Mycena (Pers.) Roussel

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Incl. *Prunulus* Gray

Frb mycenoid, very small to medium sized, often delicate, but some species robust and rather long lived; species with large frb may become spotted with red during late stages of fruiting. Cap paraboloid, bell-shaped, convex to plane, sometimes umbonate or papillate, mostly distinctly striate and sometimes sulcate, glabrous, pruinose or rarely hairy, dry to slimy, multicoloured, but often in dull grey brown shades, some yellow, red, blue, purple or black. Gills almost free or pseudocollarioid to deeply decurrent, distant to crowded, but mostly medium spaced, sometimes with strong interveining, variously coloured but often pale, some with contrasting edge colour. Stem typically cylindrical and rather thin, fragile to very tough, smooth, pruinose, floccose to hairy, base often with strigose hairs but may be smooth and inserted or with distinct downy disc. Smell often diagnostic, iodoform, radish and nitrous smells are common, when not mentioned the smell is indistinct. Taste insignificant, mealy or bitter. Sp deposit white.

Sp globose to cylindrical, often dacryoid, smooth, hyaline, thin-walled, amyloid, more rarely without iodine reactions. Basidia 2-4-spored, ± clavate, when not mentioned the basidia are 4-spored. Cheilo- and often pleurocystidia present and diagnostic or very rarely absent, either smooth or with variously shaped short and regular to highly irregular and long diverticulae over entire length or on top or only in median part. Pileocystidia or terminal elements of pileipellis elements also diagnostic and often with diverticulae, which may be so numerous as to appear coralloid. Caulocystidia or terminal elements of stipitipellis hyphae likewise important. Gill trama mostly dextrinoid (vinaceous) but not reacting in some groups, and this typically coinciding with non-amyloidity of spores. Clamps present or absent, when not mentioned clamps are present.

Saprotrophic, outside the area also parasitic; on litter of all kinds, fern rhizomes, herbs, all kinds of dead wood, decaying fruits, etc., also on humose soil, including burnt turf.

99 species in the Nordic countries, 104 species in the key. *M. alphithophora* is not included since it only occurs in indoor environments in the Nordic countries. At least *M. rosea* is known to be poisonous, but other members of sect. *Calodontes* are equally suspect. Species of *Mycena* are often attacked by the zygomycetous parasite *Spinellus fusiger*. For further information and a wealth of pictures see the *Mycena* page by Arne Aronsen (home.online.no/~araronse/mycenapage/mycenapage.html).

Lit.: Aronsen 1986a, 1986b, 1988a, 1988b, 1993, 1994a, 1994b, 1996, Aronsen & Gulden 2007, Aronsen & Maas Geesteranus 1989, 1990, 1992, 1997, Bendiksen & Halvorsen 1984, Gminder & Krieglsteiner in Krieglsteiner 2001, Gulden & Jenssen 1982, Hintikka 1963, Krieglsteiner & Schwöbel 1982, Kühner 1938, Maas Geesteranus 1992, 1995, Miersch 1991, Miersch & Rönsch 2003, Moreau 2003, Rexer 1994, Robich 2003, Ronikier & Aronsen 2007.

Main key

1.	Cap with the appearance of being dusted with icing sugar, or with a glistening, textured surface	**Key A** p. 354
-	Cap either smooth or pruinose, but not as if dusted	2
2.	Gill edge darker or of contrasting colour to the gills	**Key B** p. 355
-	Gill edge without contrasting colour	3
3.	Frb yielding cloudy, white or coloured liquid from broken tissue, especially the stem base	**Key C** p. 360
-	Frb not yielding such liquid but may produce a water-like liquid	4
4.	Frb attached to substrate by a basal disc	**Key D** p. 362
-	Frb without a basal disc	5
5.	Cap with a separable pellicle, the surface layer of the cap can be peeled off as a gelatinous layer	**Key E** p. 363
-	Cap with no separable pellicle	6

6. Stem glutinous or slimy; gills decurrent — **Key F** p. 365
- Stem dry or slightly sticky; gills adnexed to decurrent — 7

7. Gills clearly decurrent — **Key G** p. 365
- Gills not clearly decurrent — 8

8. Frb with bright colours such as blue, green, red or yellow — **Key H** p. 368
- Frb white, grey, brown or in black shades — 9

9. Cap white, < 5 mm broad — **Key I** p. 372
- Cap at least coloured at centre *or* > 5 mm broad — 10

10. On all kinds of substrates except wood — **Key J** p. 373
- On all kinds of woody substrates including bark of living trees and roots — **Key K** p. 379

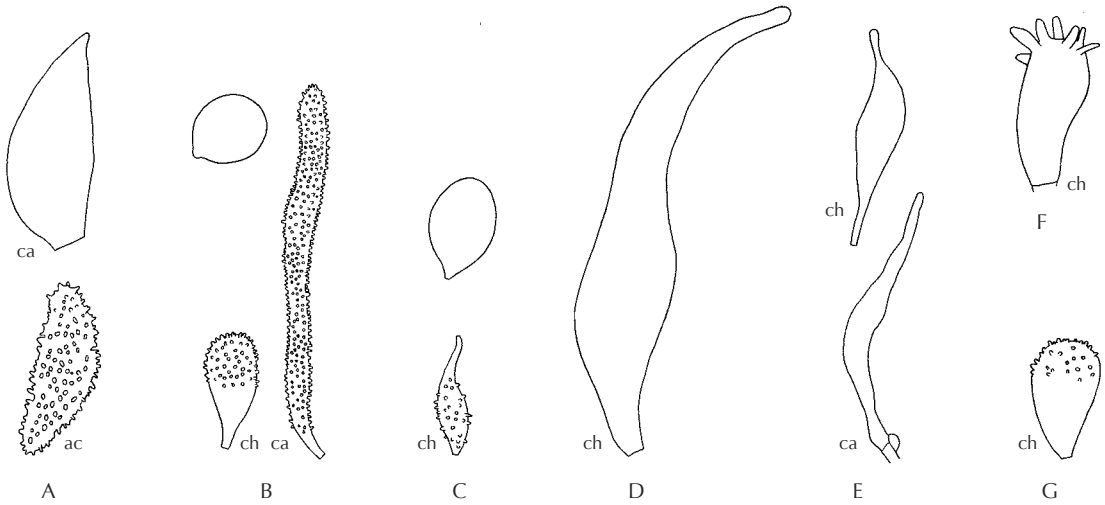
Key A: Cap with the appearance of being dusted with icing sugar, or with a textured glistening surface.

1. Frb sticky; with capitate cheilo-, caulo- and pileocystidia — see *Resinomycena sacchariferа* p. 389
- Frb not sticky; without capitate cystidia — 2

2. On knopper galls from *Quercus robur* acorn cups; gill trama without iodine reactions; sp amyloid. Cap 3-10 mm, at first ovoid and greyish, then expanding to bell-shaped and then almost flat, white with brownish centre, minutely pruinose especially away from centre; gills narrowly adnate or free, sometimes forming a pseudocollarium, ventricose, L = 20-30, white; stem 12-22 x 0.5-0.75 mm, entirely pruinose, white or brownish, at base attached by disc-like, thin pad of fine hairs. Sp 5-8.5 x 3-4.5 µm, Qav = 1.7-1.9, ellipsoid, amyloid; cheilo- and pleurocystidia absent; caulocystidia 30-70 x 10-22 µm, mostly conical to broadly conical, with acute, sometimes rostrate apex (fig. 355A); pileipellis a cutis of cylindrical slightly inflated diverticulate elements, with terminal acanthocysts, diverticulae 2 x 1 µm, forming a uniform surface feature. Summer to autumn; absent or overlooked in area; *NL, UK*. – Pers 17:513. ***M. cecidiophila*** A.P. Berg, Berg-Blok, Noordel. & Uljé
- Frb on other substrates *or* gill trama dextrinoid and sp amyloid — 3

3. Without basal disc; sp subglobose (fig. 355B). Cap 2-5 mm, hemispherical to bell-shaped, ± pulverulent, white; gills adnate with a decurrent tooth, ascending, ventricose to horizontal, L = 8-16, white; stem 5-18 x 0.1-1 mm, hyaline, densely covered with white hairs forming parallel lines, especially at the top. Sp 6-8.5 x 5.5-8.5 µm, Qav = 1.1-1.2, amyloid; basidia 2- and 4-spored; cheilocystidia 18-40 x 5-20 µm, clavate, densely covered with 1-2 µm long diverticulae; caulocystidia abundant and similarly ornamented, 34-68 x 17-30 µm, from clavate to long cylindrical types, these especially at the base of the stem, up to 250 x 10 µm, some with up to 5 µm long diverticulae; clamps sometimes abundant, often absent. Singly or in swarms on mossy trunks or decaying wood of many species of broadleaved trees, not least *Salix* and *Alnus*; autumn to early winter; *DE, UK*. – B&K 3:325, Cou 112, GBW 3:465, M&J 28, Rob 637. ***M. corynephora*** Maas Geest.
- With small basal disc; sp ellipsoid — 4

4. Frb white; many cheilocystidia with a long, narrow, pointed rostrum (fig. 355C). Cap 1-5 mm, hemispherical to bell-shaped, pure white to grey brown at centre when very old; gills narrowly adnate, then forming a pseudocollarium, ventricose ascending, L = 7-12, white to greyish with a white edge; stem 5-20 x 0.1-0.5 mm, white to pale grey, hirsute especially towards the 0.2-0.7 mm wide, hirsute disc. Sp 7-11 x 4-6 µm, Qav = 1.3-1.8, dacryoid, amyloid; basidia 2-spored, rarely 4-spored; cheilocystidia 13-36 µm long, variable, with small diverticulae, lageniform, many with a smooth, long and narrow rostrum; caulocystidia scattered, clustered towards the base, smooth to slightly verrucose, tapering, 20-110 x 4-15 µm; clamps mostly present and abundant. On plant debris of broadleaved trees, including *Corylus*, *Crataegus* and *Fagus* fruits, sometimes on mossy trunks and on coarse herbs; early summer to early winter, all year in the south; very common in temp., occasional in hemib., rare in bore.;



Spores, caulocystidia, cheilocystidia and acanthocystidia: A: *Mycena cecidiophila*, B: *M. corynephora*, C: *M. adscendens*, D: *M. haematopus*, E: *M. sanguinolenta*, F: *M. chlorantha*, G: *M. flavescens*.

DK (LC), FI (DD), FO, NO (LC), SE (LC). – B&K 3:314, FAD 57C, M&J 40, Rob 633, Svp 52:9, ◎.
M. adscendens (Lasch) Maas Geest. (*M. tenerrima* (Berk.) Sacc.)
Note: An attempt to separate a 4-spored taxon with non-rostrate cheilocystidia occurring on *Corylus* husks (as *M. nucicola* Huijsman) is considered problematic and we currently exclude this taxon from our treatment.

- Frb initially pale blue, then white; cheilocystidia lacking rostrum. Cap 0.5-2 mm, bell-shaped, convex, sulcate, minutely granulose, viscid; gills narrowly adnate, ascending, L ≤ 8, white; stem 5-20(-30) x 0.1 mm, viscid, almost glabrous, arising from a small white disc. Sp 6.5-10 x 3.7-5 µm, Q = 1.3-1.8, dacryoid, amyloid; basidia 4-spored; cheilocystidia 12.5-18 x 5.5-7 µm, occurring mixed with basidia, clavate, covered with from few to many short straight diverticulae; caulocystidia inconspicuous, lageniform, 25-100 x 7-17 µm, thin-walled, smooth; pileipellis hyphae end cells clavate to globose with very small and crowded cylindrical diverticulae; clamps absent or present. On decaying conifer needles in rich forests or mesic heaths; summer to autumn; very rare in hemib. or overlooked; FI (DD).
M. occulta Harmaja

Key B: Gill edge darker or of contrasting colour to the gills

1. With coloured fluid, especially from damaged stem base 2
- Without coloured fluid 3

2. Frb strongly pruinose, robust. Cap 10-30 mm, hemispherical to bell-shaped, often with crenate margin, pinkish brown to purplish date, hygrophanous, drying to clay pink; gills broadly adnate to subdecurrent, ventricose, L = 15-26, pinkish white to pale vinaceous, edge usually with some reddish brown colour, at least towards the cap margin, sometimes concolorous with the gill; stem 30-100 x 2-4 mm, hollow, fragile, concolorous with the cap or darker towards the base, yielding dark red fluid when damaged. Sp 7-11 x 4-7 µm, Qav = 1.5-2.5, dacryoid, amyloid; cheilocystidia smooth, acuminate, sometimes forked (fig. 355D); caulocystidia clustered, clavate with irregular, often diverticulate shapes. Typically on the wood of broadleaved trees; summer to autumn; very common in temp., common in hemib.bore., occasional in suba.; DK (LC), FI (LC), NO (LC), SE (LC). – B&K 3:340, GBW 3:439, M&J 11, Rob 459, Ves 235, ◎.
M. haematopus (Pers.: Fr.) P. Kumm.
Note: forms with and without coloured gill edge are sometimes recognised.
- Frb hardly pruinose, delicate. Cap 5-15 mm, paraboloid to hemispherical, glabrous, distinctly striate or sulcate, colour variable, pale buff with reddish buff to coral lines over gills to dark red brown, often with a purple tint, at margin often coloured like gill edge; gills adnate

to subdecurrent, ventricose, L = 13-21, often white with a dark red-brown edge extending along the whole gill; stem 20-100 x 0.5-1.5 mm, fawn to vinaceous buff, clay pink to dark red brown, sometimes densely spotted with red dots at the top, may be shiny, at base attached by fine hyphae, usually yielding a brownish red fluid when damaged. Sp 7-10 x 4.5-6 µm, Qav = c. 1.5, dacryoid, amyloid; cheilocystidia sharply acuminate (fig. 355E), useful for collections with no fluid; caulocystidia variable, but usually narrow tipped. On humus and litter of coniferous trees, often in deep moss, but also occurs with *Betula*, *Fagus* and *Quercus* in oligotrophic environments; early summer to late autumn; common in temp.-bore.; DK (LC), FI (LC), FO, NO (LC), SE (LC). – B&K 3:322 (as *capillaripes*), 364, FAD 50A, GBW 3:440, Rob 463, 465, Ves 234, ◎.
M. sanguinolenta (Alb. & Schwein.: Fr.) P. Kumm.

3. Gill edge yellow, green or brown 4
- Gill edge orange, pink or red to purple 9

4. Gill edge some shade of brown or green 5
- Gill edge lemon yellow, pale yellow, golden yellow to olivaceous buff, if with olive tones then cheilocystidia clavate with diverticulae 7

5. Cap cylindrical with only margin slightly flaring, umbilicate; gill edge brownish see *M. picta* key K 17
- Cap opens up at maturity, not umbilicate; gill edge brown or greenish 6

6. On soil in short grass see *M. olivaceomarginata* 19
- On fallen conifer trees, stumps or buried wood. Cap 6-40 mm, bell-shaped to obtusely conical, plicate, hygrophanous, yellowish brown to grey brown, hazel or sepia, often darkest at the centre, sometimes with olivaceous tones; gills adnate, ventricose, L = 13-27, white to greyish, with brown or olive-green edge, sometimes concolorous with the gill; stem 20-100 x 1-3.5 mm, yellowish brown to olivaceous brown; smell usually nitrous. Sp 8-10 x 6-8 µm, Qav = 1.2-1.5, subglobose to dacryoid, amyloid; cheilocystidia lageniform or fusiform, with obtuse or forked ends; caulocystidia similar to cheilocystidia in fig. 359D. Early summer to autumn; occasional in hemib.-bore., locally common in eastern parts; FI (LC), NO (LC), SE (LC). – ČM 8(4), B&K 3:370, GBW 3:424, R&H 356, Rob 335.
M. viridimarginata P. Karst.

7. On grass in sand dunes, especially *Ammophila arenaria*, more rarely other grasses; smell of iodoform on drying. Cap 6-25 mm, convex to hemispherical or bell-shaped, hygrophanous, translucently striate when wet, olivaceous green or olivaceous brown at the centre, paling to pale yellow at the margin; gills narrowly adnate with short decurrent tooth, ventricose, L = 18-30, grey with yellow or olivaceous tone, with paler or pale yellow to olivaceous buff edge; stem up to 50 x 1-2 mm, minutely pruinose at first, becoming shiny, but tomentose at the base, smoke grey to greyish brown with olivaceous tinge, paler near the top. Sp (8-)9-11.5 x 5-6.5(-7), Qav = 1.5-1.6, dacryoid, amyloid; cheilocystidia include some similar to fig. 355G, but with a longer pedicel, others have longer diverticulae (fig. 355F), with some heads branched. Autumn, but mostly late autumn to early winter; common in temp., very rare in hemib.; DK (LC), NO (NT), SE (LC). – C&D 559, Cou 127, OPN 9C, SMT 29(2):24, Svp 19:9, ◎.
M. chlorantha (Fr.: Fr.) P. Kumm.
- In other habitats; smell not of iodoform on drying 8

8. Cheilocystidia smooth and narrow tipped; smell if any nitrous or of swimming pool. Cap 5-25 mm, bell-shaped to paraboloid, pale yellowish grey, sometimes more yellow at disc to darker olivaceous with olivaceous buff towards the margin; gills adnate with a decurrent tooth and ventricose, L = 13-22, whitish or grey, perhaps with a yellow tinge, with a lemon-coloured to pale golden yellow edge; stem 30-80 x 1-3 mm, glabrous except near the top, pale buff to olivaceous buff. Sp 7-12 x 4-6 µm, Qav = 1.4-1.8, ellipsoid, amyloid; cheilocystidia similar to fig. 359I. On plant debris and humus, among grasses and mosses in meadows

and forests; summer to autumn; very common in arc./alp., common in temp.-suba.; DK (LC), FI (LC), FO, IS, NO (LC, incl. Svb), SE (LC). – AAF 2:37, Bor 58, FAD 50F, Rob 247.
M. citrinomarginata Gillet

- Cheilocystidia very evenly ornate, balloon-shaped with a short pedicel (fig. 355G); smell of earth, potato or radish, especially when crushed. Cap 5-17 mm, conical, bell-shaped to paraboloid, vinaceous buff to dark buff or sepia, darker at the disc; gills adnate and ventricose, L = 14-22, white, tinted yellow or grey, often with pale yellow to lemon-coloured edge; stem 15-70 x 0.5-2 mm, often joined in clusters, shiny, vinaceous buff to snuff brown, paler above to almost white. Sp 8-12 x 4.5-6 µm, Qav = 1.7-2.0, ellipsoid to subcylindrical, amyloid; pleurocystidia similar to cheilocystidia; pileipellis and stipe surface hyphae ornamented with short diverticulae. On forest litter, often decaying *Fagus* leaves or cupules, or in grassland, in FI found in *Corylus* dominated forests on rich ground; late summer to late autumn; very common in temp., occasional in hemib., but rare in FI; DK (LC), FI (DD, V: Houtskari, Iniö), NO (LC), SE (LC). – B&K 3:335 (old), C&D 554, FAD 54E (as *luteoalba* var. *sulphureo-marginata*), M&J 29, Rob 167.
M. flavescens Velen.

