

# PSATHYRELLA SPECIES

## with a red gill edge

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There are some seventy different species of the genus *Psathyrella* listed in the Checklist of the British and Irish Basidiomycota (2005). Most are rarely recorded and as only a handful can be tentatively identified in the field, *Psathyrella* species are often conspicuous by their absence from foray lists. I think it fair to say that we forayers tend to shy away from this genus, as we do with *Cortinarius* and *Inocybe* also. Indeed, those brave enough to collect a specimen in a mad moment of weakness may well either eject it from its pot when something more exciting or deserving of space turns up a few minutes later, or will put it to the bottom of the pile of specimens to be looked at later (together with the *Entolomas*?) in the hope that it may well be passed its sell-by date by the time its container gets opened! Yes, most people are familiar with *P. piluliformis* (formerly *P. hydrophila*) which commonly grows in clumps on fallen trunks / branches of deciduous trees in autumn (and coincidentally featured on the front of the last issue of FM), also *P. candolleana*, *P. artemisiae* and *P. conopilea* are common and recognisable in the field - or rather, in the wood - but then one starts struggling to think of familiar species.

Why so? Surely with a genus boasting this many species one should be able to get to grips with more than just, say, four of them? Could it be that although not tarred with the "Little Brown Job" brush as in *Conocybe*, *Galerina* etc., this genus suffers from the same problems of identification as do they: namely, one can recognise the characters which determine the genus reasonably easily

in most cases, but unfortunately that's where the easy bit stops because macroscopic characters are often not distinct enough to take one much further, and reference to specialised literature and microscopy becomes necessary. As many readers may have found, it's easy to go astray with keys and none of the generalist fungi books contain information on more than a small proportion of the possible species. If only they were really striking in some way, perhaps really smelly, prized for their delicious taste, or at the very least brightly coloured, they might stand a fighting chance of making it back to the lab for closer inspection, because many *Psathyrella* species have redeeming and interesting features.

What first attracted me to this genus was the discovery that eight of them contain thick-walled cystidia having crystals on top, as do many *Inocybe* species - another genus for which I have a weakness. However, setting those aside for another time, maybe, I have focused here on another distinctive group: eight species which have a nice macroscopic character to set them apart in the field, although you may sometimes have to look with care using a x10 hand lens to spot it. These species all show a clear pink-red line along the lower edge of the gill - official description: "gill edge red underlined". No key (that I know of) treats these species as a separate group, and having found I failed at times to make a conclusive identification, I decided for my own amusement to have a go at creating an artificial key just for these eight, using information from various available sources. It is reproduced below in the hope that it will encourage people to take a

further look at this group in particular and indeed the genus in general. After all, it seems unnecessary to dismiss so many *Psathyrella* specimens out of hand - literally! - as unidentifiable, when there are certainly many commonly found species out there which we could have a go at looking at and determining.

Here a word of caution: if microscopy is not for you then read no further. Sorry, but I don't think this is a genus one can tackle without it. If you're still reading: I'll explain why there are three keys just to sort out a mere eight species - surely a little excessive? Have you, like me, come across dichotomous keys containing one couplet where you come unstuck time and again, and find yourself wishing you could take an alternative route? If you're answering "Yes" to this then you'll understand my attempts below to try and overcome just this problem. Consider Key One, couplet 4: I have presumed here that I'm not the only amateur mycologist who, on discovering the necessity to know if a specimen has a root / bulb or not, can't swear to whether I collected it carefully enough to be sure. Sometimes it's obvious, sometimes it's not, and sometimes someone else collected it and handed it to you and the base is missing anyway. Likewise with the note in Key Two, couplet 4: washing gills may not be everybody's cup of tea, and certainly took me by surprise when I first came across it.

(see first bullet point below). "Why not just use Key Three and be done with it?" I hear you ask. Well, yes, you can; but if you've got good characters present - like roots, bulbs, coloured gill flesh - it does make sense to use them and be positive you're on the right track to making a secure identification. Also, if authorities such as Kits van Waveren saw the need to use these characters, then I certainly don't feel justified in overlooking their significance here. Anyway, "You pays y'r money and takes y'r choice": go whichever way you like, and enjoy!

