fide *I. griseovelata* and bona fide *I. sindonia* (both from Pennsylvania). Also need to add *Ps. dulcamaroides* based on USA *Salix* alpine material (Larsson) and Arctic Canadian enviro sample.

Note: Added a key to genera of Inocybaceae known to occur in North America. Updated “*I. aff. oblectabilis*” to *I. nucleata*. Updated “*I. aff. margaritispora*” to *I. aff. diabolica*. Added *Pseudosperma cf. umbrinellum* and *I. striatiformis*, the latter a Murrill species from northern Florida. Added *I. porcorum* under eastern white pine from New York and Finland and *I. oblectabilis*, *I. pallida*, and *I. dunensis*, additional European species, now confirmed from northern Florida, Tennessee, and/or Quebec. Also added *I. paludinella f. citrophylla* and *I. soluta*, the latter confirmed from Quebec and British Columbia. *Inocybe nothomixtilis* was added based on confirmation from material sequenced from New Jersey and Pennsylvania by Linas Kudzma and from New York by Sigrid Jakob.

V10 adds *I. pararubens* var. *padjelantae* from arctic tundra in Canada and some minor corrections and adjustments. V9 added *I. suecica* reported by Shannon Berch (pers. comm.) under *Quercus garryana* in British Columbia, *I. coelestium* reported by Renée Lebeuf from Quebec, and the recently newly described *I. glaucescens* from New Jersey. I also added *I. goniopusio* (= *I. pseudoasterospora* var. *microsperma*) from North Carolina based on morphology. V8 added updates to the taxonomy of several species such as *In. rosellicaulare* and *I. phaeoleuca* sensu Grund and Stuntz, which is now the same as *I. melleioconica*, now confirmed from northern Europe. V7 incorporated 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 *I. bufonia* was added to 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 now included in the key near *I. cincinnata*. *Inocybe tjallingiorum* (syn. *I. subporospora*) was included based on samples from northern Canada.

This unpublished key includes treatment of ca. 225 species, varieties, and forms of Inocybaceae documented from eastern North America, including Central America and the Caribbean Basin (ca. 175 *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, about 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 genera of Inocybaceae from North America

- 1a.** Pleurocystidia present (usually as metuloids) and basidiospores angular, angular-nodulose, spinose, or smooth in outline (if pleurocystidia are absent, then spores are nodulose), apiculus generally distinctive, basidia usually hyaline.....**Inocybe**
- 1b.** Pleurocystidia absent and basidiospores smooth in outline, apiculus generally very small and indistinct, basidia hyaline or necropigmented **2**
- 2a.** Pileus tomentose, coarsely fibrillose, or scaly but *not rimose* **3**
- 2b.** Pileus rimose..... **4**
- 3a.** Stipe considerably longer than pileus diameter, flesh weakly reddening after cut or damage; odor often pronounced like pears, fish, bruised Geranium leaves, wine casks, green corn.....
.....**Inosperma p.p.** (= *Inocybe* sect. *Cervicolores*)
- 3b.** Stipe often shorter or equal to pileus diameter *or* flesh *not* reddening, odor often not distinctive
.....**Mallocybe**
- 4a.** Stipe often furfuraceous at least apically, flesh *not reddening*; stipe equal or generally *not* bulbous, brittle or easily breaking at the base; most species with basidiospores >6 µm wide on average; if smaller, then lamellae often oliveaceous or with tropical vegetation in the Caribbean.....
.....**Pseudosperma** (= *Inocybe* sect. *Rimosae sensu stricto*)
- 4b.** Stipe smooth to finely-fibrillose, flesh reddening in species with basidiospores >6 µm wide on average; smaller-spored species with non-reddening flesh or brunnescent stipe; base of stipe often enlarged or bulbous
..... **Inosperma p.p.** (clades *Adaequatum* and *Maculatum*)

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 granulate-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* granulate

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)

Pileus and stipe sheathed in pronounced white superficial veil, without a prominent umbo, under oak and pine, northern Florida

Mallocybe* aff. *leucoloma (*M. leucoloma* confirmed from western states)

Pileus and stipe *not* sheathed in white superficial veil, habitat various

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 fulvoubonata* (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 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 or absent, lower part of stipe with green-gray shades; arctic (*Dryas*) to Nova Scotia (*Picea*) and New York (*Betula*, *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 or blackish 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 or blackish 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, strong brown, to ochraceous tawny; stipe pallid to pinkish, brunnescent; odor spermatic, spores 8-9(11) x 4.5-5 µm, in northern hardwood forest

Inosperma neobrunnescens (Grund & D.E. Stuntz) Matheny & Esteve-Rav. (Syn. *In. rosellicaulare* (Grund & D.E. Stuntz) Matheny & Esteve-Rav.; *I. brunnescens* G.F. Atk., *nom. illegit.*)

Pileus vinaceous-brown, stipe vinaceous, odor sickly sweet to aromatic with a green corn component, spores 9.5-11.5 x 6 µm; in cove hardwood forest, also under oaks or cottonwood in rest areas or similar habitats; Oklahoma, Texas, Tennessee, North Carolina, also recorded from Minnesota and Quebec under oaks