9. Gill edge orange 10
- Gill edge pink, red, violaceous purple or purplish black 11

10. Frb ± uniformly orange; cap 1-8 mm; sp without iodine reactions. Cap bell-shaped, bright yellow to orange, often with a papilla which may be darker orange; gills arcuate and decurrent, L = 7-16, pale orange with bright orange edge; stem 6-40 x 0.2-0.7 mm, pruinose, orange with a darker orange pruina at the top. Sp 6.5-8.5 x 3-4.5 µm, Qav = c. 2.4, dacryoid; basidia 2-spored; cheilocystidia clavate or ventricose, sometimes bluntly forked; caulocystidia simple. On conifer litter including small twigs, usually in herb and fern rich *Picea* forests close to watercourses; summer to autumn; rare, but locally occasional in hemib.-bore.; FI (NT), NO (NT), SE (VU). – Jordst 5(1): cover, M&J 4, Rob 533, ◎.
M. oregonensis A.H. Sm.

- Frb in various shades of brown and orange; cap 8-22 mm; sp amyloid. Cap obtusely conical to convex, slightly sulcate and hygrophanous, dark clay buff to grey or olivaceous brown, often with a yellow to rich golden margin; gills adnate, may have decurrent tooth, ventricose, L = 16-25, pale greyish yellow to beige with a distinctly orange edge; stem 35-80 x 1-2 mm, grey brown to orange with orange coarse and fine fibrils at the base attached to the substrate. Sp 7-10.5 x 4-7 µm, Qav = 1.5-2.1, cylindrical; cheilocystidia variable, but many evenly ornate (fig. 359A); caulocystidia cylindrical or clavate, often diverticulate. On litter in eutrophic coniferous forests; summer to late autumn; common in hemib.-bore, occasional in temp.; DK (LC), FI (LC), FO, NO (LC), SE (LC). – B&K 3:320, FAD 54G (as *elegans*), GBW 3:441, M&J 6, Rob 473, ◎.
M. aurantiomarginata (Fr.: Fr.) Quél.s

11. On wood, including stumps, small fallen branches and living trees 12
- On leaf litter, among grass or ferns 14

12. Cap, stem and gill edge violaceous purple. Cap 5-35 mm, paraboloid to hemispherical, brown vinaceous purple, fading to sepia or hazel, hygrophanous; gills narrowly adnate, ventricose, L = 15-26, greyish with dark violet edge; stem 10-100 x 1-3(-5) mm, quite tough, silvery lilac pink to purplish chestnut. Sp 9.5-10.5 x 6-7 µm, Qav = 1.4-1.6, ellipsoid, amyloid; cheilocystidia variably shaped, utriform, clavate and often quite broad distally (fig. 359B); pleurocystidia absent; pileipellis of densely diverticulate hyphae; stem surface hyphae smooth to sparsely diverticulate, caulocystidia simple diverticulate sometimes broadened at the end. Frb solitary to caespitose on bark of living conifers, decorticated fallen conifer trunks or large boughs, or in soil close to living conifers; autumn; occasional in hemib.-bore., rare in temp.; DK (LC), FI (LC), NO (LC), SE (LC). – C&D 566 (too brown), ČM

8(4), M&H 3:110, R&H 357, Rob 607.
M. purpureofusca (Peck) Sacc.

- Cap, stem and gill edge pinkish to reddish brown *or* stem with yellow shades 13

13. Stem uniformly yellow. Cap 10-40 mm, bell-shaped to hemispherical, ochraceous brown to dark clay pink, paler towards the edge; gills adnate, ventricose, L = 18-22, white, becoming salmon to pink or yellowish, edge yellow to red, sometimes only over the outer part; stem 15-50 x 1-4 mm, yellow to pale orange buff. Sp 8-10 x 5.5-7 µm, Qav = 1.4-1.5, ellipsoid, amyloid; cheilocystidia lageniform, broadened ventrally; caulocystidia often with branches with rounded tips (fig. 359C); pileipellis hyphae with inflated diverticulae. Caespitose on dead wood of broadleaved trees, e.g. *Fagus*, *Ulmus* and *Corylus*; early summer to autumn; common in south eastern DK, rare, but locally occasional further north and west in temp.-bore., in FI rare in hemib.; DK (LC), FI (VU, V: Houtskari and Tammisaari), NO (LC), SE (LC). – B&K 3:359, GBW 3:461, M&J 19, Rob 611, Ves 236.
M. renati Quél.

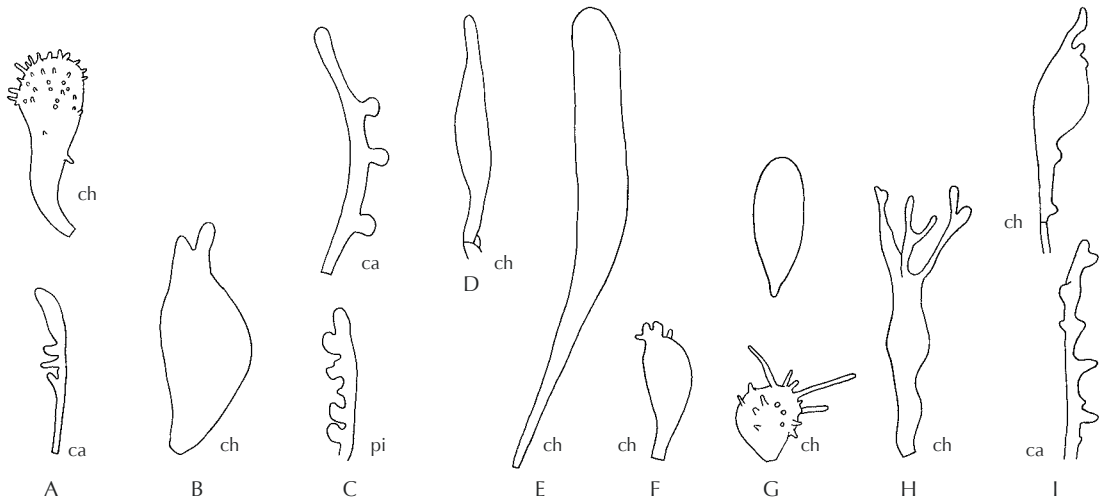
- Stem lacking yellow colour. Cap 5-25(-30) mm, paraboloid to hemispherical, translucently striate, buff to brownish pink, usually darker at the centre, greyish red; gills adnate with a decurrent tooth, ventricose, L = (12-)14-20(-22), white to pale grey, edge red; stem 10-50 x 1-2 mm, concolorous with cap, but paler at the top, shiny smooth. Sp 8-12 x 5-8 µm, Qav = 1.4-1.6, ellipsoid, amyloid; cheilocystidia lageniform with narrower tips which are sometimes forked (fig. 359D); stem surface hyphae smooth with sparse diverticulae. Solitary or in groups on fallen woody conifer litter, but also on deciduous wood, e.g. *Betula*, sometimes low down on the bark of living trees, rarely on broadleaved trees; late summer to late autumn; common in temp.-arc./alp.; DK (LC), FI (LC), FO, IS, NO (LC), SE (LC). – B&K 3:363, GBW 3:463, M&J 39, Rob 615, Ves 238, ◎.
M. rubromarginata (Fr.: Fr.) P. Kumm.

14. Gill edge purplish black; on leaf litter of broadleaved trees, rarely on conifer litter; smell strong, of radish. Cap 15-55 mm, convex, hygrophanous, pale vinaceous buff to dark brown or purplish brown, often with a darker edge; gills emarginate, ventricose to sinuate, L ≥ 28, violaceous grey to grey brown, coloured cystidia visible on the face as many dark dots, edge crenulate, dark violet black; stem 30-70 x 2-8 mm, broader below than above, silky pale fawn with darker longitudinal fibrils. Sp 6.5-8.5 x 3.5-4.5 µm, Qav = 1.6-2, ellipsoid, amyloid; cheilo- and pleurocystidia narrowly lageniform, up to 100 µm long, (fig. 359E) with purple brown contents; pileipellis and stem surface hyphae smooth, caulocystidia simple curved hairs. On litter of *Fagaceae* on rich soils, also with *Alnus* in northern part of distribution area, rarely in mountain *Betula* forests or on conifer litter; late summer to autumn; common in temp.-hemib., occasional. in bore.; DK (LC), FI (EN, U: Helsinki), NO (VU), SE (LC). – B&K 3:352, GBW 3:397, M&J 31b, Ves 232, ◎.
M. pelianthina (Fr.: Fr.) Quél. (*Prunulus p.* (Fr.: Fr.) Jacq. Johnson, Vilgalys & Redhead)
Note: forms from FI occurring north to PS with *Alnus* and *Picea*, with sp > 4 µm wide and pleurocystidia protruding further from the hymenium than in the typical *M. pelianthina*, have been described as *M. lammiensis* Harmaja (*Prunulus l.* (Harmaja) Harmaja). This difference is not easily demonstrated since the difference in sp size is so small. Collections from southern *Fagus* forests sometimes have sp > 4 µm wide. It may be simply within the intraspecific variation of *M. pelianthina*; this should soon be resolved using molecular methods.

- Gill edge red or reddish; on conifer or fern litter or among grass; smell nitrous, indistinct or only faintly of radish or slightly mealy 15

15. On conifer litter 16
- On decaying ferns or among grass 18

16. Frb reddish grey brown; smell nitrous or like swimming pool; cheilocystidia with rounded or narrow tips. Cap 5-30 mm, paraboloid to hemispherical, pale drab to grey vinaceous, usually with a darker disc; gills adnate with a decurrent tooth, ventricose, L = 10-20, greyish



Spores, cheilocystidia, caulocystidia and pileipellis elements: A: *M. aurantiomarginata*, B: *M. purpureofusca*, C: *M. renati*, D: *M. rubromarginata*, E: *M. pelianthina*, F: *M. rosella*, G: *M. pterigena*, H: *M. albidolilacea*, I: *M. olivaceomarginata*.

white with a brownish red edge to part or all of the gill, sides with similarly coloured dots visible with a hand lens or under dissecting microscope; stem 20-90 x 1-2 mm, vinaceous buff to grey. Sp 9-11 x 5-6 µm, Qav = 1.7-2, ellipsoid, amyloid; cheilo- and pleurocystidia lageniform, the narrow ends with rounded tips, with red brown contents. Typically on leaf litter from *Pinus*, but also of *Picea*; late summer to autumn; common in temp., occasional in hemib.-bore.; DK (LC), FI (LC), FO, NO (LC), SE (LC). – C&D 562, Cou 116, M&J 27, Rob 597, SMT 29(2):18.
M. capillaripes Peck

- Frb more highly coloured; smell not nitrous; cheilocystidia with needle-like tips or clavate and diverticulate 17

17. Gills pale pink with a red edge; cheilocystidia clavate and often diverticulate (fig. 359F); pleurocystidia coloured, visible on the gill faces with a lens. Cap 5-15 mm, paraboloid to hemispherical, slightly glutinous when wet, peach, deep salmon to coral red with darker coral lines when moist, may be hazel to blood red at the disc, paling with age; gills adnate, ventricose becoming plane, L = 15-20; stem 20-50 x 0.5-2 mm, pale pink to cinnamon. Sp (6-)7-9(-10) x 4-5.5 µm, Qav = (1.5-)1.7-1.8, dacryoid, amyloid. Typically on leaf litter in herb rich, moist *Picea* forests or plantations, but also in poor, *Vaccinium-Picea* forests, often under *Pinus*, also on cones, small twigs, etc.; autumn; common in hemib.-bore., rare in temp. (DK); DK (DD), FI (LC), NO (LC), SE (LC). – B&K 3:362, FAD 54F, GBW 3:443, M&J 5b, Rob 481.
M. rosella (Fr.: Fr.) P. Kumm.

- Gills white with dark red-brown edge; cheilocystidia with needle-like tips; coloured pleurocystidia absent (check for coloured fluid from damaged stem) see *M. sanguinolenta* 2

18. Cap narrowly paraboloid, up to 5 mm; on decaying fern fronds. Cap pale salmon to pale pink, at margin sometimes darker pink; gills arcuate or with plane edge, broadly adnate with a decurrent tooth, L = 4-10, white to pale salmon, with entirely pink edge; stem 5-40 x 0.1-0.3 mm, pale salmon to apricot, often more strongly coloured towards the base. Sp 8-11.5 x 4-5 µm, Qav = 2-2.2, ellipsoid to subcylindrical (fig. 359G), amyloid; cheilocystidia sphe-ropedunculate and diverticulate, very variable in size and with some diverticulae extending

well beyond the others; hyphae of the surface layer of the cap and stem with many short, even diverticulae. In moist forests or *Salix* and *Alnus* carrs with a rich fern flora; autumn to early winter; common in temp.-bore., very rare in arc./alp.; DK (LC), FI (LC), NO (LC), SE (LC). – B&K 3:357, C&D 561 (pale form), FAD 54H, GBW 3:457, R&H 355, ◎.
M. pterigena (Fr.: Fr.) P. Kumm.

- Cap less paraboloid, > 5 mm; among grass 19

19. Cap very pale with ± lilaceous tinge. Cap 10-20 mm, convex, becoming almost plane, pinkish lilac or flesh-coloured to clay buff; gills adnate and ventricose, L = 11-17; vinaceous buff, with very pale pink to red edge; stem 12-25 x 0.5-1 mm, pink in upper third or golden yellow. Sp 8-12 x 5-8 µm, Qav = 1.6-2.2, dacryoid, amyloid; cheilocystidia clavate with one to several necks (fig. 359H); caulocystidia similar to fig. 359I. Among grass or herbaceous litter; *DE, UK*. – M&J 25, MMB 34(1):41, SZP 77(5):220.
M. albidolilacea Kühner & Maire

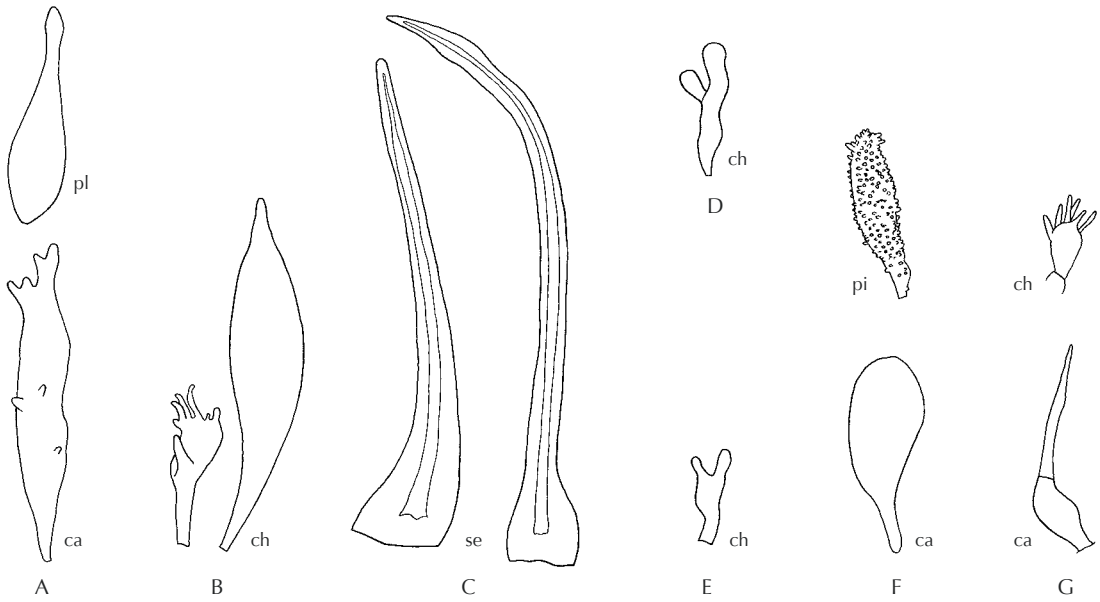
- Cap distinctly pigmented, from drab grey, sometimes with yellow or purplish tinges, through pale brown to violet brown, often with olivaceous tones. Cap 8-22 mm, conical to hemispherical; gills adnate and ventricose, L = 14-20, off white to grey, the edge from yellowish to brown, brownish red or greenish brown; stem 20-80 x 1-2 mm, pale straw to pale yellowish straw, pale vinaceous buff to pale olivaceous brown. Sp (8-)10-13(-14) x 5-7 µm, Qav = 1.7-2.0, ellipsoid, amyloid; cheilocystidia fusiform to lageniform, often branched (fig. 359I); caulocystidia diverticulate, sometimes branched. Among grass, mosses and lichens in meadows and other short grasslands, including dry grassland, dunes, parks, etc.; autumn to early winter; very common in temp., occasional, but locally common in hemib., rare, but locally occasional in bore.-arc./alp.; DK (LC), FI (DD), FO, IS, NO (LC, incl. Svb), SE (LC). – C&D 564, FAD 49B, Phil 85e, Rob 603, Ves 239 (rose form).
M. olivaceomarginata (Massee) Massee (*M. avenacea* (Fr.: Fr.) Quél. s. auct.)
Note: this is a highly variable species and the variability of the pigment has led to many forms being described; it has also been suggested (Arnolds 1982) that it is conspecific with *M. citrinomarginata*, which name would have precedence. Molecular studies are awaited to resolve these questions.

Key C: Frb yielding cloudy, white or coloured liquid from broken tissue, especially the stem base of fresh specimens; gill edge not coloured

1. Fluid milky white, not staining brown. Cap 10-20 mm, bell-shaped to paraboloid, grey brown, from pale clay buff to hazel with sepia disc and radial lines, sometimes white or very dark brown to black; gills ventricose, adnate with a decurrent tooth, L = 14-19(-20), white or off white; stem 50-80 x 0.5-1.5(-2) mm, slightly pubescent, concolorous with the cap, normally grey brown, darker below, white or blackish in some collections. Sp 9-13 (-14) x 5-7 µm, Qav = 1.5-2.0, ellipsoid to subcylindrical, amyloid; cheilo- and pleurocystidia 60-100 x 5-15 µm, lageniform with rounded ends, but often with a characteristic broader tip, slightly arrow shaped (fig. 361A); pleurocystidia very evident, protruding conspicuously from the gill face, visible with a lens on fresh material; caulocystidia variable, many like in fig. 359I, often longer, but some wider and variously diverticulate. On all kinds of forest litter, including burnt sites and also in more open habitats, not or rarely on decaying trunks, also among *Sphagnum*; early summer to early winter; very common in temp.-bore., also observed in arc./alp.; DK (LC), FI (LC), FO, NO (LC), SE (LC). – B&K 3:339 (poor), FAD 50E (dark form), 51G, GBW 3:437, Rob 443-444, 452 (white form), 455 (dark form), Ves 234, ◎.
M. galopus (Pers.: Fr.) P. Kumm.
Note: some authors treat the white and dark forms as varieties, viz. var. *candida* J.E. Lange and var. *leucogala* (Cooke) J.E. Lange, or even as species; this view is not accepted here (see Chard et al. 1983).