- To wash the spores from a gill first remove a single gill and place it flat on a slide, hold it still with a needle in one hand and put a little blob of water on it; now with a dampened little paintbrush in the other hand gently stroke away the water a few times, thus leaving the gill flesh free from spore coloration.
- As with examining *Inocybe* species, I find mounting slides in 10% Ammonia (NH<sub>3</sub>) gives by far the best results.
- Cystidia are not always easy to find in *Psathyrella*. Try taking off the thinnest sliver possible from the gill edge first, for cheilocystidia; then at right angles from your first cut take a few more tiny slivers off the remaining piece of gill. Remember which bit is which! You can then be sure that all but the first sliver will give you only pleurocystidia. All species in the key contain pleurocystidia, although by no means all *Psathyrella* species do. Sometimes there are only a very few, and you will need to squash the slide a bit to see them. (Try gently dropping a rubber-ended pencil on it a few times.)



*Psathyrella corrugis* showing pinkish-red gill edges. Photograph © Malcolm Storey.

## BRITISH PSATHYRELLAS WITH A RED GILL EDGE

## KEY ONE

- 1 Growing on dung . . . . . 2  
 - Growing on other substrates . . . . . 3
- 2 Fruitbody small; cap < 8 mm at maturity; stem to 27 x 1 mm . . . . . *P.stercoraria*  
 - Fruitbody larger; cap can be up to 30 mm at maturity; stem to 80 x 1.5 mm . . . . .  
 . . . . . *P.prona*
- 3 Spores < 9 µm long . . . . . *P.pseudocorrugis*  
 - Spores > 10 µm long . . . . . 4
- 4 Stem rooting in soil (if unsure try following Key 2) . . . . . 5  
 - Stem not rooting in soil and often with a ± distinct bulb . . . . . 8
- 5 Gill flesh colourless when washed free of spores . . . . . 6  
 - Gill flesh brownish or greyish when washed free of spores . . . . . 7
- 6 Root can be up to 50 mm long; most pleurocystidia lageniform to fusiform with slender pointed apex . . . . . *P.corrugis*  
 - Root < 10 mm long; most pleurocystidia tending to utriform with blunt swollen apex . . . . .  
 . . . . . *P.pseudográcilis*
- 7 Root < 30 mm long; basidia with basal clamp; pleurocystidia abundant, slender with no obvious pedicel (i.e. stalk) at base, many with long narrow neck and distinctly swollen spatulate apex . . . . . *P.polycystis*  
 - Root can be up to 40 mm long; basidia only very occasionally with a basal clamp; pleurocystidia fairly numerous but not abundant, lageniform-pedicellate, and lacking a swollen spatulate apex . . . . . *P.microrrhiza*
- 8 Most pleurocystidia lageniform to fusiform with slender pointed apex . . . . . *P.prona*  
 - Most pleurocystidia utriform with blunt swollen apex . . . . . *P.vinosofulva*

## KEYTWO

Follow KEY ONE until 4...

- 4 Gill flesh colourless when washed free of spores (if unsure try following Key 3) . . . . . 5  
 - Gill flesh brownish or greyish when washed free of spores . . . . . 6
- 5 Most pleurocystidia lageniform to fusiform with slender pointed apex; mature cap can be up to 50 mm; stipe white but often isabelline in lower half . . . . . *P.corrugis*  
 - Most pleurocystidia tending to utriform with blunt swollen apex; mature cap < 30 mm; stipe entirely white . . . . . *P.pseudográcilis*
- 6 Pleurocystidia lageniform to fusiform, never utriform . . . . . 7  
 - Pleurocystidia often utriform, apex may be obtuse or spatulate . . . . . 8

