

Preface to Artificial Key to Common and Noteworthy Species of *Inocybe* from the Pacific Northwest

This key is aimed at an audience familiar with the determination of agarics in general but unfamiliar with *Inocybe*. The key stresses gross morphological characters as I think appropriate before yielding to taxa that are better distinguished microscopically. 43 species are enumerated below and several others are mentioned, but probably over 100 occur in the Pacific Northwest, a region circumscribed to include British Columbia, Washington, Idaho, western Montana, Oregon, and northern California. Of the 43 species in the key, few are endemic to the region based on gross morphological species concepts. However, the key is recommended for use with Pacific Northwest material. Many eastern North American species of *Inocybe*, for example, do not occur in the Pacific Northwest and are excluded from this treatment.

The genus *Inocybe* (Fr.) Fr. traditionally has encompassed dull brown-spored agarics that are ectomycorrhizal and frequently occur on soil; exhibit a dry pileus that is often rimose, fibrillose, or scaly; and have a distinctive smell that is often spermiac or less often fruity, sweet, aromatic, like bruised Geranium leaves, like *Lycoperdon*, or green corn. Species of *Hebeloma* differ by their gelatinous pileus, often radish smell, typically verrucose basidiospores, and absence of metuloid cystidia. Decomposers such as *Phaeomarasmius* and *Flammulaster* differ by their occurrence on woody debris and lack of metuloid cystidia. The Crepidotaceae, including *Pleuroflammula* and *Simocybe*, is the closest related group to *Inocybe*, which I treat as a separate family in its own right (see Matheny et al. (2006) *Mycologia* 98:982-995).

Remember that not all species of *Inocybe* you may find can be keyed out below. A number of insufficiently clarified taxa or rare ones is excluded. Bear in mind that the identification process is like playing golf—just get the ball on the green! Getting it in the hole is another matter, and for some taxa, serious in-depth studies are required to sort out older species concepts, the multitudinous interpretations and misinterpretations of various taxa, type collections, and nomenclature. In the end, a microscope is indispensable for taxonomic work in *Inocybe* if you prefer reliable and consistent determinations. In very few cases do macrochemical reactions, for instance, PDAB, prove helpful in my experience. Let me also remind you the field of *Inocybe* is wide open and in serious need of systematic revision and evolutionary research, particularly in North America. Recent work includes: Cripps (1997) *Mycologia* 89(4): 670-688 for a taxonomic treatment of *Inocybe* that occur in Montana Aspen (*Populus*) stands; and Matheny and Kropp (2001) *Sydowia* 53(1): 93-139 for a monographic treatment of members of the *Inocybe lanuginosa* group in North America, and others. Many of my own publications are available in PDF format at http://www.clarku.edu/faculty/dhibbett/people_matheny.html.

Molecular work to date suggests that several divergent lineages exist within *Inocybe* and recent unpublished work of mine continues to support segregation of groups with smooth spores that lack pleurocystidia (“depauperate” *Inocybes*). To reflect the evolutionary history of inocyboid lineages fairly and to facilitate their communication, some name changes are necessary but have not yet been formally proposed other than for the Afro-Australian genus *Auritella*. In the interim, current subgeneric names of the depauperate groups are inserted in parentheses for the few species keyed out below and are consistent with the sugeneric designations of Kuyper (1986) *Persoonia* (Suppl.) 3: V-247. Examples include, *Inocybe (Inosperma) lanatodisca* and *Inocybe (Malloocybe) dulcamara*.

A glossary to unfamiliar terms can be found at the end of this document.

P. Brandon Matheny, University of Washington
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**Artificial Key to Common and Noteworthy Species of *Inocybe*
from the Pacific Northwest
P. Brandon Matheny Feb 2008**