- Fluid orange, dark red to cloudy white, staining brown 2

2. Frb ± smooth; fluid cloudy, sparse, staining brown; typically on mossy trunks of living broadleaved trees, including *Quercus* and *Fagus*. Cap 5-20 mm, convex to hemispherical,



Pleurocystidia, caulocystidia, cheilocystidia, setose hairs and pileipellis elements: A: *Mycena galopus*, B: *M. erubescens*, C: *M. aciculata*, D: *M. stylobates*, E: *M. bulbosa*, F: *M. rhenana*, G: *M. clavularis*.

warm brown colours like date brown, sometimes with a darker cigar-brown umbo; gills narrowly adnate with a decurrent tooth, ventricose and rather thick, L = 11-17(-20), greyish white, staining orange red when damaged; stem 10-50 x 0.5-2 mm, smooth but minutely pubescent at the top, milky coffee to fulvous, usually paler at the top; taste bitter. Sp 7-11 x (4-)5-8 µm, Qav = 1.3-1.4, broadly ellipsoid, amyloid; basidia 2-spored; cheilocystidia of two types, one narrowly pointed, the other, which mostly occurs near the cap margin, very variable, often clavate with long narrow irregular fingers (fig. 361B); pleurocystidia like the narrowly pointed type. Autumn to early winter; common in temp., rare, but locally more frequent in hemib.-southern bore.; DK (LC), FI (LC), NO (NT), SE (LC). – B&K 3:333, C&D 594, FAD 50B, GBW 3:436, Rob 439.
M. erubescens Höhn. (*M. fellea* J.E. Lange)

- Frb pruinose; fluid dark blood red or orange; on fallen wood or stumps 3

3. Fluid orange; frb often stained orange; in deciduous woodland, especially on woody *Fagus* litter. Cap 5-25(-30) mm, convex to hemispherical, sometimes umbonate, rimose, grey olivaceous buff to brown, vinaceous and sepia; gills narrowly adnate and ventricose, L = 20-25 (-29), white to off white; stem 50-150 x 1-2 mm, umber, pale orange to deep apricot, tough, can be twisted beyond 90° without breaking. Sp 5-10(-11) x 5-7 µm, Qav = 1.6-1.8, ellipsoid to subcylindrical, amyloid; cheilocystidia similar to fig. 359A. Late summer to late autumn; very common in temp. and where *Fagus* occurs in hemib.; DK (LC), NO (LC), SE (LC). – B&K 3:326, GBW 3:434, FAD 55D, M&J 11, Ves 234, ◎.
M. crocata (Schrad.: Fr.) P. Kumm.

- Fluid deep blood red; frb often stained blood red; caespitose on fallen wood of broadleaved trees see *M. haematopus* key B 2

Key D: Frb small, attached to substrate by a basal disc

1. Cap with long projecting setose hairs, visible in profile, like deep bedded rose thorns (fig. 361C). Cap 3-7 mm, mouse grey to drab, with a separable pellicle; gills adnate or arcuate, sometimes to a pseudocollarium, ventricose, L = 12-16, grey with a pale edge; stem 10-30 x 0.1-0.5 mm, white to silky white; basal disc pubescent. Sp 7-10 x (3.5-)4-5(-6) µm, ellipsoid, without iodine reactions, Qav = 1.8-2.1; cheilocystidia clavate to inflated, often with an acuminate extension (like a small fig. 379A). On litter from both deciduous and coniferous trees, mostly in oligotrophic habitats, but also in more rich sites; late summer to autumn; rare, but locally occasional in hemib.-bore.; FI (LC), NO (LC), SE (LC). – M&J 23 (as *longiseta*), Rob 69 (as *longiseta*), ◎.
M. aciculata (A.H. Sm.) Desjardin & E. Horak (*M. longiseta* Höhn. s. auct. Eur.)
- Cap without setose hairs, but may have short hyphal pegs 2

2. Cap with ± distinct hyphal pegs (small spines) especially at centre, visible when viewed in profile. Cap 4-10 mm, with a tenacious separable pellicle, white, greyish to pale brownish grey; gills adnate, adnexed to almost free, ventricose, forming a pseudocollarium, L = 14-21, white to greyish white; stem 15-50 x 0.3-1 mm, white to pale buff, may be darker towards base; basal disc distinctly plicate-hairy. Sp 7-10 x 4-5 µm, subcylindrical to ellipsoid, Qav = c. 1.7, amyloid; cheilocystidia variable, often with broad fingers (fig. 361D). Often solitary on leaf litter, including leaves from conifers, small twigs, *Vaccinium* litter, etc., often on rich ground; summer to autumn; common in temp.-hemib., occasional in bore.; DK (LC), FI (LC), FO, IS, NO (LC), SE (LC). – B&K 3:369, FAD 54C, GBW 3:391, M&J 10, Svp 52:8, ◎.
M. stylobates (Pers.: Fr) P. Kumm.
- Cap without hyphal pegs 3

3. On riparian herbaceous plants, especially *Juncus effusus*; basal disc strongly pubescent hairy; cap pellicle separable. Cap up to 4 mm, hemispherical, sulcate, pale drab to brownish grey; gills adnate, forming a pseudocollarium, ventricose, L = 8-16, white to greyish white; stem 3-20 x 0.1-0.2 mm, pubescent especially in the lower third, silky or watery white; basal disc large in proportion to the frb. Sp 9-11(-13) x 4-5 µm, subcylindrical, Qav = c. 1.8 occasionally to 2.5, amyloid; cheilocystidia short with broad, rounded fingers (fig. 361E). Also on *Carex acuta*, etc.; summer to autumn; common in temp., in hemib. locally common on the south coast of NO, rare but poorly known in bore. in FI; DK (LC), FI (DD, PH: Keuruu, PK: Ilomantsi), NO (LC), SE (LC). – B&K 3:321, C&D 546, GBW 3:393, M&J 10b, ◎.
M. bulbosa (Cejp) Kühner
- On other substrates *or* without plicate basal disc or separable pellicle 4

4. On decaying female catkins of *Alnus*; cap margin with a granular appearance. Cap 2-6 mm, plane when expanded, with a central depression, strongly plicate, viscid, greyish white with grey at the centre, striate and nearly translucent, at margin fringed with sugary granules; gills narrowly adnate forming a pseudocollarium, ventricose, L = 14-18, white; stem 10-25 x 0.2-0.5 mm, white, translucent, under lens with scattered hairs; basal disc small, hollow and covered with fine white hairs, especially at the edge, where attached to the substrate. Sp 6-8 x 3-5 µm, Qav = c. 1.8; cheilocystidia absent; pileipellis hyphae verrucose, with terminal elements easily separating (fig. 361F); caulocystidia to over 40 µm long, inflated, smooth. *DE*, *UK*. – C&D 547, Rob 74, Win 93:25.
M. rhenana Maas Geest. & Winterhoff
- On decaying *Quercus* leaves or bark on broadleaved trees; cap margin not granular 5

5. On the mossy or bare trunks of living or recently fallen broadleaved trees; basal disc 2 mm, pubescent; sp globose. Cap up to 6 mm, pubescent, with a separable pellicle, white to greyish white, or pale sepia away from the margin; gills adnate, with plane edge to ventricose, L = (7-)9-12, white or tinted grey; stem 5-20 x 0.1-0.6 mm, smooth to sparsely floccose; basal

disc white or grey; smell if any, faintly nitrous. Sp 7.5-11 x 7.5-11 µm, Qav = c. 1.1; cheilocystidia spheropedunculate with long narrow finger-like extensions, some as long as the main structure (fig. 361G); caulocystidia broadest at the base, often septate with the outer part quite thick-walled, narrowing to a point, sometimes twisted. Autumn to early winter; occasional in temp., rare in hemib.; DK (LC), NO (NE), SE (LC). – Phil 86c, Rob 65, ◎.
M. clavularis (Batsch) Sacc.

- On leaves of *Quercus* sp.; basal disc of radial fibrils which are not persistent; sp almost cylindrical. Cap 1-5 mm, greyish brown, paler at the edge, with a separable pellicle; gills adnate, forming a pseudocollarium, ventricose, L = 8-14, greyish with paler edge; stem 3-30 x 1-4 mm, hyaline white or grey; disc white. Sp 8-12 x 3-4.5 µm, Q > 2, cylindrical, strongly amyloid; cheilocystidia similar to cheilocystidia in fig. 361G, but with unevenly elongate diverticulae. Autumn to late autumn; status not well understood, but possibly overlooked and at least occasional in temp., rare in hemib.-southern bore.; DK (LC), FI (DD), NO (NE), SE (LC). – FAD 56A, M&J 40.
M. mucor (Batsch : Fr.) Quél.

Key E: Cap with a separable pellicle

1. Stem dry or only slightly sticky → 2
- Stem glutinous → 4

2. Frb on the stems of *Phragmites* above or half in water; gills deeply decurrent and arcuate. Cap 4-20 mm bell-shaped, soon becoming flat, then depressed, umbilicate or funnel-shaped, at first with inrolled margin, clay pink, dingy yellowish brown becoming darker, the separable pellicle tough; gills dingy white to pale sepia, sometimes with a pinkish tinge, L = 18-26; stem 5-65 x 0.5-3 mm, coarsely granular-pubescent, off white, becoming yellowish to pale brown, eventually reddish brown from the base. Sp 10-15 x 5-7 µm (fig. 365A), Qav = c. 2.3, cylindrical, amyloid; cheilocystidia simple clavate or like in fig. 359H or caulocystidium in fig. 361A. Solitary or subcaespitose, in fresh water lakes; autumn to early winter; probably common in temp.; DK (LC), SE (LC). – C&D 557, Cou 94, FAD 61F, Knu 126, M&J 26, ◎.
M. belliae (Johnst.) P.D. Orton
- On other substrates; gills not deeply decurrent → 3

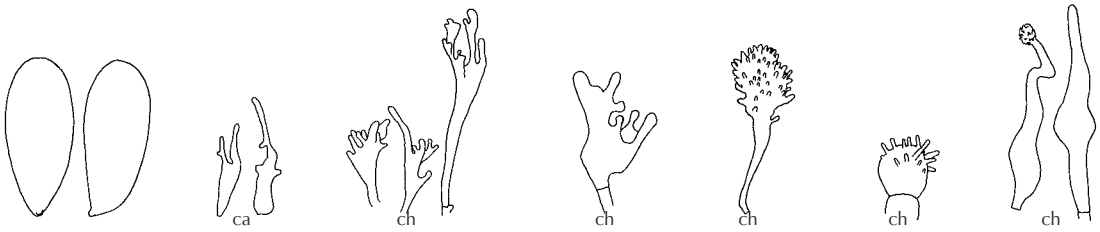
3. Gill edge separable as a gelatinous thread, test by inserting a needle behind the edge. Cap 3-9 mm, globose to bell-shaped, sulcate, translucently striate, white with a slight milky coffee tone; gills narrowly adnate to almost free, ventricose, L = 10-13, whitish to grey with paler edge; stem 3-30 x 0.3-1 mm, very pruinose, white at the top, milky coffee below, the base deep turquoise blue; smell absent to faintly nitrous. Sp 6-9 x 3.5-5 µm, Qav = 1.6, ellipsoid, amyloid; cheilocystidia congested, like in fig. 365C; caulocystidia broad at the base, attenuated to a point often branched (fig. 365B). On conifer twigs or fallen bark, in area on *Picea* and *Pinus*; late summer to autumn; rare in hemib.-bore.; FI (EN, Ks: Kuusamo), NO (NE), SE (LC). – B&K 3:327, BSMF Atlas 314, C&D 550, M&J 12, Rob 677, ◎.
M. cyanorrhiza Quél.
- Gill edge not gelatinised or separable. Cap 3-20 mm, convex to paraboloid, vinaceous buff to olivaceous buff, with drab disc, often showing a dull blue rim at margin; gills narrowly adnate, sometimes seceding to form a pseudocollarium, ventricose or with plane edge, L = 16-25, pale to dark grey; stem 40-80 x 0.5-2 mm, densely pubescent, whitish, pale brown to shiny dark brown, covered densely with white hairs, the base often with blue patches or rarely the whole stem entirely blue. Sp 6-10.5 x 4-5.5 µm, Qav = 1.5-1.7, dacryoid to subcylindrical, amyloid; cheilocystidia and caulocystidia simple clavate. On woody debris, especially from conifers, but also on wood from broadleaves trees such as *Fagus*, *Populus* and *Betula*; late summer to late autumn; occasional in temp.-suba.; DK (LC), FI (LC), FO, NO (LC), SE (LC). – BCat 784, B&K 3:318, FAD 50C, Rob 55, Ves 234, ◎.
M. amicta (Fr.: Fr.) Quél. (*M. iris* (Berk.) Quél.)

4. Cap with pale dull colours, grey to drab or pale brown; stem very pale greyish 5
- Cap and/or stem with bright or strong colours, yellow, greenish, red or dark brown to almost black 6

5. Sp on av < 5 µm wide; L = 13-22; cheilocystidia highly congested (fig. 365C). Cap 2-20 mm, paraboloid to hemispherical, pellucid striate, plicate, sometimes depressed sometimes with a small umbo, from white through pale grey to drab clay buff; gills arcuate and subdecurrent to decurrent, white to pale grey brown, edge separable as an elastic thread; stem 20-60 x 1-2 mm, hollow, watery white to dark grey brown, sometimes with a pale yellowish tinge, glutinous with a separable gelatinous pellicle, tough. Sp 7-8.5 x 4-5 µm, Qav = 1.7-2, dacryoid, amyloid; cheilocystidia apparently entangled at their outer ends, embedded in a gelatinous layer. On needle-litter, especially of *Picea*; late summer to winter; common, but locally very common in temp.-bore., rare in suba.; DK (LC), FI (LC), IS, NO (LC), SE (LC). – C&D 593, M&J 1, R&H 345, Rob 353, Ves 238, ◎.
M. vulgaris (Pers.: Fr.) P. Kumm.
- Sp on av > 5 µm wide; L = (20-)26-32; cheilocystidia clavate with broad and narrow diverticulae (fig. 365D). Cap up to 20 mm, conical, becoming irregularly bell-shaped, shallowly sulcate and translucently striate, blackish grey, blackish brown to dark grey brown, paler when dry; gills decurrent, with plane edge to arcuate, pale to dark grey, the edge paler and separable as an elastic thread; stem up to 65 x 1.5-3.5 mm, hollow, smooth, pruinose but glabrescent except for the top, viscid, grey. Sp 7-11 x 5-6 µm, Qav = 1.7-1.8. In grass, sometimes near conifers; autumn; known from a few collections from NO (DD, Vestf: Tjøme, Moutmarka).
M. agrestis Aronsen & Maas Geest.

6. Basidia 4-spored. Cap 5-35 mm, convex, conical, paraboloid or bell-shaped, often papillate, very glutinous, from pale grey through buff, olivaceous buff over sulphur yellow, lemon yellow, blood red to dark brown and almost black, extremely variable; gills broadly adnate often with a decurrent tooth or even decurrent, ventricose, L = 11-30, white often with a yellow tone, sometimes pinkish or becoming red, edge separable as an elastic thread; stem 14-110 x 0.8-4 mm, viscid, white, pale straw, lemon yellow, pale greenish yellow, dark brick to brown vinaceous. Sp 8-10 x 5-8 µm, Qav = 1.1-2, ellipsoid, dacryoid to amygdaloid, amyloid; cheilocystidia very variable, congested with many irregular shaped fingers like in fig. 365C, embedded in the gelatinous gill edge. On small standing trees, all sorts of litter including fallen wood, and in grass; autumn to early winter; very common in temp.-arc./alp.; DK (LC), FI (LC), FO, IS, NO (LC), SE (LC). – B&K 3:329-330, 332, GBW 3:432-433, M&J 36 (as *viscosa*), Rob 389, 407, 409, Ves 238, ◎.
M. epipterygia (Scop.: Fr.) Gray var. ***epipterygia*** (incl. *M. viscosa* Maire)
Note: this is a highly variable species (possibly many closely related species) with many attempts to describe varieties on field characters. This has resulted in a large number of described forms. These are not easy to separate, there being no microscopical characters yet identified to separate them. For this reason they are not included in this key. We have found apparently different varieties adjacent to each other possibly on the same mycelium, with no good characters to separate them. We have just included the two varieties with 2-spored basidia.
- Basidia 2-spored 7

7. Clamps present. Frb with pale colours especially with stem having luteous to yellow with greenish tones, very dark colours have not been recorded, otherwise similar to the main variety. In moist habitats on herbaceous and woody substrates throughout; rare, but locally occasional in temp.-bore., possibly overlooked; DK, SE.
M. epipterygia (Scop.: Fr.) Gray var. ***epipterygioides*** (Pearson) Kühner
- Clamps absent. Cap (4-)6-12(-16) mm, olive brown, dark sepia, cigar brown, umber drab, olive grey or pale grey brown, often with yellow or white margin; L = 16-22; stem 15-75 x 1-2.5 mm. Sp 11.5-13.5(-14.5) x 5.5-7(-9.5) µm, Qav = 1.7-2.1. In other characters as the main



Spores, cheilocystidia and caulocystidia: A: *Mycena belliae*, B: *M. cyanorrhiza*, C: *M. vulgaris*, D: *M. agrestis*, E: *M. clavicularis*, F: *M. smithiana*, G: *M. clavata*.

variety. Gregarious in damp moss, mostly *Sphagnum*, but also *Polytrichum*, *Aulacomnium* and *Hylocomium*, in mires and dwarf shrub heaths, along brooks and roadsides; often on north slopes on acid soil; common in suba.-arc./alp.; FI, IS, NO, SE.
M. epipterygia (Scop.: Fr.) Gray var. ***badiceps*** M. Lange

Key F: Stem glutinous or slimy; gills decurrent; cap without separable pellicle

1. Stem encapsulated in a thick glutinous layer; pileipellis hymeniform see *Roridomyces* p. 389
- Stem glutinous, but layer thin; pileipellis of repent hyphae with diverticulae. Cap (7-)10-20 (-22) mm, bell-shaped, becoming depressed at the centre, often umbonate, sulcate, translucently striate, drab to brownish orange; gills broadly adnate with a decurrent tooth or clearly decurrent, L = 13-23, grey to greyish brown; stem 20-80 x 1-2 mm, glutinous, grey brown, yellowish brown to brownish orange, tough, can be rotated beyond 180°. Sp 7-9.5 x 4-5.5 µm, Qav = 1.8-2.1, subcylindrical, amyloid; cheilocystidia clavate and ornamented with short broad diverticulae (fig. 365E); caulocystidia like small cheilocystidia. On woody debris and leaves from conifers, especially *Pinus*, especially on poor sandy soil; summer to late autumn; very common in hemib.-bore., occasional in temp.; DK (LC), FI (LC), NO (LC), SE (LC). – BCat 840, C&D 591, M&J 28, R&H 345, Rob 133, ◎.
M. clavicularis (Fr.: Fr.) Gillet

Key G: Gills clearly decurrent; frb dry and without any gelatinised aspect

1. Cap < 4 mm; on fallen leaves of broadleaved trees especially *Quercus* 2
- Cap > 5 mm *or* on bark, conifer twigs or fern rhizomes 3