- 7 Mature cap < 30 mm; spores 12.5 -15.5 x 5.5 - 8 µm; cheilocystidia as pleurocystidia, scarce (even absent) near cap margin but ± crowded from middle of gill to near stem edge, with abundant paracystidia\* up to 50 x 20 µm. . . . . ***P. prona***  
 - Mature cap can be up to 50 mm; spores smaller, 10-13.5 x 6-7 µm.; cheilocystidia as pleurocystidia but densely packed in a palisade, with a few inconspicuous paracystidia only up to 25(30) x 12(14) µm. . . . . ***P. microrrhiza***
- 8 Basidia with basal clamp; pleurocystidia abundant, long and slender, 55-85 (90) x 7.5 -15µm., with narrow neck and a ± swollen spathulate apex, and no pedicel at base; habitat on rich soil in woodland litter or attached to dead wood . . . . . ***P. polycystis***  
 - Basidia without basal clamp; pleurocystidia scarce to numerous, shorter and fatter, 40-65 (77.5) x 11-20µm., utriform with (very) obtuse apex, some with a distinctly pedicillate base; habitat in grass, meadows, woodland paths or roadsides, on calcareous soil. . . . . ***P. vinosofulva***

**KEY THREE**

Follow KEY ONE until 4...

- 4 Pleurocystidia ± lageniform to fusiform, never utriform . . . . . 5  
 - Pleurocystidia ± utriform, apex may be obtuse or spatulate. . . . . 7
- 5 Mature cap < 30mm.; spores 12.5-15.5 x 5.5-8µm.; pleurocystidia mostly with narrow neck 2-3µm. wide, and without marked pedicel at base; cheilocystidia scarce (may be absent) near cap margin, with abundant pyriform paracystidia\* to 50µm. long x 20(25)µm. wide . . . . . ***P. prona***  
 - Mature cap can be up to 50mm.; spores smaller, 10-13.5 x 6-7µm.; at least some (may be many) pleurocystidia with pronounced pedicel at base; cheilocystidia present throughout the gill (maybe scattered or abundant), mixed with smaller paracystidia, < 35(40)µm. long x < 15µm wide., which may be inconspicuous or abundant. . . . . 6
- 6 Veil absent on cap at all stages of development; some pleurocystidia with a pedicel at base; cheilocystidia scattered and erratically dispersed, < 100 cells per 1000µm. of gill edge, with numerous irregularly shaped paracystidia 12.5-35(40) x 4-15µm. which are sometimes slightly thick-walled and pale brown in 10% Ammonia . . . . . ***P. corrugis***  
 - Veil often conspicuous on cap, but can be missing due to rain or age; many pleurocystidia with a pronounced pedicel at base; cheilocystidia abundant and densely packed in a palisade, with a few inconspicuous paracystidia, 10-25(30) x 4-12(14)µm., without thickened walls and hyaline in 10% Ammonia . . . . . ***P. microrrhiza***
- 7 Basidia with basal clamp; pleurocystidia abundant, long and slender, 55-85(90) x 7.5 -15µm., with narrow neck and a ± swollen spathulate apex, and no pedicel at base; habitat on rich soil in woodland litter or attached to dead wood . . . . . ***P. polycystis***  
 - Basidia without basal clamp; pleurocystidia scarce to numerous, shorter and fatter, 40-65 (77.5) x 11-20µm., ventricose-utriform with (very) obtuse apex, some with a distinctly pedicillate base; habitat in grass, meadows, woodland paths or roadsides. . . . . 8
- 8 Gills ventricose; stipe white but often isabelline in lower half; spores 11.5-14.4 x 5.5- 8µm; basidia < 30µm. long; numerous crowded cheilocystidia mixed with many inconspicuous paracystidia\* 12.5-20 x 7.5-15µm., always thin-walled; fruits between April and November . . . . . ***P. vinosofulva***

- Gills may be slightly ventricose near cap margin; stipe entirely white; spores smaller, 11.5-13 x 6.5-7 $\mu\text{m}$ .; basidia longer, up to 37 $\mu\text{m}$ .; cheilocystidia varying from scattered to crowded, mixed with longer and narrower paracystidia, (12.5)15-25(30) x 5-12.5 $\mu\text{m}$ ., some with slightly thickened walls; fruits between July and September . *P.pseudogracilis*

**\*NOTE:** paracystidia are sphaeropedunculate marginal cystidia distinct from and sometimes mixed with the usual elongate, utriform or cylindrical marginal cystidia.