Inosperma vinaceobrunneum (Matheny & Kudzma) Haelew. (= *I. jurana* (Pat.) Sacc. *sensu* Hesler

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

Pileus yellowish to brownish yellow, odor eventually strong of *green corn*, velipellis present or absent, common; New England, Tennessee, North Carolina, Texas

Inosperma rimosoides (Peck) Matheny & Esteve-Rav. [two strongly divergent genetic variants key here – one may have a spermatic odor at first, the other may have a sweet honey-like odor at first]

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

Pileus tawny to fulvous, distinctly umbonate, velipellis patches often *conspicuous*, odor typically aromatic with green corn component, widespread throughout North America including Mexico under a wide variety of hardwoods (oak, cottonwood, alder), also disturbed areas such as cemeteries; spores 8-11.5 x 4.5-6 µm, cheilocystidia 38-75 x 11-16 µm, clavate or a mixture of cylindric, utriform, and short clavate cells

Inosperma lanatodiscum (Kauffman) Matheny & Esteve-Rav. (Syn. *In. pallidifolium* (Murrill) Matheny & Esteve-Rav.; *In. fulvum* (Bon) Matheny & Esteve-Rav. is the European form)

Pileus fulvous to yellowish brown, obtusely umbonate in age, velipellis patches *conspicuous*, odor spermatic or mild; under *Quercus* and *Tilia*, known only from New York and Tennessee; spores 9-10 x 5-5.5 µm

Inosperma aff. maculatum 1

Pileus orange-brown or tawny, velipellis inconspicuous or absent, odor aromatic with a green corn component (spermatic also recorded); New England, New York, Tennessee, North Carolina, Indiana; spores 7-10 x 4.5-5.5 µm

Inocybe curreyi (Berk.) Sacc. sensu Hesler (non *Pseudosperma curreyi* (Berk.) Matheny & Esteve-Rav. (species requires a new name in *Inosperma*)

Pileus dark brown, chestnut-brown, or brown (umbrinous), odor various (none, green corn, spermatic, or aromatic)

Pileus brown or umbrinous, *with a prominent umbo*, stipe slender, odor none; spores *elliptic*, 7.5-9 x 5-6 µm, with *Abies* or *Betula*; New York, Mexico, China

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

Pileus dark brown or bicolorous with a dark brown umbonate disc and a radially streaked reddish brown to brown margin, fruitbodies *robust*, odor of green corn, staining dark brown with age, spores (sub)reniform, 7-8 x 4-4.5 μm , in oak-hickory forests mixed with beech; New Jersey, Virginia, Tennessee, North Carolina, Mississippi

***Inosperma* aff. *fastigiellum* 2**

Pileus center dark yellowish brown, with slight velipellis, shading umbrinous towards the margin, fruitbodies robust, odor spermatic, spores **xxxxxxx**, under *Fagus*, *Quercus*; New York, Tennessee, Indiana, Oklahoma, Mexico

***Inosperma* aff. *maculatum* 2**

Pileus dark brown, chestnut-brown or umbrinous, with or without a prominent umbo, odor *often present* (aromatic or spermatic) but occasionally absent; spores 8-10 x 4.5-5.5 μm , (sub)reniform; habitat various

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 p.p.** (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 (at higher elevations), on acid soil in mixed and northern hardwood forests including *Quercus*, *Carya*, *Tsuga*, *Pinus*, *Rhododendron*; =*In. rosellicaulare*)

Pileus lacking distinct white patches of velipellis, odor spermatic

***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.; *Inocybe glabra* (“*glaber*”) Kauffman [1918] has an ochraceous-brown to livid-brown (vinaceous-brown) umbonate (acute or nipple-like) and deeply conical pileus, nauseous or radishy odor, no velipellis, white to pallid bulbous sitpe, and subreniform spores 7-9 x 4-5 μm , under hardwoods, Michigan)

Stipe furfuraceous-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, B.C., Mexico)

Stipe even or slightly enlarged at the base

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 margin yellowish; lamellae narrow and cream, pale yellow, to olive-brown; odor of green corn, spores 11-15.5 x 6-8 µm, under hardwoods, eastern U.S. [western variant is larger and occurs under 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; spores 8-12 x 5-7 µm; under *Quercus* or in *Quercus-Carya* forests, eastern U.S. (Ohio, New York, New Jersey, Tennessee)

***Pseudosperma friabile* (Matheny & Kudzma) Haelew.**

Lamellae tinged olivaceous, odor *none*, pileus yellowish brown to brownish yellow, rimose but *not* long-rimose; spores 9.5-12.5 x 5.5-6 µm; in mixed forests, southeast U.S. (Tennessee, Florida)