2. Frb white. Cap up to 3 mm, paraboloid to convex or even flat, under the lens, textured and like parachute panels; gills decurrent and arcuate, L = (4-)6-9(-11), may be absent in minute frb; stem up to 25 x 0.1-0.2 mm, silky smooth, apparently insititious, but seen at x 50 a small radial pad of fine fibrils is often present. Sp 8-11 x 4-5 µm, Qav = 1.9-2.2, subcylindrical, amyloid; cheilocystidia like in fig. 377B or even almost spherical like in fig. 365F; pileipellis hyphae densely verrucose with short, even diverticulae. On fallen leaves of broadleaved trees, especially *Quercus*; autumn to winter; probably common in temp., occasional in hemib.; DK (LC), NO (NE), SE (LC). – GBW 3:455, ◎.
M. polyadelpha (Lasch) Kühner
- Cap or entire frb pink. Cap up to 3 mm, paraboloid to convex or even flat, under the lens textured and like parachute panels, from pale pink to strikingly pale rose; gills adnate and ventricose, rarely decurrent and arcuate, L = (4-)6-9(-11), concolorous with cap or slightly paler, may be absent in minute frb; stem up to 25 x 0.1-0.2 mm, silky smooth, concolorous with cap or paler, apparently insititious (arising cleanly from the leaf), but seen at x 50 a

small radial pad of fine fibrils is often present. Sp 8-11 x 4-5 µm, Qav = 1.9-2.2, subcylindrical, amyloid; cheilocystidia like fig. 377B or even almost spherical (fig. 365F); pileipellis hyphae densely verrucose with short even diverticulae. On leaves of e.g. *Quercus* and *Betula*, in temperate woods, rarely boreal *Betula* woods; autumn to early winter; occasional in temp.-southern bore.; DK (LC), FI (DD), NO (LC), SE (LC). – Cet 2748.
M. smithiana Kühner

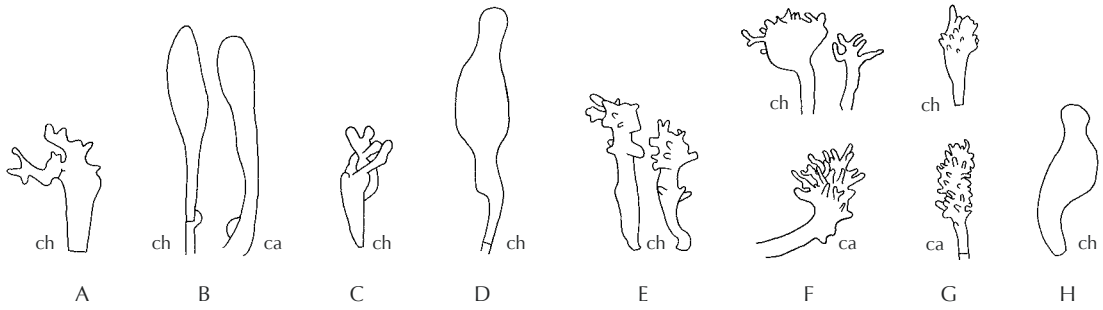
3. On fern rhizomes — see *M. lohwagii* key J 10
- Not on fern rhizomes — 4

4. On wood, including twigs — 5
- On leaf litter, mosses, soil, etc. — 7

5. Sp Q > 1.5. Cap 2-10(-15) mm, convex, may be papillate, usually pale drab or pale buff to fawn often with a darker centre; gills slightly to distinctly decurrent, arcuate, L = 8-18, pale grey; stem up to 50(-60) x 0.5-1(-1.5) mm, distinctly pruinose, usually concolorous with the cap, but may be pale luteous or lemon. Sp 6.5-10 x 4-6 µm, Qav = 1.6-1.9, ellipsoid, without iodine reaction; cheilocystidia cylindrical or lageniform; caulocystidia as curved simple hairs in clusters. On small pieces of woody debris in moist habitats, also on rotten bark; all year, at least in the south; very common in temp.-hemib., occasional, but locally common in bore., rare in suba.-arc./alp.; DK (LC), FI (LC), IS, NO (LC), SE (LC). – B&K 3:366, M&J 2, Rob 382, Ves 239, ◎.
M. speirea (Fr.: Fr.) Gillet
Note: the form with a yellow stem, all or in part, is often referred to as f. *camptophylla* (Berk.) Kühner. – C&D 612, ◎.
- Sp Q < 1.5 — 6

6. Frb grey brown, including gills; on bark and wood of conifers and possibly broadleaved trees. Cap 3-10 mm, at first bell-shaped, becoming convex with slight papilla or a depressed centre, pale grey brown, milky coffee, darker when young, translucently striate; gills broadly adnate to decurrent, arcuate, L = 8-15(-20), concolorous with cap or slightly paler; stem 8-25(-30) x 0.5-1 mm, pale ochraceous to cinnamon buff or beige brown. Sp 6-9 x 5-7 µm from 4-spored basidia, 7-10 x 5-8 µm from 2-spored basidia, Qav = 1.2-1.5, subglobose to slightly ellipsoid, non-amyloid, punctate from obscure ornamentation; cheilocystidia irregular lageniform often with gelatinous covering to the tip (fig. 365G); hyphae of the pileipellis diverticulate with long tangled diverticulae; caulocystidia also diverticulate but not tangled. Singly or subcaespitose; late summer to autumn; rare in temp.-hemib.; DK (VU), NO (NE), SE (LC). – ◎.
M. clavata (Peck) Redhead (*M. phaeophylla* Kühner)
- Frb with yellow tones; on *Juniperus communis* — see *M. juniperina* key K 2

7. Frb pale grey; smell farinaceous, especially when crushed. Cap 4-15 mm, bell-shaped, becoming broadly convex to almost plane, pale grey to brownish grey with a matt appearance; gills decurrent, shallow, arcuate, L = 10-25, concolorous with cap, paler at edge; stem 20-50 x 0.5-1.5 mm, at first lightly pubescent, becoming shiny smooth, concolorous with cap or paler, sometimes buff. Sp from 4-spored basidia 8-10.5 x 4-6 µm, Qav = 1.6-1.9, from 2-spored basidia 9-12.5 x 4.5-7 µm, Qav = c. 1.9, dacryoid to ellipsoid, amyloid; cheilocystidia clavate with broad tips, irregularly branched and densely packed (fig. 367A); caulocystidia asymmetrically ornamented with ± elaborate diverticulae. On forest litter, e.g. under *Quercus*, *Pinus*, *Juniperus*, more rarely in turf near trees, or under *Pteridium*; late autumn to early winter; common to very common in temp.-suba., occasional in arc./alp.; DK (LC), FI (LC), FO, NO (LC), SE (LC). – B&K 3:324, C&D 590, FAD 61H, M&J 37, R&H 358, ◎.
M. cinerella (P. Karst.) P. Karst. (*M. cineroides* V. Hintikka)
- Frb with different colours; smell indistinct or radish-like — 8



Cheilocystidia and caulocystidia: A: *Mycena cinerella*, B: *M. kuehneriana*, C: *M. pseudopicta*, D: *M. rosea*, E: *M. tubarioides*, F: *M. riparia*, G: *M. pseudocorticola*, H: *M. leptophylla*.

8. Frb with pinkish-violaceous colours; smell radish-like 9
- Frb darker, lacking pinkish colours; smell indistinct 10

9. Sp amyloid, Qav = c. 2. Cap 5-15(-20) mm, convex, sometimes papillate and/or depressed at the centre, pinkish white through pale pink to dull red, hygrophanous; gills sinuate and slightly decurrent, L = 18-25, very pale grey to pinkish; stem 20-40 x 1-2(-4) mm, concolorous with cap. Sp 6-8 x 3.5-4.5 µm, Qav = 1.9-2.0, subcylindrical; cheilocystidia oblong to clavate, often with stipitate ones present (fig. 367B); caulocystidia with rounded tips as well as acute. In deciduous and rich *Picea* dominated forests, on litter of deciduous trees; autumn; apparently very rare in hemib.-bore.; FI (DD), NO (NE).
M. kuehneriana A.H. Sm.
Note: a poorly understood taxon, originally described from North America. Collections examined from NL and UK fit well with the type description.
- Sp without iodine reactions, Qav = c. 1.6. Cap 4-25 mm, convex to paraboloid, but often rather flattened, with or without a depressed centre, very pale rose through clay pink to pale violaceous, hygrophanous, translucently striate; gills adnate with a decurrent tooth to quite deeply decurrent, ventricose, L = 18-30, concolorous with cap; stem 20-60 x 1-2.5 mm, concolorous with cap. Sp 6-7.5 x 3.5-5 µm, Qav = 1.6, dacryoid; cheilocystidia similar to cheilocystidium in fig. 367B, more often without long stems, clavate or fusiform; caulocystidia similar to fig. 367B. Sometimes fasciculate, more often solitary in litter of deciduous trees in damp places or on conifer debris, especially in *Populus* and *Alnus* forests; summer to autumn; locally common but few records, perhaps overlooked in temp.-bore., in FI north to Kn; DK (DD), FI (LC), NO (NE), SE (LC). – C&D 604, M&J 31.
M. pearsoniana Singer s. auct. Eur.

10. Basidia 4-spored; in *Sphagnum* moss or other deep, wet, acidic soils. Cap up to 12 mm, hemispherical, then shallowly bell-shaped, blackish brown to grey; gills relatively deep, arcuate decurrent, L = 14-20, sepia grey brown to grey with a paler edge; stem 20-60 x 1-2 mm seeming relatively long for the cap, dark brownish grey to grey, radicating in wet substrates. Sp 7-11 x 4-5 µm, Qav = 1.8-2.2, oblong to subcylindrical, amyloid; cheilocystidia with intermixed basidia, clavate and like in fig. 367A; caulocystidia diverticulate and some large and very coralloid. As well as the typical site above, it has been recorded from a burnt oligotrophic forest site in NO; autumn; rare in temp.-arc./alp.; DK (EN), IS, NO (LC), SE (LC). – FAD 61I, SMT 29(2):21.
M. concolor (J.E. Lange) Kühner
- Basidia 2-spored; with lichens and mosses in dry, open habitats. Cap 5-15 mm, hemispherical to convex or broadly umbonate, with crenulate margin, dark sepia brown to grey brown; gills broad, arcuate and quite deeply decurrent, L = 12-20, whitish towards the edge; stem 20-35 x 0.7-1.5 mm, pale brown below, greyer above, may be swollen towards the top, base

slightly bulbous with strigose hairs. Sp 9-13 x 5-7 µm, Qav = 1.7-1.9, dacryoid, amyloid, in some collections a small proportion of 4-spored basidia have been observed; cheilocystidia branched with diverticular ornamentation, more regular than in the previous two species (fig. 367C), continuous, without intermixed basidia. Typically in dry rather acid, sandy grassland, sometimes with low shrubs such as *Salix repens* and *Juniperus communis*; but also recorded from calcareous grassland and from a burnt oligotrophic forest site, the latter in NO; autumn to early winter; rare in temp.-suba.; DK (EN), IS, NO, SE (NE). – FAD 61J, GBW 3:403, Rob 137.
M. pseudopicta (J.E. Lange) Kühner

Key H: Frb dry, with bright colours (blue, green, red, yellow), without distinctly decurrent gills

1. Frb collybioid; smell radish-like or strongly aromatic; cheilo- and pleurocystidia voluminous, clavate to lageniform 2
- Frb mycenoid; smell absent or different; cheilo- and pleurocystidia not voluminous, variously shaped 4

2. Frb in shades of violet, often in concentric zones on cap; smell usually aromatic, of radish when crushed; gills some dark shade of mauve or violet. Cap 15-45 mm, bell-shaped, soon flattening, usually with an umbo, often with upturned edge, hygrophanous and translucently striate, brownish vinaceous to violet, with umbo, often contrasting with ochraceous or grey pinkish tones; gills narrowly adnate, ventricose, may have a small decurrent tooth, L = 20-45; stem 40-110 x 2-6 mm, often flattened, lilac smoke grey to brownish violet. Sp 7-10 x 3.5-5.5 µm, Qav = 1.6-1.7, dacryoid, amyloid; cheilocystidia simple clavate or lageniform; caulocystidia similar. In troops or fasciculate, on leaf litter, in mainly rich, often calcareous forests, e.g. *Fagus* forests, possibly also with conifers; autumn; occasional, but locally common in temp.; DK (LC), NO, SE (NT). – B&K 3:328, C&D 602, GBW 3:395, M&J 35, Rob 97. – Presumably poisonous.
M. diosma Krieglst. & Schwöbel
- Frb some shade of pink, lilac, occasionally white, pale blue or pale yellow; smell of radish; gills white, pink or pale vinaceous 3

3. Cap umbonate, bright rose or vinaceous pink; stem pale pinkish, clavate, occasionally whole frb white. Cap 25-60 mm, convex with an umbo which is often emphasised by a shallow depression between it and the cap margin, hygrophanous, drying from the centre to vinaceous pink; gills emarginate, L > 40, pale rose; stem 70-150(-200) x 3-12 mm. Sp 7-9 x 4-5.5 µm, Qav = 1.5-1.6, dacryoid to subcylindrical, amyloid; cheilocystidia very variable, clavate, globose, fusiform to narrowly utriform (fig. 367D); caulocystidia similar to fig. 367B. On leaf litter, in deciduous and coniferous forests, typically in rich to fairly rich *Fagus* forests; autumn; very common in temp., occasional in hemib.-bore., but rare in FI, rare in suba.; DK (LC), FI (NT), NO (LC), SE (LC). – B&K 3:361, GBW 3:401, M&J 21, Rob 125, 128 (white form), Ves 233, ◎. – Poisonous.
M. rosea (Schumach.) Gramberg
- Cap not or hardly umbonate, colours highly variable, typically vinaceous pink to pale rose, but also almost white, yellow or pale blue; stem typically with violaceous shades. Cap 10-50(-60) mm, convex; gills emarginate, L = 20-40; stem 30-100 x 1-7 mm. Sp (5-)6-7(-10) x 3-4(-5) µm, Qav = 1.6-1.8, ellipsoid, amyloid; cheilocystidia similar to fig. 367D and caulocystidium in fig. 367B. In all sorts of habitats, but mainly on leaf litter in broadleaved or coniferous forests or in turf in open areas; late summer to late autumn, rare in late spring; very common in temp.-suba., rare in arc./alp.; DK (LC), FI (LC), FO, IS, NO (LC), SE (LC). – GBW 3:398, M&J 21, Ves 232, ◎. – Poisonous.
M. pura (Pers.: Fr.) P. Kumm. (*Prunulus p.* (Pers.: Fr.) Murrill)
Note: a wide range of the colour variation described above has been the basis for the description of a whole range of further taxa mostly at the level of variety or forma. Molecular results indicate clear

separation of *M. rosea* and *M. diosma*, but the picture is less clear with the remaining variation although further species will apparently have to be recognized.

4. Stem with dull to bright blue base — see *M. cyanorrhiza* and *M. amicta* key E 3
- Stem base not blue — 5

5. On leaves of broadleaved trees — 6
- On soil, herbaceous stems, litter or wood — 7

6. On leaves of e.g. *Quercus* and *Betula*, not *Salix*, in temperate woods, rarely boreal *Betula* woods — see *M. smithiana* key G 2
- On leaves of *Salix* in boreal-subalpine sites. Cap 1-3 mm, paraboloid to hemispherical, often with a flattened centre, translucently striate, sulcate, pinkish apricot to brownish pink, often darkest at the centre; gills ventricose, narrowly adnate, L = 5-10, pinkish white; stem up to 12 x 0.3 mm, with a somewhat bulbous base, pruinose, glabrescent except at the base, hyaline-white, insititious. Sp 7-10 x 4-5 µm, Qav = 1.9-2.1, subcylindrical, amyloid; cheilocystidia clavate with fairly regular and quite abundant ornamentation, with mostly short diverticulae, but some up to 5 µm long, up to 30 x 16 µm, similar to figs 355G, 377B, 365F. On leaf litter of *Salix*; late summer to autumn; rare or overlooked in bore.-suba.; NO.
M. exilis Aronsen & Gulden

7. On rotting riparian plants — 7
- Rooting in soil, or directly on litter or wood — 10

8. Sp 10-12(-15) x 3-5 µm. Cap 2-7 mm, hemispherical to convex, sometimes more bell-shaped, sulcate, translucently striate, pink to lilaceous pink, becoming deep straw yellow; gills adnate with a decurrent tooth, arcuate, L = 6-11, pink to pinkish white becoming more brownish; stem 3-15 x 0.2-0.7 mm, flexuous, pruinose when young, then glabrescent, concolorous with the cap or more yellowish to brownish, the base attached by short coarse fibrils. Sp Qav = 2.1-2.5, subcylindrical, amyloid; basidia 4-spored; cheilocystidia slightly clavate with short rounded elaborate diverticulae (fig. 367E), hyphae of the stem surface diverticulate, the caulocystidia, simply terminal cells, occasionally clavate. In close groups in wet habitats on remnants of e.g. *Carex* species such as *C. acuta*, *C. rostrata* and *C. aquatilis*, *Juncus*, etc.; autumn; rare in temp.-southern bore., but possibly overlooked; DK (DD), FI (LC), NO (NT). – M&J 34b, SZP 81(6):237, ◎.
M. tubarioides (Maire) Kühner
- Sp ≤ 10 µm long — 9

9. Caulocystidia simple diverticulate, hyphal terminations without inflated ends, similar to fig. 359I. Cap 2-7 mm, convex to bell-shaped, sometimes with a flared margin, vinaceous buff, pale pink or greyish sepia brown, shallowly sulcate; gills adnate to subdecurrent, arcuate, L = 7-9, buff to pale pink or whitish; stem 5-13 x 0.2-0.5 mm, flexuous, lightly pruinose, then glabrescent, vinaceous buff, may be darker below, the base slightly broadened into a pad with short coarse fibrils penetrating the substrate. Sp 7-9(-10) x 4-5 µm, Qav = c. 1.7, dacryoid to ellipsoid, amyloid; basidia 4-spored; cheilocystidia variable, similar to figs 355F and 359F; stem surface hyphae diverticulate with diverticulae up to at least 7µm long. In wet habitats, on *Juncus*, *Carex*, *Deschampsia*, etc.; autumn; very rare or overlooked in temp.-bore.; NO, SE.
M. juncicola (Fr.: Fr.) Gillet
- Caulocystidia diverticulate with clavate and subglobose ends (fig. 367F). Cap 2-4 mm, convex to low convex, sometimes paraboloid, somewhat sulcate, pink to brownish pink; gills slightly ventricose, broadly adnate to distinctly decurrent, colour reflecting that of the cap, L = to 10; stem 3-5 x 0.2-0.3 mm, pruinose, may be broadened at the base, with pinkish hues, white, finely pubescent. Sp 8-10 x 4.5-5.5 µm, Qav = c. 2, ellipsoid to subcylindrical, amyloid; basidia 4-spored; cheilocystidia very variable, mostly clavate, with irregularly shaped diverticulae, unevenly spaced up to 7 µm long; caulocystidia abundant at the stem

base with distinct globose ends as well as clavate ones, with dense diverticulae up to 4.5 µm long. On decaying riparian plants, *Carex*, *Scirpus*, etc.; autumn; very rare in temp.-hemib.; DK, NO, SE. – C&D 571, MMB 34(1).
M. riparia Maas Geest.

