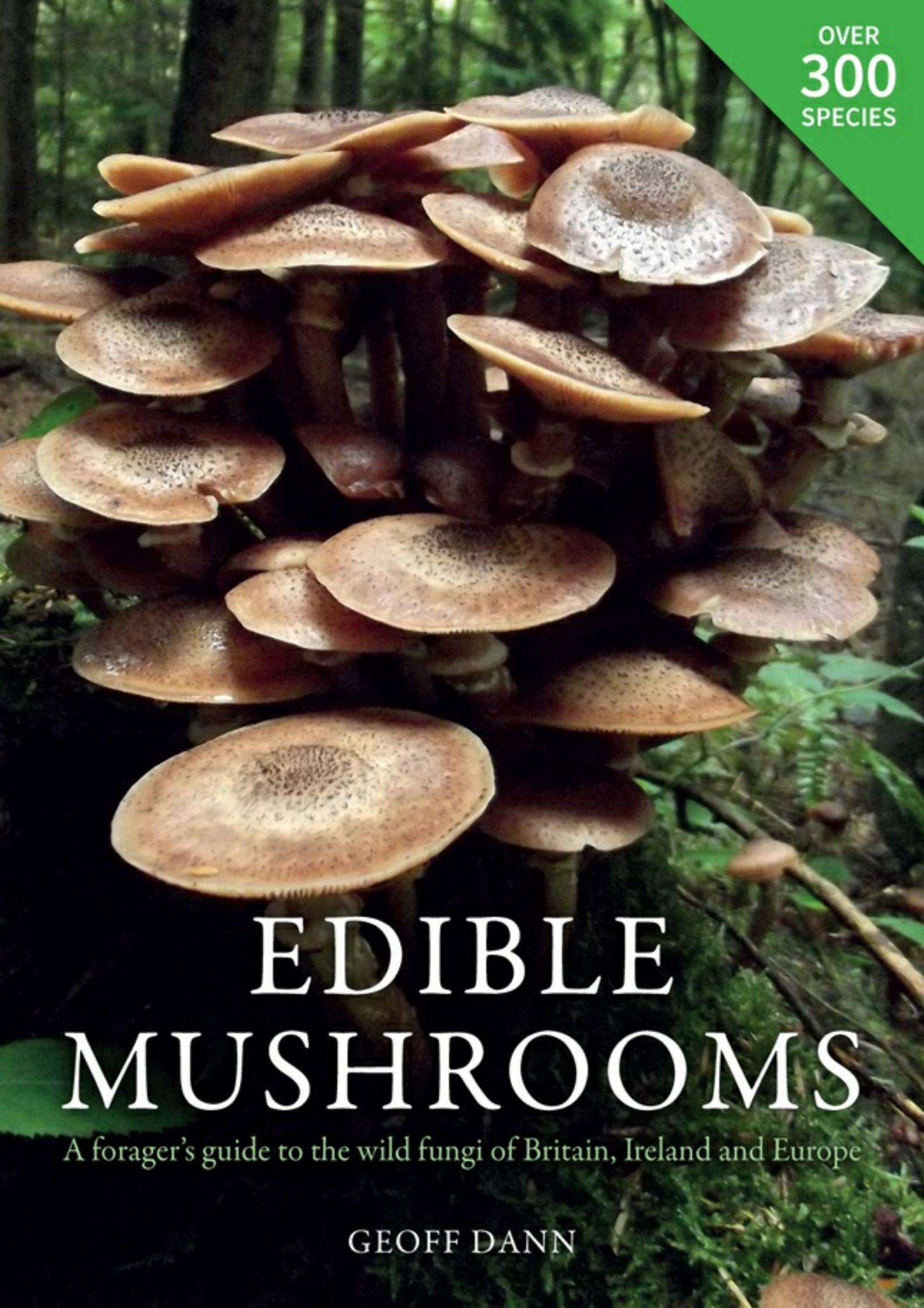
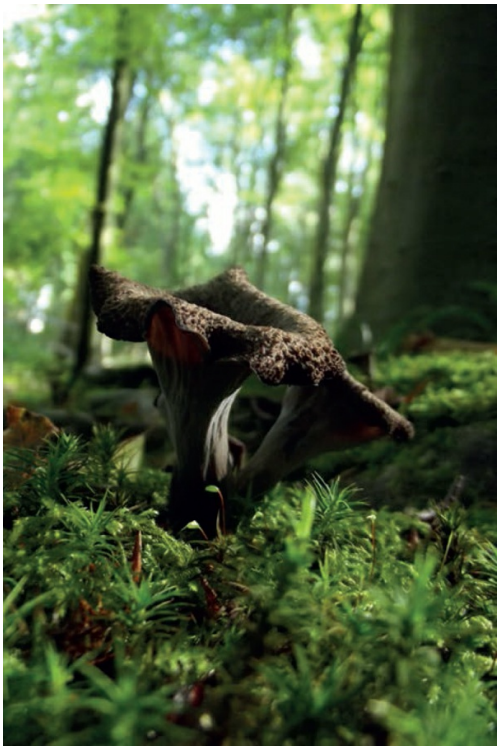