***Pseudosperma* cf. *umbrinellum* (Bres.) Matheny & Kudzma**

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 dark brown to dark yellowish brown at the center, shading umbrinous towards the margin, umbonate, velipellis absent; lamellae narrow, not olivaceous; stipe light buff with a white base, not bulbous; odor none; spores 10-12 x 5.5-6 µm; cheilocystidia 38-43 x 12-14 µm, utriform to somewhat clavate or ventricose; on sandy acid soil under *Tsuga*, *Pinus strobus*, *Quercus*, North Carolina

***Pseudosperma* sp. PBM4587** [*perlatum/notodryinum* clade]

Pileus mostly yellowish to yellowish brown (*Ps. rimosum* (Bull.) Matheny & Esteve-Rav. complex – several unique sequence variants have yet to be characterized)

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

***Inocybe fastigiata* (Schaeff.) Qué. *sensu* Kauffman** (Kauffman's concept likely was a broad one)

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

***Pseudosperma parafastigiatum* D.E. Stuntz ex Matheny ined.**

Similar to *I. parafastigiatum* (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. 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, pileus convex, robust, under conifers or in mixed woods under conifers; common in western North America, rarely reported in eastern North America (Nova Scotia)

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

Basidiomes drying pink, pileus umbonate, 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.) Qué. *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 spermatoc

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* spermatoc

Pileus yellowish brown, basidiomes slender

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

Pileus reddish brown with pale brown margin, basidiomes *not* slender

***Inocybe personata* Kühner**

Odor spermatoc or *not* like *Pelargonium*

Pileus pale ochraceous, stipe apex violet but finely white velutinous 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 subsclay; stipe fibrillose; spores >11 µm long and minimally angular; odor not spermatic; northern in distribution southwards to the 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 fusciothurnata* 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, stipe long in relations to pileus width; 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 throughout
 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, odor of green corn, ecology not clear (“in mixed woods”),

***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 with *Fagus*, *Tilia*, *Quercus* or mixed forests, limestone soil

***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)

Pileus center with blue-green tinged velipellis, elsewhere ochraceous-tawny to ochre, center becoming dark brown with age; lamellae and flesh in stipe reddening, under hardwoods, New Jersey (type) and Minnesota

***Inocybe glaucescens* Matheny & Kudzma**

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, cylindric, 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 <20 mm, stipe 13-25 x 1-3 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 mammilate 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 mammilate umbo and the spore measurements are incorrect per Grund & Stuntz (1981); under *Corylus*, New Jersey)

Basidiomes not very small and pileus dark brown to dark yellowish brown, margin splitting (stipe *not* white)

Pileus 20-50 mm, convex to plane and umbonate or nearly so; surface diffracted-scaly, rimose to the umbo, chestnut-brown (dark brown); lamellae whitish to brown; stipe 40-50 x 3-4 mm, equal to subbulbous, pruinose at the apex, tinged rufous; odor unknown; spores 6-7.5 x 5-6 µm, ovate to subglobose, at times with obscure angles; cystidia only slightly thick-walled; under hardwoods, Michigan and Tennessee

***Inocybe ovalispora* Kauffman**

Pileus 10-22 mm, conical to campanulate or plane, with a low umbo, velipellis absent; cracked-areolate over the disc in age, fibrillose to finely scaly and rimulose towards the margin; dark yellowish brown, odor spermatic; lamellae subdistant, grayish brown to yellowish brown; stipe 20-35 x 2.5-4 mm, pruinose at the apex with pallid vestiture below; ground color light buff to ochre-buff; spores 8-9.5 x 5-5.5 µm, amygdaliform with pointed apices; pleurocystidia only slightly thick walled (-1.0 µm), metuloids present upper-third of stipe; in mixed woods on humus enriched soil under *Quercus*, *Carpinus*, *Pinus*, northern Florida

***Inocybe striatiformis* Murrill (see PBM4557)**

Pileus fibrillose

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

Pileus 30-60 mm, whitish and streaked with bister-colored fibrils; stipe 30-50 x 2-5 mm, whitish, fuscous, white within but changing to green where cut; spores 8-9.5 x 5-5.5 µm, ovate; pleurocystidia 45-55 x 15-18 µm, short, subpyriform to ventricose-subvoid with slender pedicel, paracystidia saccate-clavate; Maryland, New York (also Colorado)

***Inocybe corydalina* Qué.**

Pileus -25 mm wide, center dark olive-bister, light ochraceous towards the margin, surface with scattered appressed white fibrillose patches; stipe 40-50 x 4-5 mm, white above, yellowish brown towards the center, grayish green at base; flesh white, not reddening where cut; spores 7.5-9 x 5=6 µm, subamygdaliform to elliptic; pleurocystidia 34-62 x 13-24 µm, cylindric, ventricose, or clavate with a slender pedicel; paracystidia abundant, clavate

***Inocybe coelestium* Kuyper**

Pileus 10-30 mm, coarsely fibrillose with appressed scales, center with blue-green tinged velipellis, elsewhere ochraceous-tawny to ochre, center becoming dark brown with age; lamellae with a pinkish brown phase, reddening where damaged. Stipe 30-35 x 4-6 mm at apex, base enlarged up to 9 mm wide with a rounded bulb; yellowish with white furfureous fibrils, ochraceous to reddish pink above the base or cinnamon-brown with age, reddening faintly where bruised; spores 7.5-9.5 x 5-6.5 µm, subcitriform to broadly amygdaliform; pleurocystidia 26-38 x 12-17 µm, short and obese or short clavate to short utriform; paracystidia slenderly clavate, abundant; under hardwoods, New Jersey (type).