- 1a. Basidiomes entirely white or ivory 2
- 1b. Basidiomes not entirely white or ivory, or white and bruising salmon-pink 3
- 2a. Odor sweet like sweet pea (*Lathyrus*) and/or lily-of-the-valley (*Convallaria majalis*); stipe entirely pruinose, base marginate; known from late-successional conifer forests; basidiospores nodulose
Inocybe suaveolens Stuntz
- 2b. Odor spermatic like male flowers of chestnut (*Castanea*); apex of stipe pruinose, base even to slightly swollen but not marginate; very common in parks and forests under both conifers and hardwoods; basidiospores elliptic
Inocybe geophylla (Fr.: Fr) Kumm.
- 3a. Basidiomes white and bruising salmon-pink 4
- 3b. Basidiomes not white, or if color changes where bruised, then rubescent 5
- 4a. Habit small-sized (pileus < 2.5 cm diam) and slender with nipple-like umbo like *I. geophylla*; observed most frequently under cottonwood (*Populus*)
Inocybe armeniaca Huijsman (= *I. whitei* f. *armeniaca* (Huijsman) Kuyp.)
- 4b. Habit medium-sized (pileus up to 4.0 cm diam), more robust than above, pileus convex, often without distinct umbo; observed under native and introduced conifers, also under aspen (*Populus*) in Montana
Inocybe pudica Kühn. (= *I. whitei* (B. & Br.) Sacc. f. *whitei sensu* Kuyp.)
(In Europe *I. armeniaca* and *I. pudica* have been considered intraspecific variants of a single morphological species. However, the name *I. whitei* is misapplied to *I. pudica* and instead is an earlier name for *I. agglutinata* Peck in my opinion. *Inocybe flavidolilacina* (Britz.) Sacc. is the valid name for *I. pudica* according to Singer).
- 5a. Odor sweet, aromatic, or fragrant; basidiomes rubescent where bruised; pileus pallid, pale ochraceous, to brownish; surface fibrillose to scaly; spores subamygdaliform to elliptic; metuloids present; rare in Washington, known from northern California; flesh blue with guaiac; orange to brick red, then vinaceous to vinaceous black with ammonium hydroxide
Inocybe fraudans (Britz.) Sacc. (= *I. pyriodora* (Pers.: Fr.) Kumm. *sensu* Kauffman, Stuntz)
- 5b. Odor not sweet as above or flesh not reddening or metuloids absent 6
- 6a. Basidiomes with lilac pileus, lilac lamellae, or lilac stipe apex 7
- 6b. Basidiomes lacking lilac colors 11
- 7a. Pileus lilac fading to very pale brown at the center and pallid elsewhere in older specimens, silky-fibrillose; stipe white, base of stipe usually cream-colored; habit typically robust like *I. pudica*
Inocybe lilacina (Peck) Kauffm.
- 7b. Pileus brown, rarely with a lilac sheen on the margin, fibrillose to fibrillose-scaly; at least stipe apex lilac, stipe base not cream-colored; habit usually slender 8
- 8a. Stipe surface with scattered brown or rusty red fibrils or fibrillose-scales 9