## NOTES ON SPECIES

*P. corrugis* (= *P. gracilis*, the name with which most will be more familiar). This is in fact a complex of species now amalgamated under the one name, and is the commonest species in this key, with well over 1000 records from all over the UK. It frequently appears to be terrestrial but is always attached to buried woody substrates, and is often abundant on woodchips. (van W p43-49; NM2 p240; B&K4 no.330; Cetto nos1298 & 1304; C&D no.784; Bon p266; CBIB p239).

*P. microrrhiza* is not as common as *P. corrugis* but often confused with it unless examined with care. There are under 500 records from all over the UK. It occurs on soil and decayed woody debris, and can also appear in vast numbers on woodchips. (van W p59; NM2 p240; B&K4 no.226; Cetto no. 891; C&D no.786; Ph p175; CBIB p241).

*P. polycystis* is a rare species with 10 British records claimed, but only one from Surrey and one from Orkney supported by voucher material. It occurs on soil in deciduous woodland. (van W p58; NM2 p239; B&K4 no.348; CBIB p243).

*P. prona* is an occasional species, with 163 records scattered around the Midlands and N. England, with virtually none south of the Thames and a very few from Scotland. However, it is possibly much more common but under-recorded. It occurs on soil, often among grass in woodland glades, fields and gardens. Kits van Waveren recognises several forms, some of them lacking a red gill edge. (van W p81; NM2 p242; B&K4 no.351; Cetto no.893; C&D no.787; CBIB p243).

*P. pseudocorrugis* has only 4 records from England, only one of which (from Oxfordshire) is supported by material at Kew. The small spores should make it easy to distinguish. Its habitat is soil in deciduous woodland. (van W p231; NM2 p250; Cetto no.2620; CBIB p243).

*P. pseudogracilis* is much less commonly recorded than *P. corrugis* or *P. microrrhiza*, with 83 records mainly from South East England. It occurs on soil, often in rough grass in pastures and along roadsides. (van W p50; NM2 p239; B&K4 ; Cetto no.2619; CBIB p244).

*P. stercoraria* is seemingly very rare throughout Europe, with only 4 British records of which only one from Middlesex is substantiated, and this was from weathered horse dung. (van W p98; Cetto no. 2193; CBIB p245).

*P. vinosofulva* = *P. prona* var. *utriformis* has only 4 records, all from the south of England including the type collection from Devon. It occurs on soil among woody debris in deciduous woodland. (van W p89; NM2 p242; B&K4 no.352; CBIB p245).

**Literature reference abbreviations:**

B&K4 = *Fungi of Switzerland* Vol 4 by Breitenbach & Kränzlin.

CBIB = *Checklist of the British & Irish Basidiomycota* by Legon & Henrici.

Cetto = *I Fungi dal Vero* by Cetto.

C&D = *Mushrooms & Toadstools of Britain & Europe* by Courtecuisse & Duhem.

Bon = *The Mushrooms & Toadstools of Britain & NW Europe* by Bon.

NM2 = *Nordic Macromycetes* Vol.2.

Ph = *Mushrooms & other fungi of GB & Europe* by Phillips.

van W = *The Dutch, French & British Species of Psathyrella* by Kits van Waveren.

**Acknowledgement**

The photographs used here are from Malcolm Storey's invaluable resource web-site [www.bioimages.org.uk](http://www.bioimages.org.uk). This amazing site contains some 53,000 images depicting 4,600 species of fungi, spanning all the major families. I cannot recommend the site highly enough for mycologists everywhere seeking images of fungi, both macroscopic and microscopic. My thanks to Malcolm for allowing me to use his excellent photos.

Any comments, adverse or otherwise, would be gratefully received.



*Psathyrella prona*, an uncommon species found mainly in the midlands and parts further north. Note the broadly adnate gills with a decurrent tooth and pinkish-red margins. Photograph © Malcolm Storey.





Above and left: *Psathyrella microrrhiza* often occurs in vast numbers on woodchip mulch and shows here the distinctive short rhizoid or 'root' from which it takes its name (see arrow). Compare the gill attachment here to that of *P. prona* in the previous photograph. Photograph © Malcolm Storey.