10. On bark of living trees, often in moss 11
- On litter, wood or soil 13

11. Frb blue or bluish grey. Cap 2-8(-10) mm, hemispherical to bell-shaped, sulcate, pruinose when fresh, from mouse grey through bluish grey to dark blue or violet grey, browning with age; gills adnate with a decurrent tooth, broad, ventricose, L = 8-12, pale grey; stem 5-20 x 0.2-1 mm, profusely pruinose, greyish white or concolorous with the cap. Sp 9-14 µm, Qav = 1-1.1 globose to subglobose, amyloid; cheilocystidia clavate with short broad diverticulae (fig. 367G); caulocystidia more densely ornamented than the cheilocystidia and up to 35 µm from tip to septum, abundant. On bark of many species of broadleaved trees, often in association with mosses; autumn to winter; common in temp.-hemib. occasional in southern bore.; DK (LC), FI (LC), NO (LC), SE (LC). – B&K 3:356, FAD 57E1-2, M&J 32b, Rob 667, Ves 236, ◎.
M. pseudocorticola Kühner
- Frb in shades of yellow, yellow brown, reddish brown or pink 12

12. On *Juniperus communis*; frb in yellowish shades see *M. juniperina* key K 2
- On broadleaved trees; frb in shades of reddish brown or pink. Cap 2-8 mm, hemispherical to bell-shaped, sulcate, pruinose when fresh, colour varies from brown vinaceous, through pinks to burgundy; gills adnate, with plane edge to ventricose, often with a decurrent tooth, L = 8-12, concolorous with cap or off white; stem 4-20 x 0.2-1 mm, concolorous with cap, but paler near the top. Sp 9-14 µm, Qav = 1-1.1 globose to subglobose, amyloid; cheilocystidia like in *M. pseudocorticola*, clavate with short broad diverticulae; caulocystidia more densely ornamented than the cheilocystidia, but terminal cell of caulocystidia up to 100 µm long. On the bark of broadleaved trees, often in association with mosses; autumn to winter; occasional in temp.-hemib., rare in southern bore.; DK (NT), FI (LC), NO (LC), SE (LC). – B&K 3:348, C&D 551, FAD 57E, M&J 32, Rob 663.
M. meliigena (Berk. & Cooke) Sacc.

13. Frb strikingly violet to blue grey or blackish violet. Cap 5-15 mm, conical, convex or bell-shaped, violet to violet grey when young, fading to grey, paler at margin, may be darker at centre; gills adnate, slightly ventricose, L = 17-20(-22), grey violet to grey, with paler edge; stem 20-60 x 0.5-1 mm, pruinose especially at the top, becoming shiny, concolorous with cap or paler lilaceous to grey brown, at base white tomentose. Sp 8-10 x 3-5 µm, ellipsoid, amyloid; cheilocystidia clavate with even ornamentation, like cheilocystidia in figs 359A and 377B; pleurocystidia similar; stem surface hyphae evenly diverticulate. On litter among moss or ericaceous plants under conifers, in mountain *Betula* forests and in arc./alp. habitats; summer to autumn; occasional in hemib.-arc./alp.; FI (LC), NO (LC), SE (LC). – M&J 8, Rob 200, SMT 29(2):22.
M. urania (Fr.: Fr.) Quél.
- Frb without bluish or violet colours 14

14. Cap with dull pinkish grey to orange brownish colours (young frb may be more orange);cheilocystidia clavate with small diverticulae 15
- Cap distinctly orange, apricot, bright yellow or coral red; cheilocystidia smooth, ± lageniform 16

15. Frb vinaceous buff to flesh pinkish grey see *M. metata* key J 17
- Frb reddish orange to light brown, looking like a *Galerina* see *M. alexandri* key J 9

16. Stem white, discolouring brown from base, with a long pseudorrhiza. Cap 5-25(-30) mm, conical to bell-shaped, often umbonate or papillate, pale orange yellow at the margin, becoming darker towards the deep orange centre; gills adnate with a decurrent tooth, slightly ventricose, L = 10-25(-30), concolorous with the cap to pale ochraceous, paler at the edge; stem 10->100 x 0.5-2 mm including the radicating part, finely pubescent. Sp 6-9 x 5-7 µm, Qav = 1.2-1.4, subglobose to ovoid, with prominent apiculus, non-amyloid; cheilocystidia smooth and with various simple shapes, clavate, fusiform or even capitate (fig. 367H); caulocystidia simple, smooth, mostly linear. Emanating from decaying wood or roots in broad-leaved or mixed woodland, often along stream banks, typically with *Fagus*; late summer to autumn; rare and local in temp., in NO only in two localities; DK (VU), NO, SE (LC). – C&D 607, FAD 199E (as *Collybia ventricosa* var. *subaequalis*), M&J 12, Rob cover, Svp 6:101.
M. leptophylla (Peck) Sacc.

\- Stem not discolouring brown, not strongly rooting 17

17. Cap yellow 18
\- Cap orange red, coral to red, sometimes fading to yellow 19

18. Sp without iodine reactions; in leaf-beds or in grassland see *M. flavoalba* key J 4
\- Sp amyloid; on needle litter or small twigs of *Juniperus communis*. Cap 6-12(-21) mm, obtusely conical to hemispherical, hygrophanous, translucently striate and shallowly sulcate, straw to yellow, with greenish tints, to clear yellow or olivaceous with yellow at the margin; gills narrowly adnate to emarginate, ventricose, L = 16-19, whitish; stem 40-60 x 1-1.5 mm, lightly pruinose especially at the top, grey to brownish grey. Sp 7-11 x 6-8 µm, Qav = 1.4, dacryoid to ellipsoid, amyloid; cheilocystidia clavate with short broad diverticulae of irregular length and spacing, some longer and may be curved or forked (fig. 373A) or like cheilocystidia in fig. 359A; caulocystidia simple terminations of the diverticulate stem surface hyphae; basidia 2-spored. Solitary or gregarious; late autumn; rare in temp.; NO (LC).
M. citrinovirens M. Lange

19. Stem orange, yellow to straw. Cap 2-7 mm, conical to bell-shaped, often papillate, shallowly sulcate, apricot orange, at least at the centre, sometimes paling outwards to yellow; gills sinuate to adnate, slightly ventricose, L = 7-16, pale luteous to whitish with a white edge; stem 20-50 x 0.25-0.8 mm, bright to pale yellow or straw. Sp 9-11 x 3-4 µm, Qav = c. 3, subfusiform to cylindrical, non-amyloid; cheilo- and pleurocystidia smooth, simple, clavate or subfusiform; pileipellis hyphae and stem surface hyphae mostly with simple short diverticulae. On plant debris in scrub and woodland, often rooting to small woody items; early summer to late autumn; very common in temp., common in hemib., occasional in bore., in FI north to KiL; DK (LC), FI (LC), FO, NO (LC), SE (LC). – BCat 782, B&K 3:312, FAD 53D, GBW 3:385, M&J 4, ◎.
M. acicula (Schaeff.) P. Kumm.

\- Stem white or pink 20

20. Sp Q > 1.8. Cap 4-15(-25) mm, ± conical to bell-shaped, often papillate, striate, smooth, dry to lubricous, coral red, fading to yellow and thus resembling *M. flavoalba*; gills almost free to adnate with a decurrent tooth, L = 21-27, basally coral red to white towards edge; stem 30-70 x 1-2 mm, cylindrical to widened towards base, pruinose, especially at top, translucent white. Sp 7-9.5 x 3.5-4 µm, dacryoid to cylindrical, non-amyloid; basidia 4-spored; cheilo- and pleurocystidia 45-55 x 7-10 µm, lageniform with slender neck; caulocystidia include scattered globose forms like fig. 373C; pileipellis hyphae with coralloid clusters of diverticulae; gill trama without iodine reactions; clamps present. In grassy places, often in wet fens; autumn; rare in temp., occasional in hemib.-bore.; DK (DD), NO (LC), SE (LC). – BSMF 46, pl. 1, Rob 40.
M. floridula (Fr.) Quél. s. Kühner
Note: It is possible that *M. floridula* s. Kühner is a colour form of *M. flavoalba* as suggested by several French mycologists. Maas Geesteranus considered *M. floridula* s. orig. as a likely synonym of *M. adonis*.

- Sp Q < 1.8. Cap 5-22 mm, conical, bell-shaped to low convex, ± striate, smooth, dry to lubricous, scarlet, coral red, salmon pink, fading to pinkish white, occasionally pale orange; gills adnate with a decurrent tooth, L 14-21, pinkish to white, edge white; stem 14-55 x 0.5-2 mm, short pruinose, white, strigose hairy at base. Sp 8-11 x 4-7 µm, Qav = 1.8-2.4, dacryoid to ellipsoid, without iodine reactions; basidia 2(-4)-spored; cheilo- and pleurocystidia 30-70 x 6-15 µm, lageniform, acuminate lageniform to acute lageniform; caulocystidia clavate, more rarely resembling cheilocystidia; pileipellis hyphae with simple to somewhat branched diverticulae; gill trama indextrinoid. In forests and grassland, among grass and moss, on bare peat on open sites or on woody litter, rarely in more rich sites; autumn; occasional in temp.-suba., rare in arc./alp.; DK (LC), FI (LC), NO (LC), SE (LC). – BCat 783, B&K 3:313, GBW 3:386, M&J 3, Rob 29, ◎.
M. adonis (Bull.: Fr.) Gray var. ***adonis***
var. ***coccinea*** (Sowerby) Kühner differs in having a red stem, and possibly in growing on twigs. Autumn; rare in temp.-suba.; DK, NO, SE. – FAD 53B.

Key I: Cap < 5 mm, pure white or greyish brown towards the centre

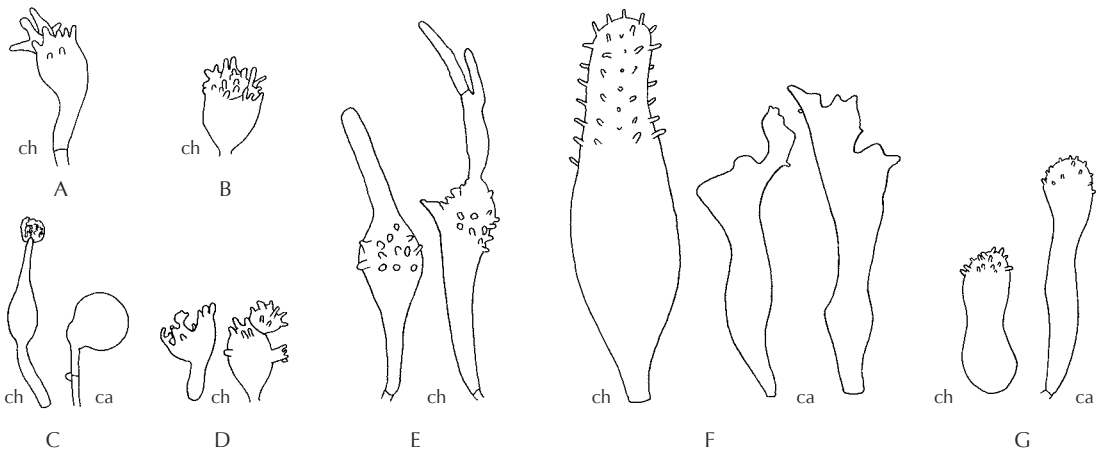
1. Sp without iodine reactions — see *Hemimycena* p. 265
- Sp amyloid — 2

2. On fern debris or living rhizomes — 3
- On flowering plant debris — 4

3. L > 10; on rhizomes — see bleached form of *M. lohwagii* key J 10
- L < 10; mostly along the rachis and on pinnae — see albino form of *M. pterigena*, key B 18

4 On the lower part of monocots, *Carex* and *Juncus*, in wet places. Cap 0.5-3 mm, paraboloid, conical to convex or hemispherical, papillate or not, not striate, white; gills often reduced, adnate to decurrent, L = 0-5, white; stem 1-3(-4) x 0.1-0.3 mm, cylindrical or widened just below the gills, pruinose then smooth, attached with very fine, radiating whitish fibrils which are united by a very thin film of gelatinous matter to form an irregularly shaped plaque. Sp 9.5-11 x 3.5-4.5 µm, Qav = 2.6, dacryoid, amyloid; basidia 4-spored; cheilocystidia 20-27 x 4.5-7 µm, rather scarce, occurring mixed with the basidia, subcylindrical, subfusiform, clamped, smooth; pleurocystidia absent; caulocystidia 20-40 x 2.5-9 µm, variously shaped, much branched, becoming less branched or even simple and subcylindrical farther upwards, then just below the gills gradually passing into lageniform elements, 22.5-35 x 6.5-9 x 3.5-4.5 µm; hyphae of the pileipellis covered with cylindrical, simple diverticulae, 2.5-5.5 x 1-2 µm. Autumn; only known from the type locality, but possibly overlooked and mistaken for *Hemimycena* spp.; NO (NE, Vestf: Tjøme).
M. oligophylla Aronsen & Maas Geest.
- On leaves of trees — 5

5. On leaves, especially of *Quercus*; gills broadly adnate with a decurrent tooth to decurrent — see *M. polyadelpha* key G 2
- On leaves of *Fagus*; gills narrowly adnate. Cap 1-2.5(-5) mm, hemispherical, plicate, translucently striate, white to drab, darker colours when present towards the centre; gills narrowly adnate, sometimes to a pseudocollarium, slightly ventricose, L = 6-10, white; stem up to 25 x 0.25 mm, white to brownish grey, attachment to the leaf variable, etiolating among the leaves, from insititious, to attachment with a very small pad of radially arranged pale strigose fibres or fine brown ones, all possible on the same leaf. Sp 8-10 x (3.5-)4-5 µm, Qav = c. 2.1, cylindrical, amyloid; basidia usually 4-spored, but some 2-spored yielding spores up to 13 µm long; cheilocystidia clavate and diverticulate with irregular diverticulae up to 6 µm long (fig. 373B), mixed with others with even, short diverticulae, like in fig. 377B, caulocystidia just simple hyphal terminations with diverticulae. In quantity on leaves, often with many on each leaf; autumn to winter; very common in temp., probably common where



Cheilocystidia and caulocystidia: A: *Mycena citrinovirens*, B: *M. capillaris*, C: *M. flavoalba*, D: *M. alexandri*, E: *M. latifolia*, F: *M. silvae-pristinae*, G: *M. septentrionalis*.

Fagus occurs in hemib.; DK (LC), FI (DD), NO (LC), SE (LC). – B&K 3:323, FAD 56B, Knu 127, R&H 354, Rob 545, ◎.
M. capillaris (Schumach.: Fr.) P. Kumm.

Key J: Frb not bright coloured, if white, cap > 5 mm, not viscid and not with coloured gill edges; on all kinds of substrates except wood

1. Frb white or very pale yellow — 2
- Frb with more colour — 5

2. With few complete, ± forked gills; sp amyloid — see *Delicatula integrella* p. 277
- With normal gills; sp without iodine reactions — 3

3. Frb white — see *Hemimycena* p. 265
- Frb with cream or pale yellow colours — 4

4. Cap 5-20 mm; gills broadly to very narrowly adnate, with a small decurrent tooth. Cap paraboloid to convex, sometimes papillate, slightly sulcate, translucently striate, cream to pale ochre, whiter towards the margin; gills ventricose, L = 14-24, white to cream; stem 20-60 (-80) x 1-2.5 mm, lightly pubescent when fresh, glabrescent, silky, whitish to pale ivory. Sp 6.5-8 x 3.5-4.5 µm, Qav = 1.7-1.8, subcylindrical, without iodine reactions; cheilocystidia mixed with basidia, fusiform, often with a gelatinous cap (fig. 373C); pleurocystidia similar; caulocystidia mostly globose. In grassland or on litter in oligotrophic and eutrophic coniferous and deciduous forests; autumn to early winter; very common in temp.-hemib., common in bore., also recorded in arc./alp.; DK (LC), FI (LC), FO, IS, NO (LC), SE (LC). – C&D 606, FAD 53G, GBW 3:388, M&J 3, Rob 33.
M. flavoalba (Fr.) Quél.
- Cap < 15 mm, ochraceous yellow; gills arcuate decurrent — see *Hemimycena* p. 265

5. Cap strikingly dome-shaped with parallel sides and umbilicate; gills broader than long — see *M. picta* key K 17
- Frb opening out normally; gills longer than deep — 6

6. Sp without iodine reactions or showing two layers, one of which is amyloid and trama without iodine reactions — 7
- Sp amyloid and single walled — 8

7. Sp without iodine reactions, with large apiculus; lageniform pleurocystidia very evident see *Mycenella salicina* p. 259
- Sp globose, with double walls, one amyloid; in damp places in mixed forests see *Fayodia bisphaerigera* p. 278

8. Cheilocystidia with short regular or irregular diverticulae, like in figs 355G and 365E 9
- Cheilocystidia smooth or with broad, irregular finger-like extensions (fig. 383B), which may be further divided into irregular diverticulae (fig. 377C) 19

9. Frb brown, looking like a *Galerina*. Cap (2-)4-15 mm, conical to hemispherical and bell-shaped, often with an umbo, smooth to sulcate, translucently striate, fulvous to pale orange brown, paler and sometimes with a cream tinge at margin, occasionally with a salmon pink hue; gills weakly ventricose, variously adnate, sometimes with a small decurrent tooth, L = 14–18(-20), concolorous with the cap or paler; stem 20-60 x 0.5-1.5 mm, concolorous with or slightly paler than the cap. Sp 7-10 x 4-6 µm, Qav = c. 1.8, ellipsoid, amyloid; basidia 4-spored; cheilocystidia clavate and variable, some with regular short diverticulae, others with irregular diverticulae and sometimes branched (fig. 373D); caulocystidia simple hyphal terminations with regular diverticulae like fig. 377B. Often among mosses or on litter of shrubby or dwarf trees, e.g. with *Salix glauca*, but also in moist *Betula* and conifer forest habitats; occasional, but locally common and probably overlooked as a *Galerina*, in bore.-arc./alp.; NO (LC), FI (DD), ◎.
M. alexandri Singer (*M. aphanes* Aronsen & Gulden)
Note: at present the evidence for this synonymy is based on the morphological similarities of 30 collections from various countries, including material from North America and the type of *M. aphanes*.
- Frb some shade of grey, or with clay pink hues, if with brown shades, then shape unlike a *Galerina* 10

10. Fasciculate on fern rhizomes such as *Athyrium filix-femina* and *Matteuccia struthiopteris*. Cap 3-7 mm, paraboloid, bell-shaped to conical, with a small papilla, sulcate, translucently striate, pale brown to whitish, often with a dark brown centre and pallid to white margin; gills arcuate, broadly adnate to decurrent, L = 14-17, white; stem 20-60 x 0.5-1 mm, cartilaginous, glabrous, pale yellow brown, whiter towards the top and darker towards the base. Sp 7-10 x 4-6 µm, Qav = c. 1.5, dacryoid to ellipsoid, amyloid; cheilocystidia clavate and diverticulate, some like in fig. 365E, others like in fig. 377B. Autumn; very rare in temp.-southern bore., one record from arc./alp. on *Athyrium*, only known from a few collections from NO (DD) and SE.
M. lohwagii Singer
- On other substrates 11

