

Making a Start on Mycena

Mycena - a guide to the identification of some common species

Part I - Identification in the field

Prepared by Richard Iliffe - revised 2008

Introduction

There are more than 100 *Mycena* species recorded in Britain, though less than half this number can be considered common and widespread. Many quite experienced mycologists find their identification daunting and tend to avoid them, possibly because many species are superficially similar. It can also be frustrating to find that there are other small white or greyish toadstools that look like *Mycena*, and which may have been so named twenty years ago but which are now placed in other genera.

These notes were first produced as an introduction to the genus, describing thirty species that had been recorded in Leicestershire. Since then my experience has widened and I have the confidence to add a few more species. Most of them are not uncommon though many are overlooked, or possibly misidentified, so they don't appear often in our local records. A few are not at all common but have been included because they are striking in appearance and easy to identify. Some common species are still missing from our local records but they are so widespread nationally that it must be just a matter of searching for them in the favoured habitat.

Those wishing to take the study of *Mycena* further should refer to Ernest Emmett's notes and keys in *The Mycologist* (1992 Vol. 6; Nos. 2-4 and 1993 Vol. 7; Nos. 1, 2 & 4) or to *Fungi of Switzerland* (Vol. 3 pp.256 - 296). The standard work on the genus is *Mycenas of the Northern Hemisphere* by Maas Geesteranus which is published in English, but is in two costly volumes. A newly published reference book is *Mycena d'Europa* by Giovanni Robich. This also is quite expensive and is mainly in Italian, with some of the keys printed in English.

Identification of Mycena

Many species can be reliably identified in the field. For scientific recording, however, checks of the microscopic features should be made to confirm the identification. Such checks can be made quite quickly and may reveal surprises - and mistaken field identifications!

Note-taking is essential if more than a few species are to be collected. The first observation should be the substrate or habitat. Some species grow only on wood, or on buried wood; on tree bark, or on moss-covered wood. Some associate only with broad-leaved trees and others grow exclusively with conifers. Others appear in woodland litter, or with grasses almost anywhere.

Field checks should be made at the time of picking; for any smell, which may disappear as the specimen dries; for white or coloured juice in the stem; and for coloured margins to the gills (use a hand lens). Presence of these features can limit the identification choices to just a few species.

To help with identification in the field the following pages give key features of species recorded locally, and of other species that we should find if we look in the right places. They are arranged in groups that have some features in common, but with no taxonomic relationship. In most cases they are just groups of 'look-alikes'.

For guidance on the microscopic features of *Mycena* see Part II of these notes on pages 8-11 below.

Notes on Mycena species in Leicestershire

Caps with distinctive colours (other than white, brown, grey and black):

- M. adonis* Small to medium; cap usually < 1.5cm. dia. and bright crimson red, fading with age, so can be coral, salmon-pink to near white. Cap conical when young then becoming flattened bell-shaped. Stem usually all white. Appears in unimproved grasslands and mossy lawns in loose groups. Rare and we have very few records.
- M. acicula* Very small, cap usually < 0.5cm. dia., though occasionally larger specimens occur. The cap is bright orange and the slender stem is yellow and up to 3cms. long. Found in woodland and grassy litter or on mossy logs and stumps. Cap usually stays 'closed' i.e. conical and not flattening out. Occasionally recorded but so small it could be over-looked.
- M. pura* Small to medium, with a sturdy, fleshy appearance compared with other Mycenas. Cap from about 1.5 to 2.5 cms. dia. and lilac-pink fading slightly with age. The stem has a similar colour. The cap is shallowly convex, flattening with age. Smell of radish. Note that there is a pure white form. Common locally in litter, usually under beech and oak.
- M. rosea* A large fleshy species, cap 3 to 5 cms. dia., convex, deep rose-pink fading with age to pale pink. Stem 6 to 8 cms. long, white, tapering evenly from a wide base. Smell of radish. Found under broad-leaved trees, particularly beech. Noted in some texts as a form of *M. pura* but it is now generally accepted as a true species. Found in the New Forest and Forest of Dean but never locally until 2004, when it was found at several well visited sites for the first time.