***Inocybe glaucescens* Matheny & Kudzma**

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 to chamois, conical, dry, margin without veil remnants, lamellae *not* purplish, stipe even; on limestone soil, New York and Vermont, also Europe (Netherlands)

***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.) Quél.**

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. olpidiocystis* 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 light yellowish brown, 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; odor faint, raphanoid with saponaceous or farinaceous components; 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; odor raphanoid-spermatic; spores 9.5-12 x 5-6 µm, in swampy areas under hardwoods, (type Michigan; Stz2777 from Michigan is same as environmental sample from arctic Alaska and very similar to *I. cf. griseolilacina* EL12006))

***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 cylindrical 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 '*erythrospilota*'; type sequences on GenBank are inaccurate – these are *I. brunneolipes*)

Stipe *and* context *not* rubescent, velipellis absent, odor spermatic; 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)

Stipe and context *not* rubescent, velipellis absent, odor of *Pelargonium*, in cove hardwood forest

***Inocybe* sp. PBM2633** [flocculosa/cinninata clade]

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

Pileus bicolorous – tawny at the center, dull yellow towards the margin; under hardwoods (e.g., *Salix*) and reported under conifers, southeast Canada, Pacific Northwest, Europe, Argentina, introduced in New Zealand

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

Pileus *not* bicolorous – light yellowish brown, 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 slightly thick-walled (0.5-1.5 μm), in mixed hardwoods and conifers, Nova Scotia

***Inocybe obscuroidia* (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 excoriolate; lamellae white to brownish-gray or avellaneous; stipe even, *not* bulbous, white or whitish; spores 7-9 x 4.5-5.5 μm ; 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 μm , 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, odor faintly spermatic; lamellae without olivaceous tones; stipe even or somewhat bulbous, whitish to pale yellowish buff, at times with pinkish tints at the apex, spores 9-11 x 5.5-6.5 μm , cystidia thick-walled; under hardwoods and conifers, New York and Tennessee (based on PBM2442 and JK120; name misapplied, nearest to *I. grusiana*)

***Inocybe griseovelata* Kühner sensu Matheny** (cf. *I. rimosa sensu* Kauffman may be similar)

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

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

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

Odor none; spores 12-15 x 5-6 μm , oblong-cylindrical to minimally angular, pileus with distinct patches of white velipellis, stipe pruinose at least half-way; under *Tsuga*, *Abies*, *Betula*, New York

***Inocybe inodora* Velen.** (Syn. *I. pruinosa* R. Heim)

Odor often spermatic or spores 6.5-12.5 μm long, plant associates various

Spores 9.5-11.5 x 4-4.5 μm , narrowly oblong-elliptical 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 μm ; 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 6.5-9 x 4-5 μm , *pip-shaped* to amygdaliform; pileus *small* (<20 mm), umbrinous, velipellis absent, odor spermatic, PDAB negative; pleurocystidia thick-walled apically; under *Tsuga*, *Pinus strobus*, *Quercus*, widespread – Nova Scotia to Mexico, also Europe [note also red-brown forms with a slight lilac apex also occur]

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

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

***Inocybe praenucleata* Murrill**

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

***Inocybe pallidobrunnea* Kauffman**

Spores >10 μm , pileus umbrinous, without a velipellis, stipe with pinkish tinges; pleurocystidia ventricose and thick-walled

Spores 9-11 x 4.5-5.5 μm (type Michigan)

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

Spores 9-12.5 x 5.5-6 μm

***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, stipe reddish brown to cinnamon brown, under hardwoods, Quebec, New York (type), Tennessee, west to Michigan and Washington

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

Basidiomes larger than above, pileus without strigose hairs

Lower part of stipe fuscescent (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 atripes* G.F. Atk.** (European *I. tenebrosa* Quéél. Is very similar, but some interpretations of this species are the same as *I. metrodii*, which lacks the fuscescent stipe)

Lower part of stipe *not* fuscescent (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 olpidiocystis* 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, also in alpine zone of northern Europe with *Salix*

***Inocybe melleiconica* Grund & D.E. Stuntz** (= *I. phaeoleuca* Kühner *sensu* Grund & Stuntz, non *sensu* Euro. auct.)

