

# Identification Notes

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## Introduction

**These notes are intended to assist with identifying fungi. They must not be used to attempt to identify edible species, which can be dangerous or even fatal without definite knowledge and experience. I do not encourage gathering fungi for consumption.**

Shropshire Fungus Group has seen a welcome influx of new members, many of them new to mycology, but interested in learning and developing their identification skills. These notes are intended as a brief guide to that process. Adopting a systematic approach to learning is likelier to lead to a good result, and this will attempt to set out a learning path.

It seems logical to begin by understanding what fungi are, and distinguishing the major groups. The fungi that we see are the fruit bodies of organisms that live in and with organic matter, including plants and trees. It is the fruit bodies, which we often call mushrooms or toadstools which we use for identification. Fungi are named using the Linnaean binomial classification; genus and species.

These Latin binomials are not always descriptive in the way that common English names usually are, but they are unavoidable if you wish to progress. It is wise to begin by learning the Latin name, (where one has been chosen) and letting the English name follow. Learning the other way round is ultimately more difficult.

There are two principal types of fungus, the first, (Basidiomycetes), are spore droppers, the second, (Ascomycetes), spore shooters. These notes concentrate on the former.

Most fruit bodies that look like mushrooms, ie with a stem and a cap, are Basidiomycetes, as are the jelly fungi, and resupinates (the crusts). There are some Ascomycetes that look a bit like mushrooms, for example the Saddles (*Helvola*) and the Morels. Many Ascomycetes are disc and cup fungi and are tiny.

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## Identifying to genus

Logically it is a good idea to begin by learning how to identify to the level of genus. Whilst it is essential to spend time in the field with more experienced people, it is only by knowing **the colour of the spores** of fungi that you can approach identification to genus in a systematic way. This means gathering suitable specimens and taking them home to obtain spore prints.

### How to make a spore print

Because spores might be dark or light using glass (eg a microscope slide) is the best medium to use. Remove the stem so that when you turn the cap over the gills will make close contact with the glass. Some stems snap easily from the cap, but in most instances it is best to cut the stem using a scalpel or a very sharp knife. Place the cap, gills downwards, on the glass

Place a tumbler or plastic cup on top of the cap to prevent it from drying out. Leave the tumbler in place for two or three hours. Here's a useful tip: some small mushrooms tend to dry out very quickly even when covered, but if you place a piece of wet tissue paper on top of the cap you will avoid this problem. Remove the tumbler and then carefully lift the cap.

Most books take spore colour as their starting point, then guide you step by step using taxonomic characters, visible to the naked eye, (or nose or mouth!) to reach the name of the genus. Features that are important in this process include:

Size, shape, texture, smell, taste, colour (including colour changes), the presence or absence of a ring on the stem.

I recommend two books designed to assist in finding the genus of a fungus;

Archie McAdam: First Steps in Mushroom Identification

Paul Nichol: An initial guide to the identification of mushrooms and toadstools

Although rather more expensive I'd recommend this also;

Mycokey: A computer application offering a visual synoptic key, and now linked to detailed keys to many species as set out in Funga Nordica (one of the best reference books).

This seems initially like a daunting task, but taken one step at a time, and ensuring that only good quality specimens are collected, it soon becomes routine, and very quickly the general impression of size and shape of different genera allows you to spot genus in the field. Now you are ready to think about getting to species.

## Starting with species

Many, if not most, fungi can only be definitely identified by combining field characters with some microscopic examination. Not everyone chooses to go down this path, and it is perfectly possible to enjoy finding and recording fungi without using a microscope, although the number of records you can be sure of will certainly be limited.

Although it is easier to identify fungi once you know the spore colour everyone wants to be able to identify the species in the field if at all possible. In a relatively short time most people will begin to recognise common genera in the field, and want to go further. These notes offer a quick reference to some common species.

There are many genera with dozens and even hundreds of species, such as *Cortinarius* and *Psathyrella*. Small numbers of these can be identified in the field, but more often microscopy is required, and these are often left to specialists. There is no shame in saying 'I don't know'. It's better than guessing.

## Macroscopic taxonomic features

These are the features you need to examine when seeking an ID. Not all of them are relevant for all species, and the knowledge of which are significant for a particular specimen can only be gained by experience.