Showing white or coloured juice in the broken stem:

- M. galopus* Small species, cap usually 1 to 1.5cms, pale grey-brown with brownish striations and a brown spot in centre. Starts campanulate then opens to hemispheric. Stem usually 5-10cms. pale grey at top, mid-grey at base. Base hairy. When stem is broken near the base white 'milk' appears. Smell faintly radishy. Very common, can appear singly or in loose large groups, usually in broad-leaved litter but can be found under conifers and occasionally in grassland.
- M. galopus var. candida* is a pure white form of *M. galopus* and has the white milk in the stem tissue. It usually seems to be more sturdy in appearance with a less slender and shorter stem. The cap appears to remain conical to campanulate, even when old. Grows singly or tufted in groups of two or three. Seldom found growing with the usual form of *M. galopus*, reinforcing my view that it is a separate species.
- M. galopus var. nigra* is a dark, near black species, also with white milk in the stem.. It is a much sturdier species than *M. galopus*, with a shorter, thicker, near black stem, the cap remaining campanulate as it ages. It is usually found in a close cluster of 3 or 4 fruitbodies, and where no typical *M. galopus* are growing. Again I believe that this is a true species. If not, where are the intermediates?
- M. haematopus* Cap quite sturdy for a Mycena, 2 to 4 cms. dia. Usually growing tufted on fallen broad-leaved wood or stumps. Caps are conical, becoming campanulate (bell-shaped) when fully expanded. Usually mid-brown in colour and the identity is often not clear until picked when the dark beetroot-red juice from the broken stems makes identification easy. Can also be found on twigs among litter. It is not one of our commonest species locally but always a pleasure to find.

M. sanguinolenta A small species usually with a long slender stem. Cap < 1.5cm. dia., stem up to 10cms. long. Cap conical to hemispheric and pale brown with reddish radial striations. The pale gills have a reddish margin. When broken the stem has bright red juice. Usually found in conifer litter.

With coloured gill margins:

M. olivaceomarginata Of this group this is the one that we find most frequently, usually in lawns and grasslands or in grassy places under broad-leaved trees. A small-medium species that can be very variable but is usually olivaceous-brown, growing in loose groups, usually only a few but it can appear in quite large numbers. The gills are pale greyish brown with a yellow-brown or reddish-brown margin (hand lens). Has a weak smell of either bleach or radish. (formerly = *M. avenacea*).

M. capillaripes Medium species, cap 1 to 1.5cms. dia., conical, pale brown with an obvious pinkish tinge. Gills pale with an easily seen red-brown margin (hand lens). Stem darker brown than the cap. Smells strongly of bleach. Grows in troops in conifer litter and is said to be quite common in this habitat, though seldom found locally.

M. flavescens Cap 1 to 1.5cms. dia., pale grey-brown, sometimes with yellowish tints. Gills white with a yellow margin on young specimens only, so easily missed. Said to smell of raw potatoes or radish when crushed. Habitat recorded in texts as either conifer or b-1 litter, but we have found it in troops on lawns and unimproved grassland.

M. citrinomarginata Cap 1 to 1.5cms. dia., creamy white, often with yellow or green tints. Gills cream to pale yellow with a deep yellow margin. Smells of bleach. Found in grasses and moss by woodland paths and margins but texts say it can also be found on mossy rotten logs. Rare locally.

M. sanguinolenta Red margin to gills. See under species with white or coloured juice in stem.

With slimy or sticky caps, often with a separable pellicle (a transparent skin over the cap surface):

M. epipterygia Medium species, cap 1.5 to 2cms. dia. usually widely conical, never flat. Pale olive-brown in colour, with a shiny surface that is sticky to the touch. Stem long and slender, white below and yellow in the upper part, sometimes faintly but often deeply so. Usually found in groups among clumps of grass, often beside woodland paths. Cap skin can be peeled off completely.

M. amicta A small species, cap usually < 1 cm. dia. and often remaining conical, seldom expanding much. Generally dark greyish and can appear slightly shiny and be sticky to the touch, often with a dark margin to the cap which may have green-bluish tints. Stem greyish and can appear pubescent (very finely hairy — use a hand lens), often with bright blue-green colour at the extreme base of the stem. Grows in loose clusters on stumps and fallen wood of conifers. The cap has a sticky pellicle which can be removed in patches, not whole — often only noticed when trying to cut sections for microscopic examination.