11. Most cheilocystidia ornamented only in the ventral part, the narrower tip without diverticulae. Cap 5-20 mm, hemispherical to convex, hygrophanous, milky coffee to hazel, with sepia lines, sometimes with sepia disc; gills broadly adnate with a pronounced decurrent tooth and may appear decurrent, ventricose or sinuate, L = 10-20, whitish smoke grey or white; stem (20-)35-75 x 1-2 mm, dull brown, milky coffee to sepia, smooth, quite tough, can be twisted to 180°. Sp 6-10 x 3.5-5 µm, Qav = 1.7-2.0, ellipsoid to subcylindrical, amyloid; basidia 4-spored; cheilo- and pleurocystidia similar, either clavate with light verrucose ornamentation, or characteristically lageniform with the ventral part ornamented, but the tip usually smooth (fig. 373E), some with forked tips, ornamentation hardly more than 1 µm high, mixed with basidia on the gill edge. In open or lightly wooded grassland or on conifer litter; autumn; rare in temp.-southern bore.; DK (DD), FI (DD), NO (DD). – B&K 3:344, FAD 55B, FRIC 3:21b, Myc 7(2):64, Rob 427.
M. latifolia (Peck) A.H. Sm. (*M. pinetorum* J.E. Lange)
- Cystidia ornamented at all surfaces or only at apex 12

12. Cystidia cylindrical to clavate, ornamented only at the outer end (fig. 373F). Cap 4-25 mm,

paraboloid, then bell-shaped with a small umbo, with a crenulate margin when young, hygrophanous, translucently striate, sulcate, dark grey brown when moist, pale grey brown when dry; gills sinuate and broadly adnate, slightly notched at the stem, L = 15-22, grey; stem up to 30 x 1-2 mm, slightly broader below, conspicuously pruinose when young, when dry slightly shiny, grey to grey brown. Sp 7-10 x 5.5-7 µm, Qav = 1.3-1.5, broadly ellipsoid; cheilocystidia mixed with basidia, distally ornamented; pleurocystidia similar; caulocystidia up to 85 x 30 µm, irregularly shaped. On *Quercus* stumps or on brown rotted wood; autumn; very rare in DK (DD, EJyl: Åbenrå).
M. silvae-pristinae M.T. Veerkamp & Kuyper

- Cystidia ornamented ± all over 13

13. Cystidia spheropedunculate with a narrow stem, ornamentation mostly < 1 µm high (fig. 355G) 14
- Cystidia with longer diverticulae or other shapes 15

14. Frb often with a lilac tinge when young; gill edge concolorous with gills; stem base coarsely strigose; sp Qav < 1.6; smell like iodoform, especially when drying
see *M. arcangeliana* key K 11
- Frb without any lilac tinge; gill edge may be pale yellow when young; stem base not coarsely strigose; sp Q > 1.6; smell not like iodoform, but especially when crushed with smell of potatoes or earth see *M. flavescens* key B 8

15. Cheilocystidia spheropedunculate, clavate or saccate, some constricted in the middle (fig. 373G); smell in fresh frb pleasant aromatic-spicy, not of iodoform on drying out. Cap 5-15(-20) mm, bell-shaped to convex, often with a small umbo, drab, sepia, cigar brown to fuscous black; gills ventricose, adnate with a decurrent tooth, L = 15-20(-25), drab, milky coffee, to whitish, edge paler; stem (25-)30-75 x 1-5 mm, pale vinaceous buff to hazel or sepia, darker towards the base. Sp 7-9 x 4-5(-5.5) µm, Qav = 1.7-1.9, ellipsoid, amyloid; pleurocystidia sparse, similar to cheilocystidia; stem surface hyphae sparsely diverticulate, caulocystidia with diverticulate slightly capitate apex. On conifer litter, especially leaf beds of *Picea* and *Pinus*; early autumn to early winter; occasional, but locally common in temp.-bore.; DK (LC), FI (LC), NO (LC), SE (LC). – SMT 29(2):23, Svp 6:101.
M. septentrionalis Maas Geest. (*M. sepia* J.E. Lange s. Lundell)
- Cheilocystidia spheropedunculate and balloon-shaped, not constricted in the middle; smell insignificant or on drying of iodoform 16

16. L < 16. see *M. mirata* key K 16
- L > 16 17

17. Cheilocystidia mostly stipitate, up to 70 µm long; frb with pinkish hues. Cap 5-25 mm, conical to bell-shaped, often with a slight umbo or papilla, sometimes sulcate, but often with a silky texture, clay buff to vinaceous buff, often with a pinkish tinge or even with a clay-pink centre; gills ventricose or sinuate, narrowly to broadly adnate, may be with surface ridges, L = (14-)17-23(-25), clay buff to pinkish; stem 25-100 x 1-2.5 mm, silky smooth, clay or vinaceous buff to pale pink, often more fawn below. Sp 8-11 x 4-6 µm, Qav = 1.7-2.2, dacryoid to ellipsoid, amyloid; cheilocystidia predominantly stipitate and voluminous, with diverticulae from 1-10 µm long (fig. 377A). Usually on conifer litter; very common in temp.-coniferous suba., occasional in mountain *Betula* forests and in arc./alp.; DK (LC), FI (LC), IS, NO (LC), SE (LC). – B&K 3:349, FAD 56F, M&J 30, R&H 359, Rob 173.
M. metata (Fr.: Fr.) P. Kumm.
- Cheilocystidia spheropedunculate, both sessile (fig. 377B) and stipitate (like in fig. 377A), the shorter ones plentiful, stipitate ones ≤ 40 µm long; frb lacking pink hues 18

18. L = (25-)30-35; frb cream to yellowish white, looking similar to *M. flavoalba*. Cap 4-25 mm, narrowly conical to paraboloid when young, becoming bell-shaped, then low convex, trans-

lucently striate towards the margin, creamy white when young, later yellowish pale brown, white at margin, more brown at the centre with age; gills ventricose, narrowly adnate, white to cream sometimes with a pink tinge; stem 30-120 x 0.5-2.5 mm, watery white, becoming grey brown. Sp 7-10 x 3.5-5 µm, Qav = 1.7-2.3, dacryoid to ellipsoid, amyloid; cheilocystidia like in fig. 377B, with some stipitate ones. Solitary to fasciculate on litter including twigs but often among moss in forest habitats, conifer and broadleaved; late summer to late autumn. *DE*. – B&K 3:372.
M. xantholeuca Kühner
Note: Indicated as Norwegian in The Norwegian Mycological Database, and one Danish collection may belong here. Status not clarified at present.

- L = (14-)17-20(-25); frb with shades of grey. Cap 5-20 mm, conical to bell-shaped, becoming more plane, often with an umbo, pale buff to vinaceous buff with darker centre, hazel to pale umber, sometimes almost white towards the margin; gills ventricose to sinuate, sometimes slightly arcuate, adnate with a decurrent tooth, white, often with a vinaceous or pink tone; stem 40-100(-150) x 0.5-2 mm, lightly pruinose, vinaceous buff to snuff brown, usually darker towards the base, paler to almost white at the top. Sp 8-10(-12) x 5-6.5 µm, ellipsoid, amyloid; cheilocystidia predominantly spheropedunculate (fig. 377B). On plant debris and litter, often in eutrophic sites, also along roads in disturbed sites with *Urtica* etc.; summer to autumn; very common in temp., common in hemib.-suba., also recorded from arc./alp.; DK (LC), FI (DD), FO, IS, NO (LC, incl. Svb), SE (LC). – Rob 161.
M. filopes (Bull.: Fr.) P. Kumm.

19(8) In mire habitats associated with *Sphagnum*, *Molinia*, etc. 20
- In drier habitats 21

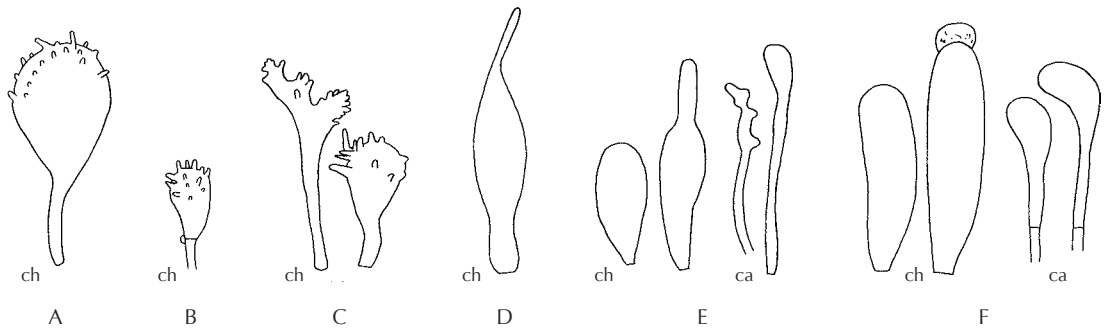
20. Cap up to 20 mm, distinctly translucently striate; L ≤ 20; stem fragile
see *M. concolor* key G 10

- Cap up to 40 mm; L rarely < 20; stem tough, can be twisted through 180°. Cap 10-35 mm, at first paraboloid to conical, spreading to shallowly convex, often umbonate, sometimes radially wrinkled, grey brown or pale cigar brown to sepia, date brown or fuscous black; gills ventricose-adnate, interveining obvious by their open nature, L = 17-28(-30), vinaceous buff to pale smoke grey or whitish, sometimes tinted pink; stem 20-200 x 2-4 mm including radicating part, hazel to date brown, paler at the top, radicating quite deep in moss or soil to buried roots. Sp 8-16 x 6-9 µm, varying over a wide range, Qav = 1.3-2.0, dacryoid or almost cylindrical; basidia 2- or 4-spored, but do occur mixed; cheilocystidia irregularly clavate, sometimes branched and ornamented with uneven diverticulae (fig. 377C). Rooting in soil or *Sphagnum*, often in heathland and sometimes on burnt sites; summer to late autumn, occasional, but locally common in temp.-arc./alp.; DK (LC), FI (LC), NO (LC), SE (LC). – FRIC 7: 51b, M&J 8, R&H 358, Rob 523.
M. megaspora Kauffman (*M. uracea* A. Pearson, *M. permixta* (Britzelm.) Sacc., *M. dissimulabilis* (Britzelm.) Lapl. s. auct.)

21. On cones of *Picea abies*, often buried; in spring; sp Q < 2. Cap 10-40 mm, hemispherical to conical, often with an umbo, which may be narrow, radially fibrillose, grey brown to dark sepia or chestnut brown; gills ventricose, adnate, L = 20-30(-40), pale grey; stem 30-70 x 1.5-3 mm, grey brown, generally paler than the cap; smell nitrous. Sp 6-11 x 4-6 µm, Qav = 1.5-1.9, dacryoid to ellipsoid, amyloid; cheilo- and pleurocystidia fusiform (fig. 377D); caulocystidia cylindrical, fasciculate, up to 100 µm long. Occasional in hemib.-bore.; FI (LC), NO (LC), SE (LC). – B&K 3:368, GBW 3:423, R&H 362, Rob 315, Sieniop 177.
M. plumipes (Kalchbr.) P.A. Moreau (*M. strobilicola* J. Favre & Kühner)

- On other substrates *or* later in the year and sp Q > 2 22

22. On leaves of *Fagus sylvatica*; stem tough; cheilocystidia similar to fig. 367E; sp Q > 2. Cap 10-25 mm, conical to bell-shaped, becoming low convex, plicate, grey brown to brown; gills adnate, often with a small decurrent tooth, ventricose, L = 20-30, white to grey brown; stem



Cheilocystidia and caulocystidia: A: *Mycena metata*, B: *M. filopes*, C: *M. megaspora*, D: *M. plumipes*, E: *M. parca*, F: *M. ustalis*.

30-80 x 1-3 mm, yellowish grey to shades of brown, very tough. Sp 8-11 x 3.5-4.5 µm, Qav = 2.3-2.5, cylindrical, amyloid; cheilocystidia with irregular, broad diverticulae. Late autumn; rare or overlooked in temp.-hemib.; DK (DD), NO (NT), SE (NE). – FAD 56E, SMT 29(2):25.
M. fagetorum (Fr.) Gillet

- On other substrates *or* stem not tough and cheilocystidia otherwise 23

23. Cap up to 3 mm; on leaf litter of *Salix* spp. 24
- Cap larger *or* on other substrates 25

24. Stem black when young, becoming grey from the base upwards; L = 0-8. Cap up to 3 mm, hemispherical, convex to bell-shaped, occasionally with a small papilla when young, shallowly sulcate, brownish grey or pale grey, often with a darker grey centre, fading to white with centre yellowish or ochraceous brown; gills arcuate, adnate to subdecurrent, sometimes reduced to shallow ridges or even absent, white; stem 5-10(-23) x < 0.2 mm, flexuous, glabrescent, entirely black when young, except for the base, which is whitish, fading from the bottom to grey as the frb matures, leaving black if any only present at the top, finally watery white, attached to the substrate by fine white fibrils. Sp 7-9 x 4.5-5.5 µm, dacryoid, amyloid; cheilocystidia smooth, simple clavate like in fig. 381A. On leaf litter of *Salix* spp.; autumn; rare or overlooked in hemib.; NO (NE, Vestf). – M&J 5.
M. terena Aronsen & Maas Geest.
- Stem not black at any stage; L = 5-10 see *M. exilis* key H 6

25. On litter of *Juniperus communis*, especially in needle-beds 26
- On other substrates 27

26. Caulocystidia clavate, typically narrowing at apex; cap grey to dark brown with paler margin. Cap 7-30 mm, conical to convex, sometimes umbonate, translucently striate, strongly hygrophanous, sulcate; gills narrowly adnate, ventricose, L = 22-27, grey with a pale edge; stem c. 60 x 1-3(-5) mm, fragile, glabrous, shining, grey brown or concolorous with the cap. Sp 7-9(-10) x 4-6 µm, Qav = 1.4-2.2, dacryoid to ellipsoid, amyloid; cheilocystidia lageniform or clavate, smooth (fig. 377E); pleurocystidia similar; caulocystidia narrow, with or without broad rounded diverticulae, narrow at the tip, very rarely broadened, hyphae of the cap surface sparsely diverticulate. Gregarious in grass near *Juniperus* or on *Juniperus* needle litter; autumn; so far only known from two localities in southern hemib.; NO (LC, Vestf).
M. parca Aronsen
- Caulocystidia inflated at apex; cap very dark sepia brown to black or even bluish black at the centre, sepia to beige towards the margin. Cap up to 40 mm, paraboloid, conical or bell-shaped, becoming applanate, often umbonate, finely radially fibrillose, translucently striate;

gills narrowly adnate, ventricose, L = 20-25, white, becoming grey with a pale edge; stem up to 80 x 4-5 mm, stocky, somewhat compressed and cracked lengthwise, finely pubescent at first, then glabrescent, slate to bluish grey brown at the top, paler below; smell nitrous. Sp 7-12 x 5-7(-8) µm, Qav = 1.5; basidia 2- or 4-spored; cheilocystidia clavate, apically rounded, smooth, some with a gelatinous cap (fig. 377F); hyphae of the cap and stem surface smooth; caulocystidia characteristically broadened or bulbous at the apex. Gregarious to fasciculate in grass near *Juniperus* or on *Juniperus* needle litter, in coastal scrub; autumn; very rare or overlooked in northern temp., only known from type locality; NO (DD, Vestf). – C&D 574, Rob 324.
M. ustalis Aronsen & Maas Geest.

27. In coniferous and broadleaved woodland; stem markedly pubescent; cheilocystidia inflated, smooth, many with an acuminate apex (fig. 379A). Cap 10-40(-50) mm, conical, bell-shaped to convex with an acute papilla, pale vinaceous buff to fawn and umber, frequently spotted; gills sinuate to adnate with a decurrent tooth, ventricose, L = (18-)20-28, white, becoming red spotted; stem 30-70 x 2-4 mm, finely pruinose, vinaceous buff, pale fawn to brown vinaceous, firm but not tough. Sp 8-12 x 4-5.5 µm, Qav = 2-2.7, subcylindrical, amyloid; cheilocystidia smooth and variable, but mostly inflated, many with one or more acuminate tips; surface hyphae of cap smooth, those of the stem almost smooth, but with long broad smooth or irregularly diverticulate caulocystidia, which are often curved and branched, occurring as fascicles. On debris, from especially *Picea* and *Pinus*, more rarely from *Fagus*; autumn to early winter; common in temp.-southern bore. in FI north to EH; DK (LC), FI (LC), NO (LC), SE (LC). – C&D 583, GBW 3:426, M&J 17, R&H 361, Rob 347, ◎.
M. zephirus (Fr.: Fr.) P. Kumm.

\- In various habitats; stem not markedly pubescent; cheilocystidia not inflated, either smooth, lageniform or digitate 28

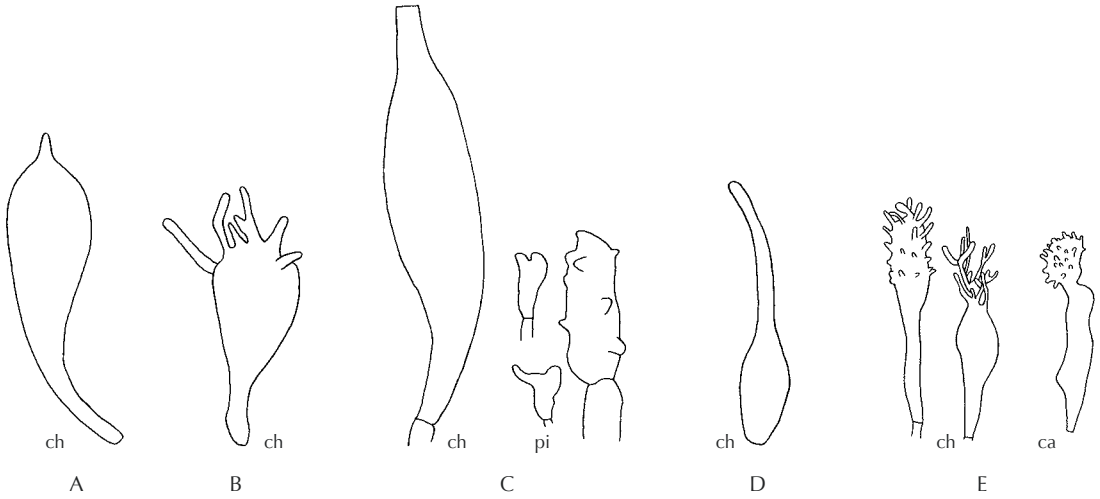
28. Caulocystidia with narrow, acuminate diverticulae (fig. 383C) 29
\- Caulocystidia with broad, rounded or inflated diverticulae (fig. 381D) 31

29. L < 22 see *M. vitilis* key K 26
\- L > 22 30

30. Cheilocystidia with few fingers which may be broad or with many short irregular diverticulae (fig. 383C); hyphae of the cortical layer of the stem smooth with only occasional diverticulae see *M. polygramma* key K 26
\- Cheilocystidia very variable, but with many long narrow fingers which may be branched, (fig. 379B); hyphae of the cortical layers of the stem lightly diverticulate. Cap up to 40 mm, conical, flattening to become shallowly conical with a broad low umbo, sulcate, hygrophanous and translucently striate, very dark grey to almost blackish, drying with a more brownish tint; gills narrowly adnate, ventricose, L = 25-30, grey; stem up to 80 x 3-4 mm, fragile, blackish grey when young, then date brown to grey brown, paler than the drying cap; smell indistinct. Sp 8-12 x 5-7 µm, Q = 1.4-1.9, dacryoid, amyloid; cheilocystidia clavate and smooth, mixed with types with long narrow fingers; basidia 4-spored, also present on gill edge; caulocystidia similar to fig. 359I, with diverticulae up to 11 µm high. Among grass and herbs at forest edges, such as fire breaks, among mossy grass on needles and plant debris; very rare or overlooked, so far only known from FI (DD, EH, PK). – Sieniop 178.
M. tristis Maas Geest.
Note: a very poorly known taxon in need of further study.