- 8b. Stipe surface silky-fibrillose to fibrillose, stipe color uniform 10
- 9a. Stipe surface with scattered brown fibrils to fibrillose-scales; paracystidia on gill edges often thick-walled and brown
Inocybe cincinnata (Fr.: Fr.) Quél. (= *I. cincinnatula* Kühn.; = *I. phaeocomis* (Pers.) Kuyp.)
 (One form of *I. lacera* (Fr.: Fr.) Kumm. exhibits a stipe apex with lilac tinges, but the oblong minimally-angular or boletoid spores distinguish it easily).
- 9b. Stipe surface with scattered rusty red to orange fibrils; paracystidia on gill edges pale brown
Inocybe pyrotrica Stuntz
- 10a. Odor of bruised Geranium (*Pelargonium*) leaves; stipe surface nowhere pruinose; pleurocystidia often with indistinctly subcapitate apices; fruiting in fall
Inocybe griseolilacina J. Lange
- 10b. Odor spermatic; stipe apex pruinose; apices of pleurocystidia obtuse; fruiting in spring or fall
Inocybe pusio P. Karst. (= *I. obscuroides sensu* Stuntz)
- 11a. Lamellae pumpkin colored or bright orange cinnamon when young; basidiomes dark avellaneous to dull reddish brown on disc, pale cinnamon towards margin, surface coarsely-fibrillose; resembling *Chroogomphus tomentosus* (Murr.) O. K. Miller in the field
Inocybe cinnamomea A. H. Smith
- 11b. Lamellae some other color, basidiomes not as above 12
- 12a. Stipe surface entirely pruinose, base with marginate bulb, and basidiospores nodulose 13
- 12b. Stipe surface entirely pruinose and base without marginate bulb, or not pruinose entire length and with rounded bulbous base; basidiospores various 17
- 13a. Pileus center conspicuously white with an avellaneous margin
Inocybe albodisca Peck
 (West coast forms consistently feature smaller spores than eastern North American material and might, consequently, deserve autonomous status).
- 13b. Pileus honey yellow, isabelline, yellowish brown, or dark brown, without a white center 14
- 14a. Pileus lubricous when moist, under dry conditions rimulose or cracked, honey yellow to yellowish brown, not rimose; very common in parks and forests; basidiospores 8-10 X 5.5-7 µm; pleurocystidia often short (40-55 µm) and lageniform
Inocybe mixtilis (Britz.) Sacc. (= *I. trechispora sensu* Kauffman)
- 14b. Pileus dry, isabelline, yellowish brown, or dark brown; rimulose or rimose; less common than above; basidiospores either larger than above (10-12 µm long) and/or pleurocystidia longer (60-90 µm) 15
- 15a. Pileus dark brown to chesnut brown, surface rimose
Inocybe glabrodisca P. D. Orton (= *I. decemgibbosa* (Kühn.) Vauras)
- 15b. Pileus isabelline to yellowish brown, at times clay brown 16
- 16a. Pileus at most rimulose; stipe darkening to gray or black upon drying; odor oily-raphanoid; flesh turns PDAB solution bright yellow
Inocybe xanthomelas Bours. & Kühn.
 (The PDAB reaction is consistent among collections of the species made under *Pseudotsuga*, *Pinus*, and introduced *Fagus*).

16a. Pileus distinctly rimose; stipe, if darkening, only to brown; odor spermatic; PDAB reaction not bright yellow (gills that turn reddish are interpreted here as a negative reaction)

Inocybe praetervisa Quéf.

17a. Basidiomes small to very small (pileus <2.0 cm diam); stipe even or tapered at the base, pruinose entire length; basidiospores gibbous; pleurocystidia sessile or truncate at base; subpellis of pseudoparenchymatous hyphae

18

17b. Basidiomes medium to small (pileus 2-7 cm), occasionally quite robust; stipe various, if pruinose entire length, then basidiospores smooth; pleurocystidia usually with a tapered pedicel; subpellis of cylindrical to inflated hyphae

19

18a. Center of pileus brown with gray margin; basidiospores 6.5-8 × 4.5-5.5 μm

Inocybe petiginosa (Fr.) Gillet

(*Inocybe nigrodisca* Peck is very similar except for the almost black center of the pileus).

18b. Center of pileus tawny to fulvous with yellow brown margin; basidiospores 8-11.5 X 5-7 μm

Inocybe jacobi Kühn. (= *I. fulvella* sensu Stuntz, 1947)

(*Inocybe castanea* Peck has a reddish brown or chestnut pileus with large lanceolate pleurocystidia).

19a. Stipe pruinose most of length or the entire length; basidiospores smooth

20

19b. Stipe pruinose only at apex or not at all; basidiospores various

22

20a. Occurring in spring; habit often tricholomatoid or robust; pileus brown; stipe with a marginate bulb; caulocystidia descending to at least center of stipe; cortina not observed

Inocybe "praecox" Kropp, Matheny, & Nanagyulyan, ined.

(*Inocybe "praecox"* fruits during April to May and may be common west of the Cascade crest.

Another vernal species, *I. "monticola"* Kropp, Matheny, & Nanagyulyan, is also robust but with an even stipe and a reddish brown to brown pileus covered with a whitish velipellis; it is known so far only from montane forests in Oregon and Utah. These species are morphologically similar to the *I. splendens* Heim complex of Europe).

20b. Occurring in fall; habit not tricholomatoid; pileus cream to honey yellow or pale brown to light brown; caulocystidia descending to lower part of stipe but may be replaced by caulocystidioid hairs at the base; cortina absent or present

21

21a. Pileus cream to honey yellow or chamois

Inocybe kauffmanii A. H. Smith (= *I. longipes* Kauffm., non Masee)

(*Inocybe picrosma* Stuntz is very similar except for the stipe that discolors dull brown or vinaceous brown, the stipe base with salmon colors, and a peculiar resinous odor with a component of acetic acid.