EDIBLE MUSHROOMS

A forager's guide to the wild fungi of Britain, Ireland and Europe

GEOFF DANN

Edible Mushrooms



Horn of Plenty.

Edible Mushrooms

A forager's guide to the wild fungi
of Britain, Ireland and Europe

Geoff Dann

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About the author

I was fortunate to have grown up roaming the woods and old grassland on the ridge of the North Downs in Surrey, south-east England, and my interest in the wild things around me goes back to about the time I learned to walk. My love of fungi in particular started with a search for the hallucinogenic variety in my late teens (in the mid-1980s). It became apparent that while my intended quarry was not so easy to find, a dazzling variety of other fungi were available, some of which had to be edible. And so I began using the first edition of *Mushrooms* by Roger Phillips to learn how to identify what I was finding. There was no internet to help me, nobody to teach me and no other books even half as good. It took plenty of time, and plenty of caution. Fungi foraging remained my hobby and passion for the next 20 years, while my day job was software engineering, a career I left in 2005 to study philosophy and cognitive science at Sussex University.

In 2008, with my studies over and time on my hands, I set myself a personal challenge of scouring the extensive woodlands of Sussex for every edible and toxic species of fungi that I should have found/identified, but hadn't. This wasn't intended as a career move any more than the philosophy degree, but my knowledge and passion for the subject was noticed by the owner of a recently created fungi foraging website, and he offered to promote my services as a foraging guide in return for writing articles for his website. Lacking any other job, it seemed silly to say no.

One thing then led to another and, without any real effort on my part to develop my new career in any particular direction, each autumn I found myself working full-time teaching people about edible and poisonous fungi. In 2011 I started collecting photos with a vague plan to one day write a book about fungi foraging. Five years later, it has become a reality.

To Cathy

Acknowledgements

My first debt of gratitude is to the numerous people who have helped me via the Fungus Conservation Trust (formerly the Association of British Fungus Groups), especially Michael Jordan, without whom the FCT would not exist. Others who have kindly taken the time to identify fungi I couldn't are Roy Betts, Leif Goodwin, Roy Miller, Andreas Gminder, Chris Johnson, Mal Greaves and Pavel Nedelev.

Of course I am also indebted to the combined work of generations of mycologists, but especially to Roger Phillips, whose 1981 book *Mushrooms* made it possible for me to start learning about fungi foraging in my teens. Thanks also to Nigel Frith and Kerry Reynolds for encouraging me to start teaching people about edible wild fungi.

I'd like to thank Kerry, and also Neil Woolley, for providing feedback on early drafts, Mavis Addis for the Ganoderma artwork and Liz Holden for assistance with new English common names, and Melissa Waddingham for taking me truffle hunting.