31. Caulocystidia with many short diverticulae, but only slightly inflated, like in fig. 359C 32
\- Caulocystidia considerably inflated distally (fig. 381D)(check for buried wood) see *M. leptocephala* key K 22

32. Frb very dark; on *Salix* litter; inflated diverticulate pileocystidia present as terminal cells of the cap surface hyphae. Cap up to 20 mm, conical to convex, flattening with age, mostly



Cheilocystidia, pileocystidia and caulocystidia: A: *Mycena zephirus*, B: *M. tristis*, C: *M. austera*, D: *M. aetites*, E: *M. juniperina*.

with a prominent umbo, sulcate, hygrophanous, translucently striate, dark grey with a darker greyish brown to almost black centre, margin paler to whitish; gills narrowly adnate with a decurrent tooth, ventricose, L = 25-30, grey to dark grey, with paler edge; stem up to 50 x 3 mm, pale grey at the top, darker greyish below, paler than cap; smell nitrous. Sp 9.5-11(-12.5) x 5-6.5 µm, Qav = 1.85, dacryoid to ellipsoid, amyloid; cheilocystidia smooth, fusiform, to over 100 x 20 µm (fig. 379C); pleurocystidia similar and frequent; caulocystidia broadly diverticulate; cap surface hyphae densely diverticulate with some terminal elements enlarged, inflated and of irregular shapes. On soil among *Salix* shrubs; so far only known from the type locality in southern NO (DD, Vestf).
M. austera Aronsen

- Frb paler; pileocystidia not inflated. Cap 10-25(-30), convex to bell-shaped, flattening and forming a broad umbo, hygrophanous, translucently striate, dark grey brown or sepia when young, becoming grey brown to drab; gills narrowly to broadly adnate, sinuate or ventricose, L = 14-20(-24), grey; stem 24-80 x 1-3 mm, concolorous with cap or slightly paler, to clay buff, fragile; smell not nitrous, rather rancid or farinaceous. Sp 8-10.5 x 5-7 µm, ellipsoid to subcylindrical, amyloid; cheilocystidia mostly fusiform (fig. 379D) or like in fig. 377D, sometimes with furcate necks; caulocystidia diverticulate, like fig. 359C. In grass, at roadsides, in lawns and other types of grassland; autumn; common in temp.-hemib.; DK (LC), FI (DD, V: Turku), IS, NO (LC), SE (LC). – B&K 3:315, C&D 572, Cou 132, M&J 42, Rob 223, ◎.
M. aetites (Fr.) Quél.

Key K: Frb not bright coloured, if white, then cap > 5 mm; not viscid or with coloured gill edges; on all kinds of woody substrates including bark of living trees and roots

1. Frb on trunks, root buttresses or branches of standing live trees, often among moss 2
- Frb on fallen trees, stumps, logs or fragments of woody debris 15

2. Scattered or in small groups on bark of living *Juniperus communis*. Cap 2.5-8 mm, hemispherical to paraboloid, finally convex, sometimes with a small papilla, conspicuously sulcate, pruinose to flocculose, pale brown or yellowish brown to rather bright brownish yellow, often darker at the centre, paler to white at the margin; gills arcuate and broadly

adnate with a decurrent tooth sometimes distinctly decurrent, L = (7-)10-13, pale yellowish grey or beige, edge white pruinose; stem 3-5 x 0.5 mm, slightly widened below the gills and at base, pruinose, beige to pale brown. Sp 9-12 x 8-10.5 µm, subglobose to globose, Qav = 1.0-1.3, amyloid; cheilocystidia clavate with terminal diverticulae in dense groups, tangled, forked and up to > 30 µm long (fig. 379E); caulocystidia with fewer and shorter diverticulae; pileipellis hyphae with structures, like small cheilocystidia, giving a tangled coralloid appearance. Late summer to autumn; rare or overlooked in temp.-hemib.; DK (NA, EJyl: Vandplasken, Glatved Strand, Lol: Møn, Høvblege), NO (DD, Vestf), SE. – Rob 654, 658, SMT 29(2):20, Svp 51:56, ◎.
M. juniperina Aronsen (*M. cupressina* Antonín & Maas Geest.)

- On broadleaved trees 3

3. Sp non-amyloid 4
- Sp amyloid 9

4. Sp ornamented with round protuberances see *Mycenella* p. 257
- Sp smooth 5

5. Sp almost spherical, Q ≤ 1.2 6
- Sp ellipsoid, Q ≥ 1.3 7

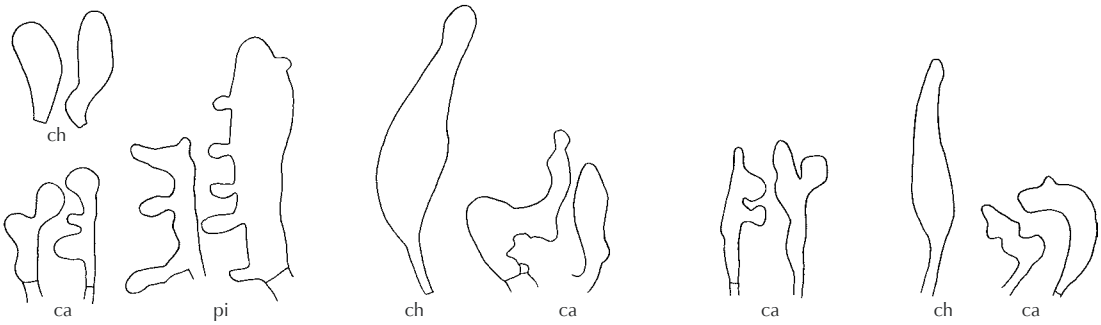
6. Cap 2-6(-10) mm; stem minutely pruinose. Cap hemispherical to shallowly bell-shaped, sometimes papillate, sulcate, pruinose, ± white to greyish brown; gills broadly adnate to decurrent and arcuate, L = 8-15, concolorous with the cap; stem 5-20 x 0.2-1 mm, concolorous with the cap or paler, minutely pruinose. Sp 7-10 µm, almost spherical, non-amyloid; basidia either predominantly 4-spored or 2-spored; cheilocystidia simple clavate (fig. 381A); caulocystidia and cuticular hyphae with inflated diverticulae. On mossy, living trunks; autumn; rare in temp.-hemib.; DK (DD, EJyl: Mønsted), NO (NT), SE (LC). – Rob 361.
M. alba (Bres.) Kühner
Note: immature *M. hiemalis* might key to here with sp of low Q, but the cuticular hyphae diverticulae are not inflated.

- Cap > 8 mm; stem punctate-hirsute with hairs showing dark pigment with a lens; sp with a conspicuous apiculus, like a *Mycenella* see *Hydropus floccipes* p. 283

7. Cap creamy white. Cap 2-15 mm, bell-shaped to low convex, white to very pale cream to buff; gills adnate, ventricose, L = 16-22, concolorous with the cap or paler; stem 15-35 x 0.5-1.5 mm, distinctly pubescent, tough, can be twisted considerably without snapping, watery white or concolorous with the cap. Sp 6-9 x 5-6 µm, ellipsoid, Qav = 1.3-1.4, non-amyloid; basidia 2- or 4-spored; cheilocystidia mostly narrowly utriform (fig. 381B); caulocystidia abundant, very variable, typically clavate, but often bent at right angles or even with a wavy outline. Associated with broadleaved trees, often *Fagus*, usually occurring at the base of trees, often on root buttresses; autumn; common in temp., rare in hemib.; DK (LC), NO, SE. – B&K 3:351, Bres 240.1, C&D 610, FAD 52B (as *gypsea*), M&J 33.
M. olida Bres. (*M. minutula* (Peck) Sacc.)

- Cap in shades of brown or grey 8

8. Gills arcuate and adnate to decurrent; caulocystidia as fairly simple hairs see *M. speirea* key G 5
- Gills ventricose, ascending and adnate, not decurrent; caulocystidia of various shapes with inflated ends (fig. 381C). Cap 2-10 mm, hemispherical, bell-shaped to low convex, clay buff to dark sepia at the centre, paler outwards; gills arcuate, adnate to decurrent, L = 10-20, white to off white; stem 10-30 x 0.5-1 mm, watery white. Sp 6-10 x 5-7 µm, Qav = 1.3-1.4, non-amyloid; cheilocystidia cylindrical to lageniform; caulocystidia with inflated tips to the diverticulae. Usually at the base of broadleaved trees, also on fallen wood; autumn to winter; common in temp., rare in hemib.-southern bore.; DK (LC), FI (LC), NO (NT), SE (LC). – B&K



Cheilocystidia, caulocystidia and pileipellis elements: A: *Mycena alba*, B: *M. olida*, C: *M. hiemalis*, D: *M. leptocephala*.

3:341, FAD 54A, M&J 2, Rob 365, ◎.
M. hiemalis (Osbeck) Quél.

9. Sp ellipsoid, Q > 1.3 — 10
- Sp almost spherical, Q < 1.3 — 13

10. Cheilocystidia variable, but smooth with narrow tips which are occasionally forked, or with many narrow fingers — see *M. erubescens* key C 2
- Cheilocystidia clavate, ornamented with ± even diverticulae — 11

11. Cheilocystidia balloon-shaped, with even ornamentation, mostly just 1-2 µm high, like fig. 355G. Cap 10-25 mm, hemispherical, convex, bell-shaped to almost plane, sometimes umbonate, hygrophanous, translucently striate, from pale buff to sepia or with olivaceous tones, sometimes darker like date brown at the disc, the outer part being paler often with yellowish tones; gills ventricose or sinuate, adnate, L = 16-28, very pale straw to pale sulphur, often with a pinkish tinge; stem 25-70 x 1-2.5 mm, violaceous grey to vinaceous buff, becoming clay buff to drab, never purely white, attached to substrate by coarse, white, strigose fibres at the base, which sometimes extend half way up the stem. Sp 6.5-9 x (4.5-)5-6 µm, ellipsoid, Qav (1.3-) 1.4-1.5(-1.6), amyloid; pleurocystidia sparse, similar to the cheilocystidia. Often caespitose or in troops, on fallen wood, on mossy trees, in *Ribes* shrubberies etc., more rarely on leaf litter; from late summer, but predominantly in autumn to early winter; common in temp., rare in hemib.-suba., with southern distribution in FI; DK (LC), FI (DD), NO (VU), SE (NE). – B&K 3:319, Cou 118, Däh 376, Phil 81f, Rob 147, Svp 20:66, ◎.
M. arcangeliana Bres. (*M. oortiana* Hora)
- Cheilocystidia similarly ornamented but with diverticulae less regular and up to 7 µm long, being mostly like those in fig. 377B, although some stipitate ones are present — 12

12. L < 16 — see *M. mirata* 16
- L > 16 — see *M. filopes* key J 18

13. Frb in smoke-grey tones — see *M. pseudocorticola* key H 11
- Frb with reddish brown or darker grey pigments — 14

14. Frb with brown shades, sometimes faint mauve to reddish tones; cap with or without pigmented pustules; gills with or without coloured edge — see *M. meliigena* key H 12
- Frb greyish white with a darker centre, no mauve or purple tones; cap without pigmented pustules; gill edge not coloured. Cap 2-5(-10) mm, hemispherical, bell-shaped to convex, sulcate, translucently striate, dark sepia at the centre, paler sepia outwards; gills ventricose

or plane subhorizontal, adnate often with a decurrent tooth, L = 10-15(-18), grey brown with a paler edge becoming whiter with age; stem 6-20 x 0.5-1 mm, concolorous with the cap, pruinose. Sp 8-10 x 8-11 µm, globose, amyloid; cheilocystidia like fig. 367G, but the diverticulae less than 4 µm long, more like fig. 355G. On bark, often mossy, of broadleaved trees (*Ulmus*), possibly mostly in rich, calcareous sites; autumn to early winter; very rare or overlooked in temp.; DK (DD, EJyl: Mønsted), NO (NE), SE (LC). – FAD 57D, Rob 671.
M. supina (Fr.) P. Kumm.

15(1) Frb solitary or in a dispersed troop on various woody substrates 16
- Frb ± fasciculate or in close groups on stumps, fallen wood or roots, rarely solitary 27

16. Gills with L < 16; cheilocystidia diverticulate, like fig. 377B, but with slightly longer diverticulae, which are more variable in length. Cap up to 6 mm, hemispherical, later flattening, slightly sulcate, brownish grey or pale grey with whitish margin; gills ventricose, adnate, sometimes sinuate, L = 8-15, off white or with tinge of cap colour; stem 12-30 x < 0.5 mm, greyish brown, paler to white near the top, attached to the substrate by a distinct pad of fine fibrils; smell insignificant. Sp (7-)8-12(-13) x 4.5-7 µm, Qav = 1.6-2, dacryoid to subcylindrical, amyloid; basidia 2- or 1-spored. On small woody debris of conifers and broadleaved trees, in the litter layer; summer to late autumn; common in temp., occasional in hemib.-southern bore.; DK (LC), FI (DD), NO (LC), SE (LC). – FAD 57F (as *filopes*), 57H (as *debilis*).
M. mirata (Peck) Sacc.
- Gills with L > 16 *or* cheilocystidia smooth, perhaps furcate, but not diverticulate 17

17. Cap cylindrical with margin flaring slightly; gills shorter than broad. Cap 2-6 mm, umbilicate, dark brown with darker radial lines, the margin often rusty brown; gills flat with a decurrent tooth, L = 20-22, cream to pale brown often with a fulvous brown edge, especially at their outer end; stem 15-35 x 0.2-1 mm, wider just below the gills to twice the diam., concolorous with the cap or slightly paler brown, base with whorl of yellowish brown, smooth, strigose hairs. Sp 6.5-8.5(-10) x 3.5-5.5 µm, Qav = 1.6-1.7(-1.9), amyloid; basidia 2-4 spored; cheilocystidia hard to see, being part of a chain of cells with the terminal cells in diverse shapes, diverticulate with diverticulae often densely coralloid; caulocystidia absent. Often solitary, on many substrates in woodland habitats, including woody debris and fallen, strongly decayed conifer or hardwood trunks, e.g. *Alnus* and *Fagus*; summer to autumn; rare in temp.-bore., apparently more common in FI, easily overlooked; DK (NT), FI (LC), NO (DD), SE (LC). – B&K 3:353, Lud 88.1, Sieniop 173, Svp 8:97, ◎.
M. picta (Fr.: Fr.) Harmaja (*Xeromphalina p.* (Fr.: Fr.) A.H. Sm.)
- Frb opening out normally; gills longer than broad 18

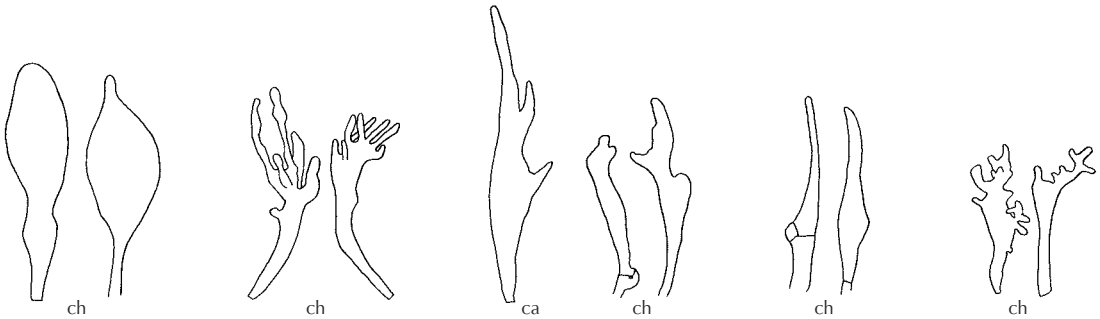
18. Sp non-amyloid 19
- Sp amyloid 20

19. Gills arcuate and adnate to decurrent; caulocystidia as fairly simple hairs
see *M. speirea* key G 5
- Gills ventricose, ascending and adnate, not decurrent; caulocystidia of various shapes with inflated ends (fig. 381C) see *M. hiemalis* 8

20. On fallen trees, stumps or fallen twigs of coniferous trees 21
- On fallen trees, stumps or litter of broadleaved trees 24

21. On fallen twigs and thin branches; cap rarely exceeding 30 mm 22
- On stumps, fallen trees and fallen branches; cap often 30-40 mm 23

22. Caulocystidia inflated distally (fig. 381D); cheilocystidia rarely with abruptly acuminate tip. Cap 5-22 mm, bell-shaped to convex, occasionally umbonate, striate, smooth or somewhat sulcate, from smoke grey through various darker shades of grey, often with clay buff shades to dark drab, sepia or cigar brown, sometimes warmer hazel towards the centre; gills



Cheilocystidia and caulocystidia: A: *Mycena abramsii*, B: *M. vitilis*, C: *M. polygramma*, D: *M. laevigata*, E: *M. maculata*.

ascending, ventricose, adnate usually with a decurrent tooth, L = 14-26; stem 20-80 x 0.5-2 mm, purplish chestnut above, paler to cap colour or paler below; smell usually distinctly nitrous. Sp 7-12 x 4-6 µm, ellipsoid to subcylindrical, Qav = 1.5-1.8, amyloid; basidia typically 4-spored; cheilocystidia clavate to fusiform and lageniform, (fig. 381D). On litter and humose soil in and outside forests, usually attached to wood, occasionally on trunks low down; summer to late autumn; very common in temp.-suba.; DK (LC), FI (LC), FO, IS, NO (LC), SE (LC). – Cou 118, FAD 51D, Rob 265, Ves 237.
M. leptocephala (Pers.) Gillet (*M. chlorinella* (J.E. Lange) Singer)
Note: *M. aronsenii* Maas Geest. (NO) differs only by having diverticulate hyphae of the stem surface. The *M. leptocephala* group is badly in need of revision using both morphological and molecular methods.