Inocybe kauffmanii has an indistinct to somewhat fabaceous odor).

21b. Pileus very pale brown, pale brown, to brown; center at times cream colored

Inocybe sindonia (Fr.) P. Karst. group

(Taxonomy unclarified. Material I have studied and sequenced was an associate of Norway Spruce (*Picea abies*) on the campus of the University of Washington. Stuntz never applied the name *I. sindonia* to Pacific Northwest material. *Inocybe laetior* Stuntz has a pileus with a reddish brown center and brassy yellow margin and bright salmon pink entirely pruinose stipe. *Inocybe eutheloides* Peck is a concept that needs to be evaluated. Both *I. kauffmanii* and *I. sindonia* do not occur until well into fall—generally October to November. *Inocybe sindonia* has been reported from Aspen (*Populus*) stands in Montana and with a peculiar odor, like a "wet dog").

22a. Pileus bicolorous—center much darker than the pallid margin; fibrils often agglutinated on the pileus and above the stipe base; never scaly

23

22b. Pileus not bicolorous, or if so, then center pallid with a darker margin or surface fibrillose-scaly; fibrils never agglutinated

24

23a. Pileus center fuscous; similar colored fibrils at base of stipe

Inocybe fuscodisca (Peck) Massee

23b. Pileus center fulvous or tawny; similar colored fibrils at base of stipe

Inocybe agglutinata Peck (= *I. whitei* (B. & Br.) Sacc. *sensu original, non Kuyper*)

(These two species are closely related to *I. geophylla*; the basidiospores are elliptic).

24a. Upper 1/4 to 1/3 of stipe pruinose; pileus shiny, reddish brown or yellow brown; stipe often with pinkish tinges; basidiospores amygdaliform

Inocybe nitidiuscula (Britz.) Sacc. group

(A spring form occurs in our area that lacks pink tinges on the stipe and has a light yellowish brown or "Tawny-Olive" pileus. I have applied a European name, *I. queletii* Maire & Konr., to this taxon, but Pacific Northwest material may be autonomous. *Inocybe fuscidula* Velen. differs by its rimose pileus and lack of pink tinges on the stipe; *Inocybe leioccephala* Stuntz, the correct name for which is *I. catalaunica* Sing., is similar except for the entire stipe length that is pruinose).

24b. Only extreme apex or upper 1/10 of stipe pruinose or not pruinose at all; pileus, stipe, and basidiospores various

25

25a. Basidiomes yellow brown to dull fulvous brown; generally robust (pileus up to 7 cm diam, stipe 6-12 cm × 8-12 mm); metuloids bright yellow in 3% KOH; known only from late-successional conifer forests west of the Cascades; August to October

Inocybe olympiana A. H. Smith

(*Inocybe subochracea* (Peck) Peck, quite smaller than above (pileus 2-4 cm diam), appears to be the eastern North American equivalent, where it occurs in mixed hardwood and conifer forests. Sparse taxon sampling to date relying on molecular phylogenetic inference supports a distinction between the two species).

25b. If basidiomes robust, then some other color than above; metuloids, if present, not bright yellow in 3% KOH; in parks or forests of various ages and stand composition

26

26a. Pileus isabelline to yellowish brown, fibrillose; flesh imparting bright blue-green pigment in solution of PDAB; basidiospores amygdaliform; metuloids present; common west of Cascades in October and November

Inocybe sp.

(The "PDAB" *Inocybe* is most easily recognized by the unique reaction of the flesh in solution. The name to apply to this species is unclear, so a new name will likely be proposed. A similar reaction occurs for all species of *Lyophyllum sensu lato* tested to date as well as *Psathyrella spadicea* (Fr.) Sing. and *P. piluliformis* (Bull.: Fr.) P. D. Orton (= *P. hydrophylla* (Fr.) Maire)).