M. clavularis Small, cap <5mm., white to pale grey. Stem growing from an obvious basal disc, and the gills join the stem at a collar (like *Marasmius rotula*). Microscopically it has unusual round spores and bulbous gill edge cystidia with hairy protrusions. Usually found growing on mossy boles of living trees. Can easily be confused with other species growing in a similar habitat but the elastic pellicle becomes obvious during attempts at dissection.

Tiny white species:

- M. adscendens* Cap <3mm and pure white with sugary appearance to surface (hand lens). Stem 1 to 2cm long and obviously pubescent (finely hairy) over the whole length. The base is slightly swollen but there is no obvious basal disc. Fairly common on fallen broad-leaved twigs or on the bark of living trees, but often over-looked. (formerly = *M. tenerrima*).
- M. stylobates* Cap small but larger than *M. adscendens*. Usually < 5mm. and can be white or pale grey-brown. With sugary surface, or with apparent short hairs on the cap (hand-lens). Stem up to 3 cm. long and very slender, silvery white, and with an obvious white hairy basal disc where attached. On twiggy debris or herbaceous material.
- M. polyadelpha* Tiny white cap usually < 3mm. and remaining conical, stem relatively long and slender, up to 4 cm. but often contorted or coiled, silvery white with no basal disc and growing directly from the surface of rotting oak leaves.
- M. capillaris* Almost identical to the above but growing on rotting beech leaves. Stem may have a hairy basal disc which can be white or brownish.

Small to medium white or very pale species:

- M. galopus* var. *candida* See notes under those with milk in the stem.
- M. pura* There is a pure white form of this normally pink species — check for radish smell.
- M. luteoalba* Better known as *M. flavoalba*, a small yellow-white species that grows in quite dense groups on mossy lawns. It appears late, around mid-October and is quite common. The cap dia. seldom exceeds 1cm. and it quickly expands and becomes irregularly flattened.
- M. olida* A small cream-white species, cap <1cm. and found in small loose groups on the bark of mossy tree trunks. The habitat gives the first clue to identity.
- M. hiemalis* Very small cap <0.5cm., white with grey or brown centre and faint striations. Found on the mossy boles of living trees or on fallen mossy logs. Can be confused with *M. speirea* but the gills are not obviously decurrent.
- M. rorida* Another small white species with cap dia. < 0.75cm. Grows in small tufts of 2 or 3 on twigs and woody litter and is easily identified by the thick slimy coating on the lower part of the stem. If the stem has dried out it cannot be readily identified in the field but it is reported that storing it in humid conditions brings back the slime. Very uncommon locally.
- M. clavularis* See under those with a separable pellicle.

Small creamy-grey, grey-brown or blackish species: All are small to medium with caps 1 to 2cms.dia.

- M. galopus* var. *nigra* See under those with milk in the stem.
- M. leptcephala* Usually has a mid-grey cap with grey-white gills. The cap tends to remain conical or become a flattened bell-shape. Found in broad-leaved or conifer litter but can be found in grassland near trees. It is very common throughout the autumn and is easily identified by the strong smell of bleach, or of bruised poppy leaves. If unsure try crushing the cap to release the smell.