- Caulocystidia absent or as simple uninflated terminations; cheilocystidia smooth and variable, some furcate, some with an abruptly acuminate tip, but not very inflated (fig. 383A) see *M. abramsii* 25

23. Cap various shades of light brown, often with a dark centre, frequently discoloured with red stains; smell not distinctive; stem markedly pubescent; cheilocystidia inflated with an acuminate tip see *M. zephirus* key J 27
- Cap dark brown; smell often nitrous; stem without distinctive pubescence; cheilocystidia not inflated with an acuminate tip (check for signs of pigment on the outer ends of the gill edge) see *M. viridimarginata* key B 6

24. Smell nitrous (may quickly disappear); cheilocystidia smooth and variable, some furcate, some with an abruptly acuminate tip, or with inflated caulocystidia 25
- Smell not notable; cheilocystidia lageniform or digitate, but not usually with an acuminate tip; frb relatively tough 26

25. Caulocystidia absent or as simple uninflated terminations; cheilocystidia with acuminate tip, but rarely very inflated; frb rather fragile. Cap 10-30(-35) mm, hemispherical, bell-shaped to convex, sometimes subumbonate, translucently striate, sepia brown to drab at the centre, paler brown outwards, becoming paler; gills sinuate to ventricose, adnate, L = 18-28, white, vinaceous buff or pale grey; stem 30-100 x 1-3 mm, smooth, hollow, fragile, yields watery liquid when damaged, concolorous with the cap or paler especially towards the top sometimes white, sometimes with a vinaceous tone. Sp 7.5-13 x 4-6(-6.5) µm, ellipsoid to subcylindrical, Qav = 1.8-2.1, amyloid; cheilocystidia variable, lageniform and fusiform, with mucronate types (fig. 383A) characteristically present, sometimes furcate; pleurocystidia similar but sparse. Usually solitary and attached to wood rather than soft

litter; late spring to autumn; common in temp.-hemib., rare, but locally occasional in bore.-suba.; DK (LC), FI (LC), IS, NO (LC), SE (LC). – B&K 3:311, Bol 19(3):92, GBW 3:413, R&H 364, Rob 219.
M. abramsii (Murrill) Murrill

- Caulocystidia inflated distally; cheilocystidia rarely with abruptly acuminate tip; frb not fragile — see *M. leptocephala* 22

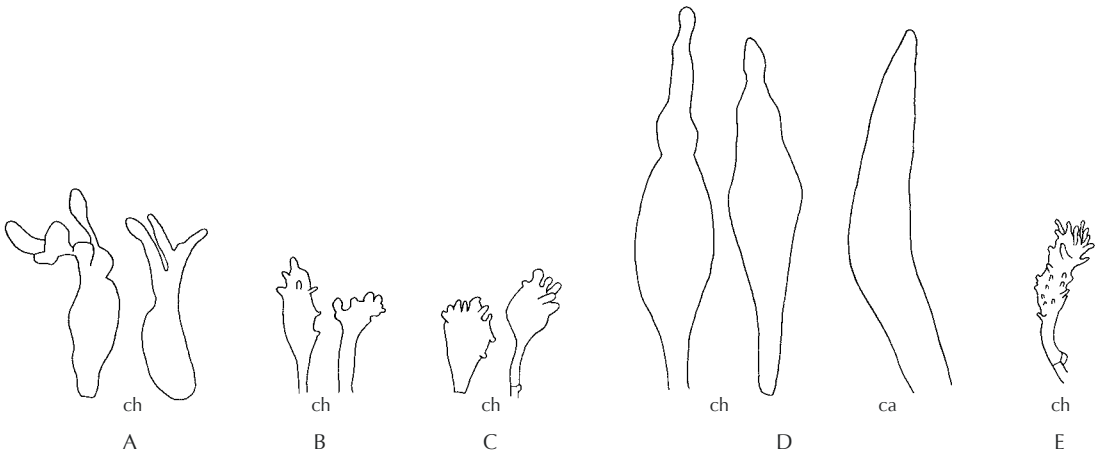
26. L < 23; cheilocystidia narrowly digitate. Cap 5-20 mm, bell-shaped when young, becoming convex, often with an umbo, sometimes with a rimose appearance as if finely fibrillose, vinaceous buff to grey brown, darker at the centre sometimes as dark as cigar brown or sepia; gills ventricose to sinuate, narrowly adnate, sometimes with a small decurrent tooth, to adnexed, L = 16-21(-23), whitish to pale grey often with a pink tinge, stem 50-90(-120) x 1-2 mm, glabrescent, shiny when dry, lubricous when wet, fairly firm, splits if twisted beyond 180°, whitish above, vinaceous buff to clay buff below. Sp 7.5-12 x 5-7.5 µm, ellipsoid to subcylindrical, Qav = 1.5-1.7, amyloid; cheilocystidia digitate with long fingers which tangle with others hindering disruption from the gill edge (fig. 383B); basidia 4-spored, lacking clamps in most collections, sometimes 2-spored. On twigs ± buried and often in deep litter, sometimes it appears to be growing on leaf litter, often with *Fagus* and *Quercus*, but also with other broadleaved trees; early summer to early winter; very common in temp.-hemib., occasional in bore.; DK (LC), FI (LC), IS, NO (LC), SE (LC). – B&K 3:371, FAD 52D, Rob 339, Ves 237.
M. vitilis (Fr.) Quél.

- L > 23; cheilocystidia with few fingers which may be broad or with many short irregular diverticulae (fig. 383C). Cap 20-30(->50) mm, conical, sometimes with an umbo, often with revolute margin with age, plicate, ash grey, grey brown to dark sepia, darkest at the centre; gills sinuate or ventricose, narrowly adnate or adnexed, L = 23-35, white to pale grey, sometimes tinged pink; stem 50-150(-180) x 1-5 mm, grey to greyish brown, often with a silvery blue grey sheen, smooth or with shallow longitudinal grooves, finely pubescent, becoming glabrous, tough, can be twisted through 180° with care. Sp 8-10 x 5.5-7 µm, ellipsoid, Qav = 1.4, amyloid; surface hyphae of the stem smooth with only occasional diverticulae, caulocystidia with tapering limbs; clamps abundant. On all kinds of woody debris from broadleaved trees, occasionally rooting to buried substrates; autumn to early winter; very common in temp., occasional in hemib.-bore.; DK (LC), FI (LC), NO (LC), SE (LC). – FAD 52C (white form), 52F, GBW 3:419, M&J 13, Rob 289, Ves 237, ◎.
M. polygramma (Bull.: Fr.) Gray

27(15) With coniferous trees — 28
- With broadleaved trees — 31

28. Cap creamy white, discolouring dirty orange brown; smell not nitrous. Cap 10-30 mm, low convex, convex to bell-shaped, sometimes papillate or slightly umbonate, ivory white to ochraceous or pale buff, especially at the centre, sulcate and translucently striate, slightly viscid; gills sinuate, ventricose or arcuate, adnate to slightly decurrent, L = 25-30(-32), white to cream; stem 30-70(-100) x 1-3 mm, silky white, often with translucent bands and sometimes a faint lilac tone, in the early stages more smoke grey, very tough and fibrous, can be twisted beyond 180° without damage. Sp 6.5-7(-8) x (3-)3.5-4.5(-5) µm, ellipsoid, Qav = 1.7-1.8, amyloid; cheilocystidia smooth and narrowly fusiform (fig. 383D); caulocystidia at the top of the stem like the cheilocystidia, otherwise like hyphal ends with diverticulae up to 6 x 2 µm. On decaying larger conifer trunks; late summer to autumn; common in bore., occasional but locally common in hemib.; FI (LC), NO (LC), SE (LC). – B&K 3:343, C&D 576, M&J 14, R&H 363, Rob 259.
M. laevigata (Lasch) Gillet

- Cap with brown shades; smell nitrous or not — 29



Cheilocystidia and caulocystidia: A: *Mycena silvae-nigrae*, B: *M. inclinata*, C: *M. tintinabulum*, D: *M. niveipes*, E: *M. galericulata*.

29. Smell not nitrous; cap and gills may be spotted red; cheilocystidia variable, but clavate with irregular diverticulae (fig. 383E), not smooth. Cap 10-45 mm, obtusely conical to bell-shaped, or convex, various shades of brown, from vinaceous buff to dark sepia, usually darker at the centre, frequently developing brown-vinaceous to dull red spots, but not always evident in fresh fruitings, hygrophanous, sulcate, translucently striate; gills ventricose, adnate, L = 18-25, greyish white; stem 25-85(-100) x 1-4 mm, quite tough, withstands twisting, grey brown to pale sepia below, paler above to almost white. Sp 7-9 x 4.5-6 µm, Qav = 1.4-1.7; cheilocystidia clavate and mostly distorted, with many coarse diverticulae (fig. 383E), these are discontinuous, with tracts of basidia scattered along the gill edge (this character helps separate this species from dark *M. galericulata*, which has similar cheilocystidia but a sterile gill edge). Fasciculate on *Quercus* trunks and stumps in the south and on *Picea* trunks further north; autumn; occasional in temp.-hemib., occasional in bore., but rarer in northern part; DK (LC), FI (LC), NO (LC), SE (LC). – GBW 3:450, M&J 15, Rob 519.
M. maculata P. Karst.

- Smell usually markedly nitrous; cap and gills lacking any red discoloration; cheilocystidia smooth fusiform, lageniform or clavate, may be simple or with variously forked ends 30

30. Basidia 2-spored; clamps absent; pleurocystidia present, like the cheilocystidia. Cap 10-35 mm, paraboloid, often with a flared margin, becoming more bell-shaped, papillate or umbonate, sometimes areolate-rimose, very dark black brown when young, becoming sepia to hazel; gills ventricose, adnate, L = 14-25, white to grey; stem 30-120 x 1-4 mm, usually curved into substrate, shiny, pale brown above, darker below, in young frb with a silvery lilac tinge above. Sp 8-14 x 6-10 µm, subcylindrical, Qav = 1.5-1.8, amyloid; cheilo- and pleurocystidia fusiform, or clavate with digitate extensions, which might be furcate (fig. 385A). On conifer wood, often on rotten stumps, sometimes in mires, also recorded on *Picea* cones; mainly in spring to early summer; occasional, but possibly overlooked in temp.-hemib.(-bore.?); DK (LC), NO (LC), SE (LC). – B&K 3:365, C&D 582, SMT 29(2):19.
M. silvae-nigrae Maas Geest. & Schwöbel (*M. alcalina* (Fr.: Fr.) P. Kumm. s. auct. p.p.)

- Basidia 4-spored; conspicuous clamps present; pleurocystidia absent. Cap 10-30 mm, paraboloid to bell-shaped, long remaining this shape, lubricous when wet, dark grey brown to sepia, hygrophanous and translucently striate; gills ventricose, adnate, L = 15-24, whitish smoke grey; stem 12-70 x 1-3 mm, concolorous with the cap or paler to milky coffee. Sp 9-11 x 5.5-7 µm, ellipsoid, Qav = 1.6-1.8, amyloid; cheilocystidia fusiform to lageniform or clavate, some-

times furcate. Typically fasciculate, on conifer wood, often strongly decayed *Picea* or *Pinus* trunks or stumps; late summer to late autumn; very common in hemib., common in bore., rare in temp.; DK (NT), FI (LC), NO (LC), SE (LC). – B&K 3:367, GBW 3:421, R&H 364, Rob 312.
M. stipata Maas Geest. & Schwöbel (*M. alcalina* (Fr.: Fr.) P. Kumm. s. auct. p.p.)

31. Cheilocystidia cylindrical or clavate, evenly ornamented only at the outer end (fig. 373F) see *M. silvae-pristinae* key J 12
- Cheilocystidia smooth or ornamentation not restricted to the outer end 32

32. Stem floccose-pruinose, silvery grey to bicoloured, paler above and yellow brown to orange brown below; smell rancid-aromatic, farinaceous or of cucumber, especially when crushed. Cap 10-35(-40) mm, conical, becoming bell-shaped, sometimes with an acute papilla or broad umbo, with a crenulate rim exceeding the gills, may be radially rugulose or fibrillose, viscid when wet, from pale buff through hazel to sepia; gills ventricose, adnexed to adnate with a decurrent tooth, L = (18-)20-25(-28), white at first, becoming greyish sometimes with a pinkish or vinaceous tinge; stem 30-110 x 1.5-4(-6) mm, white floccose when young with a longitudinally grooved appearance, becoming bicoloured, the lower part of the stem developing a chrome yellow to date colour, the base very dark. Sp 8-10 x 5.5-7.5 µm, Qav = 1.3-1.6; cheilocystidia clavate and very varied, with irregular broad or narrow diverticulae (fig. 385B) some like those in fig. 383B. In fascicles, typically associated with *Quercus*, more rarely on *Fagus*; autumn to early winter; common in temp.-hemib., rare in the eastern parts; DK (LC), FI (LC), NO (LC), SE (LC). – B&K 3:342, FAD 55E, GBW 3:449, M&J 15, Ves 233, ◎.
M. inclinata (Fr.) Quél.
- Stem with another colour, smooth to pruinose; smell absent, nitrous or farinaceous 33

33. Stem all yellow; cap often lilaceous pink to yellowish red see *M. renati* key B 13
- Frb with other less vivid colours 34

34. Sp ≤ 6 µm long. Cap rarely exceeding 25 mm, convex, bell-shaped to depressed with incurved margin, with very tough and leathery surface, greasy lubricous, only separable as strips, not as a separate pellicle, removed tissue has tissue from below, blackish brown to sepia to grey brown; gills adnate to decurrent, L = 20-24, whitish to grey; stem 15-40(-100) x 1-3 mm, glabrous and shiny, grey, becoming darker from the base; smell spermatic or as young camembert cheese. Sp 3-6 x 2-3 µm, ellipsoid, Qav = 1.7-2.0, amyloid; cheilocystidia clavate with inflated or simple obtuse diverticulae (fig. 385C). Densely caespitose, clusters may be 40 cm across, on stumps and trunks from broadleaved trees mainly *Fagus*, but also with other broadleaved trees, e.g. *Betula*, *Populus* and *Quercus*; late autumn throughout winter to early spring; occasional, but locally common in temp., rare in hemib.-bore.; DK (LC), FI (VU), NO (NT), SE (LC). – GBW 3:452, M&J 41, R&H 360, Sienio 177, Ves 236.
M. tintinabulum (Fr.) Quél. (‘*tintinnabulum*’)
- Sp longer 35

35. Cheilocystidia smooth 36
- Cheilocystidia clavate and diverticulate (figs 377C, 385E) 38

36. Frb white. Cap 13-20 mm, low convex to convex, ivory white to ochraceous or pale buff; gills ventricose, adnexed, L = c. 30, coloured as cap; stem up to at least 40 x 2 mm, concolorous. Sp 7-9 x 3.5-4.5 µm, ellipsoid, Qav = 1.7-2.0, amyloid; cheilocystidia narrowly utriform like fig. 367D; caulocystidia smooth, ending in an acute tip rather like fig. 355E; surface hyphae of stem and cap smooth. In groups on buried hardwood in moist, *Alnus* dominated forest; on calcareous soil; autumn; very rare in bore.; SE (LC, Mpd).
M. sudorella Singer
Note: this description is based on examination of the collection made in Mpd linked to the description of the type; the Swedish collection was the second recorded.
- Frb with grey or darker colours 37

37. Frb generally fragile; stem very pale to silvery white. Cap 15-60 mm, conical to bell-shaped, becoming almost flat, pale mouse grey to off white, the disc lightly coloured with vinaceous or clay buff or drab; gills ventricose, narrowly adnate L = 22-28(-30), white; stem (25-)35-80(-100) mm, sometimes with shallow longitudinal grooves, pale grey to shiny silky white, sometimes with a blue tone; smell usually nitrous. Sp (7-)8-10(-12) x (5-)5.5-7(-8) µm, , Qav = c. 1.6, ellipsoid, amyloid; cheilocystidia, fusiform, with the tip often mucronate or beaked (fig. 385D); pleurocystidia similar; caulocystidia up to 10 µm wide, attenuated to a narrow tip, these may be curved to the shape of a walking stick handle. Scattered or in small fascicles, on wood from broadleaved trees, often in rich calcareous habitats; early summer to autumn; occasional in temp.-bore.; DK (DD), FI (LC), NO (LC), SE (LC). – R&H 363, Rob 275.
M. niveipes (Murrill) Murrill

- Frb less fragile, with darker colours, grey brown to dark sepia. Cap 10-30 mm, paraboloid, becoming convex to bell-shaped, hygrophanous, ± sulcate, blackish brown at the centre, shading through sepia to greyish brown; gills ventricose and adnate, L = 20-26, pale grey; stem 30-90 x 1-3 mm, blackish grey with a brownish cast, paler to whitish at the top, sometimes becoming entirely white on drying; usually with a nitrous odour. Sp 7-10 x 4.5-7 µm, Q = c. 1.6, ellipsoid, amyloid; cheilocystidia variable, clavate, sometimes with digital extensions or like the abundant pleurocystidia fusiform like those of *M. plumipes*, fig. 377D. – M&B 2:12.
M. algeriensis Maire
Note: the Nordic occurrence of this poorly understood taxon, should be re-evaluated but is currently listed from DK (DD), FI (DD), NO (NE), SE (LC). This description is based on a collection from Finnish Lapland and Kühner's description. The collection did not reveal any clamps in spite of a careful search. Maas Geesteranus suggests that it should have clamps, Kühner does not mention any. It is included in the key to raise awareness.

38. Frb often with reddish markings, especially in lower part of stem, even on fresh material; gill edge partly fertile, with tracts of basidia between cheilocystidia
see *M. maculata* 29

- Frb without general reddish markings, although older material may show some red or pink colouration; gill edge sterile, with continuous cheilocystidia 39

39. Cap blackish grey to fuscous black; on roots of ericaceous shrubs or burnt roots of *Ulex*, often radicating to the substrate; cheilocystidia clavate, heads often branched (fig. 377C) (collections in this habitat were formerly referred to *M. uracea* Pearson)
see *M. megaspora* key J 20

- Cap with greyish cream to grey brown colours, rarely white, darker when young; cheilocystidia rarely with any branching. Cap 10-45 mm, conical-hemispherical to bell-shaped, often umbonate, sometimes gibbous; gills ventricose emarginate, L = 18-40, off white to grey brown, often pinkish when old; stem 30-200 x 1-6 mm, dark sepia when young becoming pale vinaceous buff to pale greyish cream, tough, can be twisted through 360° and recover, sometimes radicating to buried wood. Sp 9-12 x 6.5-9 µm, Qav = 1.2-1.7, dacryoid, amyloid; basidia 2-spored (early season) or 4-spored (late season); cheilocystidia clavate with irregular short diverticulae (fig. 385E). On stumps, large branches, fallen trunks of broadleaved trees in most habitats where these occur; late spring to early winter; very common in temp.-bore.; DK (LC), FI (LC), FO, IS, NO (LC), SE (LC). – B&K 3:338, FAD 56C, GBW 3:447, Rob 501-502, Ves 235, ◎.
M. galericulata (Scop.: Fr.) Gray