26b. Pileus some other color or flesh unreactive with PDAB or metuloids absent

27

27a. Pileus brown, fibrillose-scaly; stipe white or with pale brown tinge; basidiospores amygdaliform; metuloids present, hyaline

Inocybe flocculosa (Berk.) Sacc. group

(Species in this complex include *I. pallidipes* Ellis & Everh., *I. pallidobrunnea* Kauffm., *I. gausapata* Kühn., and *I. flocculosa* (Berk.) Sacc. Most collections I have studied appear in the fall and lack the bright yellow metuloids attributable to *I. flocculosa*, for which *I. gausapata* is considered a synonym by Kuyper. A variant with a reddish brown pileus and another with a dark brown pileus with an appendiculate margin and white floccose-scaly stipe have been recorded near Hood Canal in Washington. The latter two may deserve autonomous status).

27b. Not as above

28

- 28a. Basidiospores boletoid or oblong minimally-angular to fusiform; mean $Q > 2.0$; pileus often dark brown to dark grayish brown, lacerate-scaly; stipe often dark brown at the base; pleurocystidia often with subacute apices; common and widespread east and west of the Cascades
- Inocybe lacera* (Fr.: Fr.) Kumm.**
- (The gross morphology of this species is rather variable ranging from forms with a long stipe or short stipe, lilac tinge at stipe apex, or with brown gill edges. One variant has spores that range between 6.5 and 17 μm in length. *Inocybe longispora* M. Lange occurs with Aspen in Montana but differs by the robust habit, bright orange brown pileus with a prominent white velipellis when fresh, and stout firm stipe with rare caulocystidia).
- 28b. Not as above; if spores similar, then metuloids absent 29
- 29a. Basidiospores elliptic, phaseoliform, or subamygdaliform; pleurocystidia absent 30
- 29b. Basidiospores angular-nodulose; pleurocystidia often present 35
- 30a. Basidia necropigmented; stipe length usually \leq pileus diameter; pileus ochraceous brown, yellowish brown or fulvous, tomentose-fibrillose to matted-scaly, entire; basidiospores $8-11 \times 5-6 \mu\text{m}$; cheilocystidia short clavate
- Inocybe (Mallochybe) dulcamara* (Alb. & Schw.: Pers.) Kumm. group**
- (Numerous additional species occur in our area; their taxonomy and phylogeny is currently under investigation).
- 30b. Basidia hyaline; stipe length $>$ pileus diameter; pileus color various, scaly or rimose-fibrillose 31
- 31a. Pileus squarrose-scaly; flesh rubescent where bruised; odor fishy or like bruised Geranium (*Pelargonium*) leaves; flesh emits dark green pigment in guaiac solution; recorded where *Tsuga* occurs 32
- 31b. Pileus rimose-fibrillose; flesh not rubescent; odor spermatic, like green corn, aromatic, or absent; flesh not as above in guaiac solution; recorded with wide range of tree associates 33
- 32a. Pileus reddish brown; flesh strongly rubescent; stipe base often not green; often robust
- Inocybe (Inosperma) hirsuta* var. *maxima* A. H. Smith**
- 32b. Pileus brown (umbrinous) to yellowish brown; flesh weakly rubescent; stipe base green; usually medium to small-sized, occasionally robust
- Inocybe (Inosperma) calamistrata* (Fr.: Fr.) Gill.**
- 33a. Pileus copper brown; odor complex—green corn mixed with aromatic component; basidiospores with mean width $< 6.0 \mu\text{m}$; under conifers and *Populus*
- Inocybe (Inosperma) lanatodisca* Kauffm.**
- (*Inocybe maculata* Boud. differs only by its dark brown pileus and strong *Tuber*-like or young *Lycoperdon*-like smell, but this appears to be a species complex that is best sorted out by phylogenetic analyses using DNA sequences).
- 33b. Pileus variously colored; odor not aromatic; basidiospores with mean width $> 6.0 \mu\text{m}$; under conifers and hardwoods, including *Alnus* 34
- 34a. Odor spermatic or absent; pileus acutely conical or convex, color variable—mostly brown to yellowish brown, at times nearly white
- Inocybe (Pseudosperma) rimosa* (Bull.: Fr.) Kumm. group**
- (Also known as *I. fastigiata* (Schaeff.) Quél., considered by some Europeans a synonym of *I. rimosa*. This species complex includes some of the most variable forms in *Inocybe*. *Inocybe flavella* P. Karsent is an autonomous species that is yellow with cylindrical cheilocystidia. A white form collected under