- M. aetites* Can be very similar to the above species but usually has darker radial striations on the cap and can appear much darker, to near black, but it is very variable. The cap remains conical and only expands slightly with age. It does not have a strong smell, usually very faint of bleach or radish if crushed. It is usually found in unimproved grasslands or lawns though we have recorded it in woodland path-sides.
- M. stipata* Has a grey-brown striate cap that can flatten out and become irregular when old. The gills are a uniform pale grey in contrast to the more brownish colour of the cap. Has a strong smell of bleach. It grows on fallen conifer twigs and branches, and possibly stumps. It is very uncommon locally and most of our old Leicestershire records under the former name *M. alcalina* are almost certainly misidentifications.
- M. vitilis* Cap size variable, from 0.5 to 2cm. dia., and with a distinctive olivaceous-brown tint with a pronounced central papilla as the cap flattens out. The cap surface is often shiny as if greasy. The stem can be very long and is shiny, and very springy. If waggled to and fro it does not break like other more delicate *Mycena* species, but don't be too vigorous! In woodland litter.
- M. arcangeliana* Caps are a pale olivaceous off-white with a slightly darker olive centre, becoming more greyish with age. When immature the caps are mid-grey and tightly closed around the stem. A common late autumn species, appearing mid-October. The stems are pale grey at the top but a distinctive darker lilac-grey towards the base. They often appear in clusters or in closely packed rows along part buried twigs in woodland litter, but occasionally on larger fallen branches. Develops a distinctive iodoform smell as specimens dry out in a container after collecting, reminiscent of iodine. We used to know this species as *M. oortiana*.
- M. filopes* Can be variable in size, shape and colour, usually pale olive-grey or pale grey-brown with a slightly darker centre. It tends to remain campanulate as it develops. In either broad-leaved or conifer woodland litter or with grasses near trees and can be singly or in loose groups or small clusters. Has the same iodoform smell as the above species when drying out.
- M. metata* Similar to *M. filopes* but usually with a pinkish-brown cast to the cap colour, which tends to open out more and become hemispheric. Usually in broad-leaved litter. Develops the iodoform smell when drying out.
- M. cinerella* Has a very grey cap which starts conical and flattens out or curls up with age. It has obviously decurrent gills and a strongly mealy smell. Appears very late in the season, usually early November, and we find it in conifer litter, though it can also grow under broad-leaved trees.
- M. speirea* Difficult to place as it does not fit into other groups. Cap very small < 0.75cm. Colour very pale brownish with a mid-brown centre and a yellowish stem which is relatively long and slender. Gills are usually decurrent and the centre of the cap can appear slightly depressed. It is found on woody litter, twigs, fallen branches and occasionally on mossy logs, usually in small groups.

Small species found on mossy boles of living frees, or on mossy stumps: (provided here as a cross-reference)

- M. adscendens* tiny sp., no basal disc but stem base slightly swollen and with a pubescent stem (hand lens).
- M. clavularis* small with basal disc to stem.
- M. hiemalis* small without a basal disc to stem.
- M. olida* small to medium, pale cream.
- M. speirea* small, pale brown, yellowish stem, with decurrent gills.
- M. stylobates* very small, white to off-white, longish silvery stem, hairy basal disc to stem.

Medium to large grey-brown species, often in dense clusters:

- M. galericulata* Variable in size but can be the largest of all the *Mycenas* with cap dia. < 6cms. Very young specimens are tightly closed around the stem, becoming conical and later flattening out but with a large shallow boss in the centre so that it resembles an Edwardian wide brimmed bonnet, hence the old name 'Bonnet *Mycena*'. The colour when young is dark grey, becoming grey-brown, then paler with age so that when dry an old cap can be almost beige. It can have a noticeable pinkish tinge when old, and the ageing gills may become creamy-pink, though the spore print is white. There are often cross-veins between the gills that are easily seen when the cap is held up to the light. The stem is usually dark grey when young, becoming paler with age, and is very tough and shiny smooth. The smell is indistinct. It appears in clusters on stumps and fallen branches but is more usually in loose groups and can be single or in ones or twos on the surface of fallen trunks. It can be in litter, coming from buried wood, and may grow in rows from old roots. It is one of the commonest *Mycenas* and can be found at all times of the year.
- M. polygramma* Very like *M. galericulata* but smaller than the largest forms of that species and much less common; usually appearing late in the season, from Mid-October. It is a more uniform dark grey colour, and the cap is conical with a less pronounced umbo when it expands. The stem usually shows fine longitudinal dark grooves on a silvery powdery background but this feature can sometimes be missing, particularly on young specimens, and the stems are then a smooth shiny grey. It grows on old broad-leaved stumps or fallen branches but can be in litter from buried wood. It may be in small groups or in clusters.
- M. inclinata:* Could be mistaken for a small version of the two species above but the caps are a more uniform size < 3cms. They are more brown than grey, and remain conical. The stems are shiny smooth, pale grey above, grading through dull orange to dark brown at the base. Always grows in dense clusters from the sides, or on top of stumps of oak or other broad-leaved trees or along the sides of fallen branches. This growth form makes it distinctive. If in any doubt crush a cap between the fingers to get the very strong rancid-meally smell.

A brief note on Mycena 'look-alikes'

First of all what is a typical Mycena supposed to look like? Most have small conical or campanulate caps and only a few flatten out when mature. Most have obvious radial striations on the cap and most have a slender stem which thickens slightly towards the base and the extreme lower part may be hairy.