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, confirmed molecularly from Pennsylvania

***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 cinnamon-buff to clay color, occasionally darker and more tawny, stipe 3-8 mm wide, white turning sordid brownish below with a subbulbous base, odor spermatic to fabaceous; spores 7-9 x 5-6 μm , pleurocystidia short (<50 μm long), under *Picea*; widespread in northern regions of the U.S. (New York, Michigan, Pacific Northwest) and Europe

***Inocybe ochroalba* Bruyl.** (= *I. 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, base slightly bulbous, odor indistinct, in alpine zone under *Dryas*, *Salix* (known only from arctic areas of North America)

***Inocybe ohenojæ* Vauras & E. Larss.**

Spores 10-12 x 6.5-8 μm , *not* noticeably thick-walled, stipe whitish but becoming slightly yellowish or brownish, base bulbous but not marginate, odor indistinct or slightly spermatic, in alpine zone under *Salix* and *Bistorta vivipara* (known only from arctic areas of North America – District of Keewatin)

***Inocybe pararubens* var. *padjelantæ* Vauras & E. Larss.**

Spores <10 μm long *or* <7 μm wide, *not* noticeably thick-walled; stipe typically cinnamon brown, incarnate, or pale; 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 , at times with small indistinct germ pore; with *Salix* in far north regions (Canadian Arctic, Quebec), also Europe (= *I. subporospora*; *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 dark brown at center shading to brown or tawny-olive to the margin, fibrillose, *not* hygrophanous; stipe ochraceous, slightly bulbous; odor spermatic; spores 8-10 x 4.5-5.5 µm, (sub)amygdaliform, pleurocystidia narrow; under hardwoods in parks, cemeteries, woods, northern Europe, under *Quercus garryana* in British Columbia (S. Berch, pers. Comm.)

***Inocybe suecica* Vauras & E. Larss.**

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; misapplied as *I. phaeoleuca sensu* Grund & Stuntz]

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, squamulose or fibrillose-scaly, floccose-scaly, or woolly fibrillose

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

***Inocybe viridumbonata* Pegler**

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

Basidiomes red to reddish brown *or* dark purplish-fuscon, 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-fuscon, 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, spores *not* cruciate

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 8-9 mm wide, stipe 12-22 x 1-2 mm, stipe grayish violaceous at the apex

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

If basidiomes small, then stipe lacking any violaceous tones, otherwise larger than above

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), stipe squarrose to floccose-scaly

***Inocybe stellatospora* (Peck) Massee** (Syn. *I. longicystis* G.F. Atk., *I. lanuginosa* (Bull.: Fr.) P.

Kumm. *sensu* Euro. auct., *non* Kauffman; note two different species have been detected (i) northerly occurring species – Pacific Northwest, Minnesota, to Quebec and northern Europe – this likely will need a new name; (ii) eastern U.S. species – New York to North Carolina, also northern Europe, Japan – this may encompass both *I. longicystis* and *I. stellatospora* types)

Pleurocystidia thick-walled and short-obovate to pyriform (<50 µm long), stipe woolly fibrillose

***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)

Similar to above but pileus with a very dark brown disc and a pale brown to brown margin; lavender tones not observed on lamellae; on soil in mixed forests (*Pinus*, *Tsuga*, *Quercus*, *Betula*), North Carolina

***Inocybe* aff. *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 and 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); cf. *I. prominens* f. *longistriata* Kauffman (type Oregon); 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 [umbo is darker than margin on some specimens among the type]; 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 [possibly in mixtilis group?]

***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*, possibly also *Abies*, widespread

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

Stipe base marginate, odor not distinctive; spores mostly 7-8 x 5-6 μm in diam, irregular in outline, polygonal, with 5-7(8) coarse obtuse nodules; under conifers (*Abies*), southeast Canada to Tennessee and North Carolina

***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, ventricose; 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 Iowa, Tennessee, 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, probably widespread

Pileus reddish brown at the center, paler towards the margin

Pileus with a low broad umbo, lamellae yellowish brown, stipe olive-brown to umber with a yellow cortina; spores 7.5-10 x 5.5-7 μm , angular-trapeziform, weakly nodulose with 4-7 corners or few small nodules; cystidia thin- to slightly thick-walled apically, ventricose with subacute apices; under young *Abies fraseri*, North Carolina [ITS 97-98% similar to *I. ventricosa*]

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

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 conical, with a small or low broad umbo, lamellae pale gray to dark brown; stipe light brownish, becoming brown to dark brown; spores 9.5-12 x 6.5-8 μm , angular-nodulose with 5-10 small nodules; cystidia thick-walled, on calcareous ground under pines; known only from New York (Brooklyn), Finland (type), late fall in the U.S.

***Inocybe porcorum* Murrill**

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

***Inocybe subprominens* Murrill**

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

Pileus with an acute umbo (pale brown at margin) and cystidia without acute apices, not the *curvipes*-type (see below)

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** (cf. *I. porcorum*)

Pileus with a low obtuse umbo or not umbonate; if acutely umbonate, then cystidia saccate or broadly fusiform and with acute apices

Pileus scaly (squarrose 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*; compare to *I. soluta*, which generally has a fibrillose pileus that can form scales.