- Alnus* in Washington approaches *I. obsoleta* Romagn. Several snowbank variants occur in our area under conifers in sandy soils—one with a heavy white veil on the convex pileus and no odor; and another that exhibits pink gills when young with no odor. *Inocybe squamata* J. Lange is robust, scaly on the disc, has yellow gills, and is reported from Montana).
- 34b. Odor of green corn; pileus shape acutely conical or convex, color yellow or staw colored
***Inocybe (Pseudosperma) sororia* Kauffm.**
- 35a. Snowbank or vernal species (May to July) under high elevation conifers, fruiting near melting snow but not always; pileus generally yellowish brown to light brown or avellaneous, rimose-fibrillose, at times with a white disc; basidiospores bullet-shaped or rocket-shaped with 3-4 basal nodules
***Inocybe chelanensis* Stuntz**
(Inocybe rainierensis Stuntz differs only by its dark brown pileus and bulbous stipe base; it is known only from very few collections on Mt. Rainier in late August. *Inocybe sierraensis* Kropp & Matheny, known only from the Sierra Nevada of California, has a cream to tan fibrillose pileus and spurred spores with usually only a single nodule. DNA evidence supports a strong distinction between *I. chelanensis* and *I. sierraensis*).
- 35b. Not occurring after snow melt; pileus generally dark brown to brown (umbrinous), scaly, fibrillose, or rimose, usually without a white disc; basidiospores gibbous to coarsely nodulose
36
- 36a. Pileus squarrose or shaggy-scaly and stipe scaly to woolly-fibrillose
37
- 36b. Pileus fibrillose to rimose-fibrillose and stipe fibrillose to silky-fibrillose; if pileus fibrillose-scaly, then stipe merely fibrillose
39
- 37a. Pileus shaggy-scaly; pleurocystidia thin-walled, fusiform to subcylindric, apices often rounded to subcapitate, > 50 µm long; usually on soil; rare
Inocybe stellatospora (Peck) Masee
 (Also known as *I. longicystis* Atk., but this name does not have priority. A variant from Washington and Oregon appears intermediate between *I. stellatospora* and *I. boltonii* Heim; it can be scaly on the pileus and at the base of the stipe, but has thick-walled fusiform cystidia with tapered apices. Kauffman and Murrill applied the name *I. stellatospora* to *I. tahquamenonensis* Stuntz, but this application is inconsistent with the original protologue and lectotype of *I. stellatospora*. *Inocybe tahquamenonensis* is known only from eastern North America and is easily recognized by its purple-fuscous colors. *Inocybe giacomii* Favre has long indistinctly nodulose spores (10-11 µm long) and has been reported from Aspen (*Populus*) stands in Montana and may be an arctic-alpine variant of *I. boltonii*).
- 37b. Pileus hispid-squarrose; pleurocystidia, if present, slightly thick-walled, short, and obovate, < 50 µm long; often on rotten wood; common
38
- 38a. Pleurocystidia absent; basidiospores 10-12 µm long, with 12-20 nodules; common east of Cascades
***Inocybe leptophylla* Atk.**
- 38b. Pleurocystidia present; basidiospores 8-10 µm long, with 8-12 nodules; common west of Cascades
Inocybe lanuginosa (Bull.: Fr.) Kumm.
 (This interpretation of *I. lanuginosa* conforms to *I. ovatocystis* (Bours. & Kühn.). *Inocybe leptophylla* and *I. lanuginosa* appear sympatric in areas along the Coos County coast in Oregon and the Hood Canal area and central Cascades of Washington. However, *I. leptophylla* is more frequently encountered east of the Cascade crest. The two species cannot be separated by gross morphology).
- 39a. Stipe base conspicuously bulbous
40
- 39b. Stipe even or base not conspicuously bulbous
41
- 40a. Stipe base turnip-shaped or almost marginate; basidiospores coarsely nodulose

Inocybe napipes J. Lange

40b. Stipe base rounded bulbous; basidiospores with less pronounced nodules than above

Inocybe assimilata (Britz.) Sacc. (= *I. umbrina* Bres.)