Rickenella

The two familiar species were at one time included in Mycena. They have deeply decurrent gills. One is the bright orange *Rickenella fibula*, and the other is beige with a black centre and is called either *Rickenella setipes* or *Rickenella swartzii* depending on the reference book. They can be quite common on lawns and grasslands and can sometimes appear in mixed colonies.

Marasmius

The smaller species in the genus have generally buffish coloured caps with a 'crinkly' matt surface without striations. The stem is usually dark brown in the lower half. They have the ability to dry out and recover without losing viability which may explain why the caps often look bedraggled.

Mycenella

With grey or white caps. They are said to have a tough rooting stem and ornamented spores but the commonest species *Mycenella salicina* has smooth round spores. We don't have any on our local list but they may be out there.

Hemimycena

Pure white and very like some of the white Mycena species. The spores are generally longer than those of most Mycena and can be spindle-shaped. The one we know best is *H. lactea* which grows in large colonies in conifer needle litter and was a common autumn find during the Martinshaw survey. The cap of this species is pure white and it becomes flattened and wavy when mature and the gills can be widely spaced. The stem base is usually very hairy.

Delicatula

Only one species in Britain which is *D. integrella*. Not on our local list but we could have it. It is a small pure white species growing on wood and with veil remnants around the margin. The gills are often not properly formed and are widely spaced, looking as if slugs had eaten most of them.

Collybia

Some of the tiny Collybia species can look very like Mycena but most arise from a sclerotium (a small hard yellow or black piece of tissue a few millimetres across) They are often in small dense groups as most arise from the rotting remains of Russula or other fungi.

Coprinus* and *Psathyrella

Some of the smaller species with slender stems are Mycena-like but the dark spores give them away.

Part II - Studying Mycena at home

These notes discuss simple procedures to make identification easier and quicker. Hopefully they will encourage more members to work on Mycena. There are two approaches. The first is a quick check of a suspected field identification, and this may often be done in a matter of minutes, just by checking gill edge cystidia. The second method is to systematically work from first principles on an unfamiliar, or possibly rare species. Even if just starting on Mycena it is worth developing the ability to prepare good scientific notes so that you become familiar with all the technical terms in identification guides. The procedure also encourages you to observe features more thoroughly, and such descriptions are essential to accompany dried material when sending to an expert for verification.

L values: Before we discuss microscopic features it is worth mentioning a macro-feature of Mycena that can be useful. This is the number of mature gills that reach, or attach to the stem. It is easiest to check these under a low-power microscope (say x20) by holding the stem and looking at the inverted cap and counting these gills. I count half and double the answer as the stem usually obscures part of the view. Precision is not required as we are looking at ranges of around 5-10, 10-20, or 20-30. If you have tentatively named a specimen with 25 gills reaching the stem and the reference books say this species has an L value of 10-15 you obviously need to reconsider your identification.

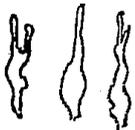
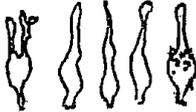
Spore Prints: As with identifying all mushrooms and toadstools the recommended first action at home is to set up spore prints immediately on returning. For Mycena you really need a minimum of two specimens as the one dropping spores will shrivel and be no use for later examination. Five is better as you then have three left for drying if you wish to preserve a collection. In desperation, if only having one specimen, cut a segment out of the cap and place the remainder for a spore-print while you use the small segment to study the microscopic features. Spore print colour is only significant if you are studying something unfamiliar or rare. In a few cases the spores may be cream to yellowish, though the majority are white. The more important requirement is to check for an amyloid reaction. A small drop of Melzer's iodine placed on the fresh spore print will show a blackish reaction if positive. If unchanging the spores are inamyloid. The amyloid reaction can also be checked by squashing a small piece of gill tissue under a cover slip in Melzer's iodine and if positive the flesh turns deep red-brown — this can be done without waiting for a spore print to develop. If there is no reaction to this test you have one of the Mycena species that has inamyloid spores, or you may well have a non-Mycena !