- CAP
  - SHAPE
  - COLOUR
  - TEXTURE
  - DRY/SLIMY
  - SIZE
  
- STIPE
  - PRESENT/ABSENT
  - HOLLOW/SOLID/BRITTLE
  - CENTRAL/LATERAL
  - WIDTH
  - TEXTURE
  - TAPERING/PARALLEL/BULBOUS
  - VOLVA
  
- RING
  - PRESENT/ABSENT/TRANSIENT
  
- GILLS
  - ATTACHMENT
  - BRITTLE
  - CLOSENESS
  - COLOUR
  
- PORES
  - INTACT OR SPLIT ON BREAKING
  - COLOUR
  - COLOUR CHANGE
  
- SPORE
  - COLOUR
  
- SUBSTRATE
  - SOIL
  - WOOD
  - GRASS
  - FUNGI
  - DUNG
  - OTHER
  
- ASSOCIATED SPECIES
  - TREES
  - PLANTS
  - DUNG
  - FIRE SITES
  
- SMELL
  - MANY AND VARIOUS
  
- TASTE (Not to begin with!)

## Quick reference spore colour guide

<b>WHITE</b>	<b>PINK</b>	<b>MID BROWN</b>	<b>RUSTY</b>	<b>BLACK</b>
AMANITA	ENTOLOMA	HEBELOMA	AGROCYBE	AGARICUS
ARMILLARIA	PLUTEUS	INOCYBE	BOLBITIUS	COPRINUS
CALOCYBE	VOLVARIELLA		CONOCYBE	HYPHOLOMA
COLLYBIA	CLITOPILUS		CORTINARIUS	PANEOLUS
CYSTODERMA	RHODOTUS		GALERINA	PARASOLA
DERMOLOMA			GYMNOPIIUS	PSATHYRELLA
FLAMMULINA			KUEHNEROMYCES	PSILOCYBE
HYGROCYBE			PHOLIOTA	STROPHARIA
LACCARIA				
LEPIOTA				
LEPISTA				
LYOPHYLLUM				
MACROLEPIOTA				
MARASMIUS				
MELANOLEUCA				
MYCENA				
OUDEMANSIELLA				
PLEUROTUS				
TRICHOLOMA				
XERULA				

## Quick reference to various species

N.B. DNA sequencing has meant that a number of these names have changed. They are presented here in their original taxonomic groups for convenience.

<b>Russula</b>	<b>(Brittlegills)</b>
ATROPURPUREA	Dark purple/blackish. Smell fruity. Taste mild
BETULARUM	Pinkish. Under birch. Tastes hot.
CHLOROIDES	Large white, with green ring around base of gills
CLAROFLAVA	Very yellow, wet ground, with birch
CYANOXANTHA	Bluish/violet often with green. Mild to acrid
CYANOXANTHA PELTEREAUI	Green variant
DELICA	White/cream, pushing up through litter
FOETENS	Large brownish yellow, gelatinous cuticle, strong smell
FRAGILIS	Serrated gills
NIGRICANS	Blackening. Slowly hot taste.
OCHROLEUCA	Yellow, but stipe greyish. Mild to hot taste

<b>Lactarius</b>	<b>(Milk Caps)</b>
ASPIDEUS	Pale cream cap. Milk turning dark lilac. With Willow
BLENNIUS	Pinkish to grey, maybe zoned at perimeter, hot immediately on front of tongue With Beech
CAMPHORATUS	Curry smell
CITRIOLENS	Large, white, furry edge. Milk white rapidly turning yellow. Broadleaf woods
DELICIOSUS	Salmon/orange, with green. With pine, carrot coloured milk, slightly bitter Pine
DETRITUS	Salmon/orange, with green milk. With spruce, carrot coloured milk, slightly bitter With Spruce
GLAUDESCENS*	Large, white, crowded decurrent gills, milk sometimes green on drying
GLYCOSMUS	Fleshy coloured. Coconut smell. Beech, poss Willow & Alder
PIPERATUS*	Large, white, crowded decurrent gills, milk stays white
PUBESCENS	Furry edge to cap, pale colour
PYROGALUS	Ocraceous-grey. Cap viscid. Really fiery. Hazel
QUIETUS	Dull red/brown, zonate. Milk acrid. Smells oily. With Oak
RUFUS	Chestnut brown, dry shiny cap with umbo. Milk hot. Conifer, poss Birch or Beech
SUBDULCIS	Reddish brown. Milk white, mild becoming slightly bitter.
TABIDUS	Orange brown Milk white, turning yellow on handkerchief. Mild becoming slightly bitter Conifer, Birch, poss Oak
TORMINOSUS	Furry edge to cap, reddish colour, zoned
TURPIS	The ugly one. khaki, squat.
VELLEREUS*	Large, white, velutinous cap. Milk mild when separated from flesh