41a. Often in landscaped and urban settings; basidiospores trapeziform to oblong-angular with few low nodules, mostly 9-12 µm long; pleurocystidia mucronate or with subacute apices and often quite broad—15-25(-30) µm

Inocybe curvipes P. Karst. (= *I. decipientoides* Peck)

(This species has many North American synonyms including *I. radiata* Peck, *I. astoriana* Murrill, *I. jamaicensis* Murrill, and *I. ochraceoscabra* Atk.).

41b. In mixed conifer forests; basidiospores shorter than above, mostly 6-10 µm long; pleurocystidia with obtuse apices and generally not as broad as above

42

42a. Basidiospores merely rectangular with few small nodules, 6-8 µm long; lamellae soon yellowish brown; cystidia fusiform with tapered apices

Inocybe soluta Velen.

42b. Basidiospores polygonal and more coarsely nodulose than above, mostly 8-10 µm long; lamellae pallid for long durations; cystidia narrowly utriform to fusiform, at times with blunt apices

Inocybe subcarpta Bours. & Kühn.

GLOSSARY

avellaneous: vinaceous gray brown or “Avellaneous” of Ridgway

basidiome: fruitbody or carpophore

caulocystidia: cystidia similar to hymenial cystidia located on the stipe mixed with cauloparacystidia

caulocystidioid hairs: cystidioid terminal cells of superficial hyphae on stipe, paracystidia not present among these cells, can resemble metuloids

cauloparacystidia: cells on the stipe similar to paracystidia found on gill edge

chamois: dull yellow or “Chamois” of Ridgway

cheilocystidia: cystidia similar to pleurocystidia found on gill edge

depauperate: in this instance, referring to *Inocybe* species that lack pleurocystidia (excluding *I. leptophylla*) and having smooth basidiospores

entire: margin of pileus that is not rimose or striate

fulvous: reddish cinnamon brown or “Hazel” of Ridgway

fuscous: smoky drab

gibbous: refers to nodulose-spored condition of basidiospores

guaiac: macrochemical prepared as a tincture of gum guaiac consisting of 95% ethyl alcohol saturated with gum guaiac; useful to test for presence of phenol-oxidase enzymes in mycelium

hispid-squarrose: stiff erect scales

isabelline: dingy yellowish brown with an olive tone or “Isabella Color” of Ridgway

ivory: creamy-white

marginate bulb: bulb with a circular ridge

metuloid: modified cystidium apically incrustated with calcium-oxalate, typically thick-walled

monophyletic: a taxon that includes the common ancestor and all of its descendants

mucronate: with a short apical extension

necropigmented basidia: basidia that become ochraceous and collapse with age

nodulose: basidiospores with small knots

obovate: reverse egg-shaped

paracystidia: short clavate cells clustered between and among cheilocystidia

PDAB: macrochemical known as p-dimethylamino-benzaldehyde composed of PDAB dissolved in solution of conc. HCl acid and 95% ethyl alcohol

phylogeny: study of the evolutionary history of organisms

pleurocystidia: sterile terminal cells found on the sides of gills that are differentiated in size or shape from basidia or immature basidia

pseudoparenchymatous: cells that appear isodiametric in shape

Q-value: quotient of length and width, the former divided by the latter, usually applied to basidiospores to indicate how broad or narrow are

raphanoid: odor like radish, a mustard plant in the genus *Raphanus*

rimose: condition of pileus surface where fibrils have split and cracked usually revealing paler flesh beneath

rimulose: having tiny cracks between fibrils or weakly rimose

rubescent: becoming red

sympatric: overlapping geographic distributions

taxonomy: study of the identification and nomenclature of organisms or things

tawny: brownish orange

trapeziform: four sides two of which are usually parallel or no sides parallel

umbrinous: raw umber or brown or “Snuff-Brown” to “Saccardo’s UMBER”; burnt umber (not used here) refers to a reddish brown color

yellowish brown: “Buckthorn Brown” of Ridgway

verrucose: warty-roughened, not the same as nodulose