Spore sizes: For measuring spores a light spore-print on a glass slide will suffice (allow half an hour, compared with 5 or 6 hours for a true colour representation). Spore sizes of Mycena are of limited value. Most species have basidia which carry four spores but it is not at all unusual for them to have some basidia with only three, or even two spores. These latter spores will be larger than those from a basidium carrying four. This means that many Mycena have a wide range of spore sizes and although these ranges can be compared they are not very helpful as they often overlap. It is more useful to know the Q value, which is the ratio of the length to width and is a measure of the roundness of a spore. If for example, a spore measures 8 x 4 microns the Q value is 2; if the spore is perfectly spherical the Q is 1, and for most species it will fall between these two values. It is only really necessary to do detailed measurements when studying an unknown species. For a quick practical check look at the spores in a gill squash and you can see if they are narrowly oval, broadly oval, or almost round, and this is usually sufficient. For routine identification checks spore prints may appear to be irrelevant, but if looking at something uncommon the time taken to set one up will not be wasted and the information gained may prove useful later when determining an uncommon species.

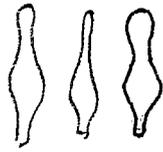
Basidia: We are interested in whether the predominant form of the basidia on a species carries either two or four spores. With pale coloured spores it is not possible to see any four-spored patterns on a dry gill face under the microscope, so you have to look in squash preparations at x400 for basidia that have shed their spores and count the sterigmata (singular = sterigma) which are the protruding points where the spore was attached. I usually find mature basidia easiest to see in the gill tissue remote from the margin. It often appears that the basidia along the gill margin are immature and not carrying spores, and in some cases the margin will be cluttered with cystidia. Having found a basidium you have to focus on it very carefully as a four-spored basidium will usually show only two sterigmata in the microscope depth of field and you will have to gently rack up and down to bring the other two into focus and confirm the presence of four. If you try this repeatedly on several basidia and can find only two sterigmata then the indications are that the species will be one of those with only two-spored basidia e.g. *M. galericulata*.

Cystidia: We are primarily interested in cystidia on the gill margin (cheilocystidia). A very few species have cystidia on the gill face (pleurocystidia) but we usually only need to know if these are present for unfamiliar or rare species. To examine for marginal cystidia place one gill on a slide and cut off a tiny sliver from the margin. The smaller the piece the better, and it is best to do this under a low power microscope. The size of the piece of tissue should be no more than about half a millimeter deep and 2 —3 mm long. Ideally it should be so small that you can hardly see it! Place a drop of congo red or other stain beside the sample so that it spreads and envelops it, taking care to keep an eye on the orientation of your section as if it floats and rotates you need to know which edge is the marginal one. Lower a cover slip carefully so that it drops in the direction away from the margin you wish to examine to encourage air bubbles to move away. Tap the cover slip several times with an eraser on the end of a pencil to spread the tissue, or alternatively press down with the eraser and give a quarter turn — this tends to break up the tissue better and to separate out a few cystidia from the gill margin so that you can see their full extent. Even if your section is too large and refuses to squash you will often be able to see whether the cystidia are spiky, or rounded with granules on them, which in many cases is all you need to know. A selection of the various forms of cheilocystidia is given on the following pages.

Mycena – some gill margin cystidia

<u>Species</u>	<u>Typical cystidia</u>	<u>Notes</u>
M. galopus		a useful check when the specimen has dried and no milk can be found. Can be quite pointed
M. olivaceomarginata		can be variable
M. amicta		finger-shaped and appearing as a continuous pallisade along the gill margin
M. adscendens		formerly <i>M. tenerrima</i> . Cystidia of various types
M. stylobates		like gloved fingers but can be single fingers
M. pura		useful for checking the white form
M. flavo-alba		
M. olida		note that the illustrations in B&K <i>Fungi of Switzerland</i> appear to be untypical
M. leptcephala		compare with 'look-alike' <i>M. aetites</i>
M. aetites		see above, usually 'teat-ended'

M. stipata



formerly *M. alcalina*

M. vitilis



M. arcangeliana



formerly *M. Oortiana*. Cystidia often oval with no 'stem'

M. filopes



similar to the above but macro features differ

M. metata



said to have longer 'stems' than *M. filopes*

M. cinerella



M. speirea



irregularly digitate, small

M. galericulata



can be single but more often with 2-3 outgrowths

M. polygramma



M. inclinata



more clavate and shorter than those of *M. galericulata*