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

Pileus at times 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 saccate or broadly fusiform 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 at times bicolorous with a very dark brown (bister to sepia) disc, brown towards the margin, odor spermatic where cut; spores 9-13 x 7-11 μm , many shaped like jacks or 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 saccate or broadly fusiform with acute apices; at low elevations under planted hardwoods or pine; pileus not as dark as above, odor spermatic

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

Spores >10 μm long; pileus uniformly dark brown to brown, odor acidulous; spores 9.5-12 x 6.5-8 μm , angular-nodulose with 5-10 small nodules; cystidia without acute apices; under pines, known only from New York (Brooklyn) and Finland (type)

***Inocybe porcorum* Vauras & Kokkonen**

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

Pileus without a velipellis, brown to dark brown, disc often darker than the margin, silky fibrillose to weakly rimulose, odor spermatic, stipe swollen but not distinctly bulbous (base white), not darkening with age; spores 7-10 x 6-7 μm , some shaped like jacks or angular,

mostly with 5-7 nodules; pleurocystidia *thick-walled* (1-2.5 μm), lageniform to fusiform-ventricose, apices obtuse; under *Abies*

***Inocybe goniopusio* Stangl** (Syn. *I. pseudoasterospora* var. *microsperma* Kuyper & P-J Keizer)

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* Kühner)

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*

***Inocybe parceoacta* 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*; confirmed from Wisconsin, eastern Canada

***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 fide Kauffman 1924)

Pileus 15-25 mm, conical or convex becoming plane with a low broad umbo, scaly on the disc, rimulose towards the margin, chestnut to reddish brown; stipe brittle, fibrillose, flexuous, white becoming reddish brown, not nigrescent, with a fugacious white partial veil; spores 8-10 x 6-8 μm , coarsely nodulose with 9-12 distinct nodules; pleurocystidia 40-50 x 15-20 μm , thin-walled, ventricose to bladder-shaped, at times with subacute apices; on roadside under grass and ferns, known only from the type locality, Massachusetts (Sep) (cf. PBM3328, ACAD19494 as “*umbrina*”)

***Inocybe castaneoides* Peck**

Pileus conical-plane with an umbo, velipellis absent, at times forming scales, grayish brown, *not nigrescent*, odor not diagnostic; spores 6-8 x 5-6.5 μm , angular to angular-nodulose with 5-7 nodules or corners, in coniferous forests, also with *Betula*, *Salix* ranging from Quebec to the Pacific Northwest, also Europe. *Inocybe maritimoides* is phylogenetically very closely related.

***Inocybe soluta* Velen.** (Syn. *I. brevispora* Huijsman)

Pileus with grayish remnants of velipellis at center when young, rimulose to rimose, odor *none* or almost 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**

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 multicornate

Spores 12-14.5 x 10-12 μm , nodules multicoronate, cheilocystidia metuloid (thin-walled per the protologue), under *Picea*; Nova Scotia and New York, southwards to North Carolina under high-elevation spruce-fir

***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 often stout and robust or stately; pileus ivory yellow, pale yellow, to light yellowish brown, at times with a distinct white velipellis, subsmooth; stipe pure white, spores 8.5-10 x 6-7.5 μm , coarsely nodulose with 7-10 prominent conical nodules; in Oak-Hickory woods mixed with Beech or in suburban areas and rest areas under planted *Quercus* and/or *Quercus-Pinus* [PBM2987, RAS424 et al.]

***Inocybe leucocaulis* nom. prov.** [*praetervisa* clade]

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)

Basidiomes yellow throughout

***Inocybe paludinella* f. *citrophylla* Guinb.**

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 spermatoc

***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); confirmed only from Europe (North American *petiginosa* genetically divergent and with a bicolorous pileus (viz, HRL2094)

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

Pileus colored as above but with a brownish black disc; Michigan, also Europe but misapplied as *I. petiginosa* and *I. subexilis*

***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.** (Syn. *I. euganea*)

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.** (*non subexilis sensu* Grund & Stuntz 1980, Nova Scotia)

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 or under other conifers

Odor penetrating and unpleasant, not spermatic; spores with 5-8 low obtuse nodules; northeast U.S.

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

Odor spermatic, spores with 6-10 distinct nodules, under conifers; widespread northern U.S. and southern Canada but also Mexico (Pacific Northwest, Montana, Nova Scotia, Mexico, central and northern Europe, also Argentina)

***Inocybe jacobi* Kühner** (= *I. subexilis sensu* Grund & Stuntz 1980)

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; habit small tricholomatoid; under *Pinus* and *Quercus*, Texas (Gulf Coast)

***Inocybe pseudocoronata* Matheny in ed.**

Spores spinose (15-20 spines, none bifid), stipe base rounded bulbous, habit mycenoid, under *Tilia*, *Fagus*, Tennessee

***Inocybe* sp. PBM4428**

Spores stellate, stipe base marginate, pleurocystidia >50 µm long; ecology various

Basidiomes staining greenish blue where bruised, odor aromatic but with spermatic component, in oak-hickory forests under *Quercus*, *Carya*, rare, known only from Tennessee (type), South Carolina, Illinois

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

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

Pileus chestnut-brown to cinnamon-rufous, odor spermatic

Stipe cinnamon or tinged rufous to pale brown, in *Tsuga* dominated forest or under *Pinus strobus*