<b>Hypoxylon</b>	<b>(Woodwarts)</b>
FRAGIFORME	BEECH
MULTIFORME*	BIRCH
NUMMULARIUM*	BEECH TARCRUST
FUSCUM	HAZEL
DIATRYPELLA QUERCINA	OAK
DIATRYPE DISCIFORMIS	BEECH BARKSPOT
DIATRYPE STIGMA	DECIDUOUS

## **Mycena**

### **(Bonnets)**

ACICULA	Orange cap, yellow/orange stipe
ADONIS	Coral pink cap
AETITES	Ammonia
BULBOSA	Tiny, with basal disk with a fringe of hairs
CROCATA	Saffron latex
DISSEMINATUS*	Loads of fairy caps
EPIPTERYGIA	Gelatinous cap, yellow stipe
FILOPES	Iodine, brown centre to cap, looks dusty
GALERICULATA	Connecting veins, stiff stipe
GALOPUS	White latex
HAEMATOPUS	Deciduous, but occ. conifer. Red latex
INCLINATA	Dark, stipe becoming red-brown, substantial, clumping on Oak
LEPTOCEPHALA	Ammonia, grey
PELIANTHINA	Dark gill edges
POLYGRAMMA	Silver grey longitudinally grooved stem
RORIDA*	Glutinous stipe, transparent slipping body stocking
SANGUINOLENTA	On conifer. Red latex
SPEIREA*	Decurrent gills
STYLOBATES	Tiny, with basal disk without a fringe of hairs
TENERRIMA	Small, powdery, small basal disc, swelling flask shaped 'frosty'
TORTUOSA	Holds water droplets
VITILIS	Snapping bonnet

## **Postia**

STIPTICA	White, on conifer
CAESIA	Blueing, on conifer
SUBCAESIA	Blueing, on deciduous

## **Stereum**

### **(Crusts)**

HIRSUTUM	Slightly hairy on top, smooth orange below
GAUSAPATUM	On Oak. Bleeds red when scratched
RUGOSUM	On other hardwood. Bleeds red when scratched
SUBTOMENTOSUS	Clear white margin which yellows when squeezed or bitten

## **Chlorociboria (Green Elf Cup)**

AERUGINOSA	symmetrical fruitbodies on a centered stipe
AERUGINESCENS	spathulate ascocarps with eccentric stipe

## **Exidia**

### **(Brains and Butter)**

NUCLEATA*	Gelatinous, on wood. Pale, translucent, with visible Calcium nodules
GLANDULOSA	Black, gelatinous, rather flat, top-shaped, not brain-like
PLANA	Black, with brain-like lobes
RECISA	Brown with irregular cushion-shaped knobs
THURETIANA	White, irregular cushion-shaped and coalescing lobes

## **Lycoperdon (Puffballs)**

PERLATUM	Covered with tiny spines which rub off easily
PYRIFORME	Pear-shaped. On wood, the only puffball to grow on wood
MOLLE	Grey to chocolate brown, shaped like a small pestle, in soil
NIGRESCENS	Covered with tiny teepees of fibre, darkening with age
EXCIPULIFORME	Pestle-shaped, often large

## **Collybia (Toughshanks)**

BUTYRACEA*	Deep brown when young, paling with age. Close gills. Bulbous hollow stem
CONFLUENS*	Buff coloured growing in clusters in litter. Pruinose stipe
FUSIPES*	Dark brick-red, tightly clustered, on wood at base of trunk, stipe tapered to base
PERONATA*	Pale yellow-brown, thin fleshed. Hairy foot to stem
DRYOPHILA	Light orange-brown cap and stem. Close gills, on litter
ERYTHROPUS	Very similar to C. dryophila but with a dark red stem, on wood
MACULATA	Whitish fb usually with scattered brown (foxy) spots

## **Stropharia (Roundheads)**

SEMIGLOBATA	Small orange-brown hemispherical caps, often on dung. Grey-purple gills
CAERULEA	Blue-green cap with greyish gills, white scales below the ring, long grass
CORONILLA	Small yellow cap, with a ring which is striate on the upper part. Greyish gills
PSEUDOCYANEA	Blue cap, smells of pepper. Often in grassland
AERUGINOSA	Blue cap with whitish edge to the gills, woodland
AURANTIACA*	Distinctly red caps, with dark gills

**\*Those marked with an asterisk now reside in a different genus, but can be recorded using the earlier name.**