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

Stipe dull yellow to olive-yellow, under *Tilia*, *Fagus*

***Inocybe* aff. *asterospora* Qué. *non* Kauffman**

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

Pileus brown to light brown with a distinct velipellis, stipe light brown; under *Oreomunnea* or *Quercus*, Panama

***Inocybe* sp. AC573** [sister lineage to *I. insignis*]

Pileus light brown or mixed more with yellowish shades, stipe yellow becoming dull brown; widespread in mixed forest including birch, spruce, fir – Michigan, New York (type), south to North Carolina and Tennessee at high elevations (>5000 ft)

***Inocybe intricata* Peck**

Pileus reddish umber to orange-yellow (raw sienna), duller in age, stipe white or faintly tinged with yellow; in hardwood or mixed forests, Nova Scotia and Washington (type)

***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 whitish and stipe whitish, slightly scaly on the disc, often split towards the margin, similar to *I. geophylla* in habit, New York

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

Pileus smooth and not often split or larger than above

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* Quél.** (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 with a cracked cuticle, scaly but scales disappearing with age except on the umbo, parts reddening or becoming brownish red with age, odor sweet or fruity; spores mostly 7-7.5 x 5.5 µm, angular-nodulose with 6-8 moderate-sized nodules; under *Quercus*, *Tilia*; Missouri (type), Indiana, Tennessee

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

Pileus not cracked and scaly, parts *not* reddening, odor spermatic (if known)

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 whitish velipellis easily observed on the pileus and edge of the stipe bulb when young, spores 7-8.5-10 x 5-5.9-7 µm with 10-13 low obtuse nodules, short cystidia with average length < 50 µm; in hardwoods of *Fagus*, *Quercus*, Cistaceae stands at times mixed with *Pinus*, also mixed forests with hardwoods (*Betula*, *Carpinus*, *Tilia*) or conifers (*Pinus*, *Abies*), also in parks and urban habitats; New York, New Jersey, Pennsylvania, also southern and central Europe

***Inocybe nothomixtilis* Esteve-Rav., Bandini & V. González** [cf. *I. abundans* Murrill]

Same as *I. occulta* 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 Pacific Northwest, California, Europe and east Asia

***Inocybe ceskae* Bandini, Esteve-Rav., & B. Oertel.** (Syn. *I. mixtilis sensu* Am. auct. p.p.)

Pileus fulvous (darker than honey yellow) or brownish yellow with an isabelline margin, stipe white with dull yellow tinge, in mixed forest under *Pinus strobus* on calcareous soil, New York

Inocybe* aff. *mixtilis

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, odor sweet and fruity; spores mostly 7-7.5 x 5.5 μm , angular-nodulose with 6-8 moderate-sized nodules; under *Quercus*, *Tilia* in Missouri (type), Indiana

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

Pileus *not* discoloring brownish red, scales absent; stipe without red, distribution various, odor *not* sweet or fruity (but see *I. earleana* below)

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; PDAB negative; 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; Indiana, Tennessee, Texas, Florida

***Inocybe nucleata* Murrill**

Pileus yellowish brown with appressed scales or cracked-areolate, stipe cream colored or pale yellow; spores 8-9 x 6-7 μm with 8-10 moderate-sized nodules; pleurocystidia utriform to ventricose or obese, very thick-walled apically, hyaline; in mixed woods under conifers (*Abies*, *Pinus*, *Picea*), widespread in eastern and western North America, including Mexico, probably common

***Inocybe occulta* Esteve-Rav, Bandini, B. Oertel & G. Moreno**

Same as above but with whitish velipellis easily observed on the pileus and edge of the stipe bulb when young, spores 7-8.5-10 x 5-5.9-7 μm with 10-13 low obtuse nodules, short cystidia with average length < 50 μm ; in hardwoods of *Fagus*, *Quercus*, Cistaceae stands at times mixed with *Pinus*, also mixed forests with hardwoods (*Betula*, *Carpinus*, *Tilia*) or conifers (*Pinus*, *Abies*), also in parks and urban habitats; New Jersey and Pennsylvania, also southern and central Europe

***Inocybe nothomixtilis* Esteve-Rav., Bandini & V. González**

Pileus isabelline; stipe pallid above, dull brownish-yellow below, odor “rather strong fungous”, spores 5.5-6.5-7.5 x 4.5-5-6 μm with mostly 7-10 moderate to small nodules; pleurocystidia fusiform, thick-walled, short, 45-50 x 15-18 μm ; caulocystidia slenderly fusiform to cylindrical, in woods, New York City

***Inocybe abundans* Murrill** (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 somewhat fruity, acidulous, or mild

Pileus pale ochraceous-tawny to light pinkish-tan, dry; stipe white or pallid, odor somewhat fruity, acidulous, or mild, *not* spermatic; 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 [thick-walled per Atkinson's notes of the type]; in mixed woods under *Picea*, *Fagus*, New York

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

Pileus up to 30 mm, brown to yellowish brown (umbrinous), with a low obtuse umbo, light grayish velipellis present; PDAB negative; stipe 25-35 x 2-4 mm, white, odor (weakly) acidulous; spores 7-8 x 5-6 µm, angular-nodulose with mostly 5-7 small nodules; pleurocystidia thick-walled; on acid soil in mixed woods under *Tsuga*, *Pinus strobus*, *Quercus*, North Carolina

***Inocybe cf. nucleata* Murrill [PBM4586]**

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 in Nova Scotia, under conifers mixed with *Betula* in New York (pileus umbrinous and under conifers in Washington)

***Inocybe decemgibbosa* (Kühner) Vauras sensu Grund & Stuntz (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, cinnamon-buff to light brown; 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, Indiana, Ohio, Arkansas, Oklahoma, also under *Quercus oleoides* in Costa Rica

***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 montane, alpine, and boreal forests including Alaska to lower regions of the Pacific Northwest, Rocky Mountains, Europe

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

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

Fruitbodies generally robust - pileus mixture of isabelline and honey yellow, stipe pallid (staining dirty pinkish or brownish), lamellae pale clay buff; spores oblong-angular with few nodules, in grass on urban campus (in sand dunes under willows in Europe), confirmed from northern Florida, also Europe

***Inocybe dunensis* P.D. Orton (= *I. heimiana* Bon)**

Fruitbodies not robust, of if so, then spores not as above - pileus pale fulvous to light yellowish brown or yellowish brown (umbrinous); stipe pinkish or not, may dry brown

Pileus disc very dark brown, margin reddish brown to umbrinous, odor of green corn

***Inocybe cicatricata* Ellis & Everh.** (Maine, New Jersey, Illinois, Indiana, Tennessee, Florida)

Not as above

Pileus reddish brown, odor not of green corn

Stipe with pinkish tinges

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

Stipe pallid to very pale yellow

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

Pileus *not* reddish brown

Stipe and stipe flesh pinkish buff, odor spermatic

Pileus -30 mm wide, brown to yellowish brown (umbrinous), velipellis *absent*; lamellae pale brown to clay brown; spores 9.5–11 × 7–8 μm, angular-nodulose with 7–8 low nodules or corners; pleurocystidia thick-walled; in mixed forest on limestone under *Pinus*, *Quercus*, confirmed from northern Florida, Europe

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

Pileus -25 mm, conical to campanulate, yellowish brown, when young *with a white velipellis*; lamellae grayish to light brown; spores ?????, cystidia thick-walled ???; under *Pinus strobus* on limestone or in mixed pine-oak forests; confirmed from Tennessee, reported from Quebec, also Europe (probably same as *I. nobilis* (R. Heim) Alessio)

***Inocybe pallida* Velen.**

Stipe and stipe flesh *not* pinkish buff, odor not distinctive (where known)

Pileus 15–35 mm with a prominent subacute umbo, clay brown, margin eventually rimose; stipe 40–50 × 1.5–2.5 mm wide, white; odor unknown; spores 8–10 (–12) × 5–6 (–7) μm with scattered indistinct nodule; cystidia thin-walled; in mixed woods under *Picea*, *Fagus*, New York

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

Pileus up to 30 mm wide, without a prominent umbo, stipe white when fresh, usually drying a darker color but not always blackening; flesh exuding *yellow pigment in PDAB*; odor not distinctive; spores mostly 9–11 × 7.5–8.5 μm, cystidia thick-walled; under *Pinus strobus* or mixed hardwoods including *Pinus strobus*, widespread – Quebec to North Carolina

***Inocybe* aff. *xanthomelas* Boursier & Kühner** (formerly as *I. aff. straminipes*)

Pileus <30 mm wide, with a small obtuse umbo, generally becoming *scaly* or excoriate-scaly; stipe white to buff or pale yellow, *not* discoloring, PDAB *negative*, odor not distinctive; spores >10 μm long, irregularly angular-nodulose, cystidia thick-walled; under hardwoods associated with *Quercus*, *Carya*, *Castanea*, common and widespread – New York, New Jersey, Wisconsin, Arkansas, Tennessee, North Carolina, Georgia, Florida

***Inocybe* aff. *diabolica* Vaurus** (formerly as *I. aff. margaritispota*)

Pileus 30–60 mm wide, conical when young, distinctly rimose throughout; stipe 4–10 mm wide, not distinctly pruinose on lower half; odor not distinctive; 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* Qué. group** (= *I. glabrodisca* sensu Kropp & Matheny 2004)

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

***Inocybe praetervisa* Qué.**

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

***Inocybe rivularis* Jacobsson & Vaurus**

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

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

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 × 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 murinopilicina* 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. insequentii* (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 taedophilola 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; ITS sequences of “chelanensis” on GenBank are actually *I. candidipes*)
Inocybe cf. *candidipes* (Larsson et al. 2017)
Inocybe chelanensis (Stuntz 1947, Nishida 1989, Kropp & Matheny 2004; ITS sequences mislabeled on GenBank – these conform to *I. candidipes*)
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 lemmei (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; now also confirmed from Florida)
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 pseudodestructa (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; =*I. tjallingiorum*)
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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