For the use of their photos I'd like to thank Ian Bastone, Justin Long, Herbert Baker, Dr Holger Krisp, Gerhard Koller, Sava Krstic, Andreas Kunze, Jerzy Opiola, Ron Pastorino, Ryane Snow and Walt Sturgeon.

I am grateful to the following for their invaluable contributions:

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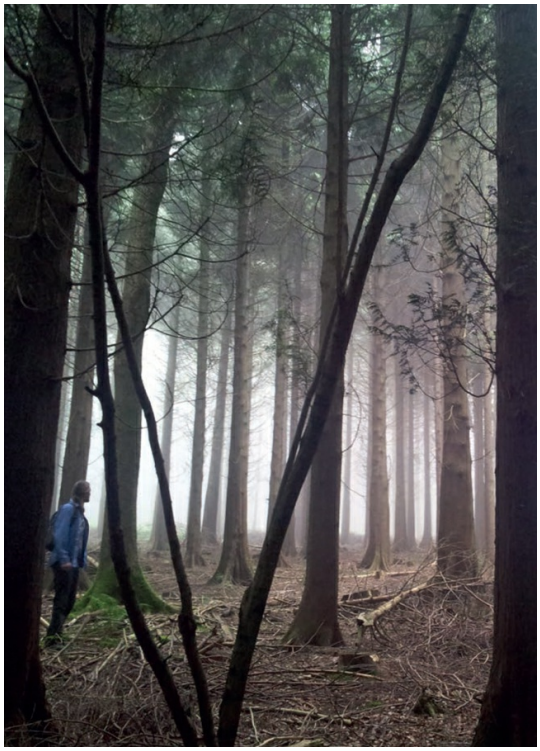
Species descriptions: With thanks to Roger Phillips, Stefan Buczacki, Michael Jordan, Paul Sterry and Barry Hughes, whose works were used as reference guides when composing and checking the species descriptions.

Cooking tips: With thanks to Elisabeth Luard, Roger Phillips, Amy Farges, Joy Spoczynksa, John Wright and Richard Mabey for inspiration regarding wild mushroom cookery.

Finally I thank my wife, Cathy, for her support in so many ways during the process of creating this book.



Introduction

Foraging for fungi is an addictive pastime that can border on an obsession. It is fun, free and endlessly fascinating. You experience the thrill of the hunt, the satisfaction of adding to your "collection" each time you try eating something new, and the reward of learning about the natural world. You have the perfect excuse to go out and explore the countryside, not just by the well-beaten path but off-piste to quiet places where most people have no reason to go and nature still rules. And with a bit of luck you get to take home a selection of delicious, free, unusual and healthy food. It's a taste of what our ancestors did right up until the invention of agriculture – a chance to use brain and body to do one of the things evolution actually designed them to do. You never know what lies around the next corner: it could be the mother lode of a famous delicacy, it could be something you've been seeking for years but never found, or it could be a strange and wonderful species you never even knew existed.

Whether you're a Brit who knows nothing at all about edible wild mushrooms or a Continental European whose family have been collecting them for generations, this book is for you. It is a comprehensive, state-of-the-art guide to every species of interest to a forager in the temperate and mountainous zones of Europe. All species are illustrated with clear in-situ photos, and for each edible species I describe how good it is to eat, where and when to find it, how safe or dangerous it is to collect, and how to distinguish it from similar species. The important poisonous fungi are also covered as well as a few that are of interest because they are exceptionally common, or because they are useful as something other than food – medicines, dyes, tinder, etc.

When I started teaching myself to forage for wild fungi in the 1980s, almost nobody in the UK knew anything about this subject. There was no grandmother to teach me, no classes to attend, and no internet to consult. The only guide worth using was a reference book (first published in 1981) that features hundreds of species of fungi of no interest to a forager, and minimal information about edibility. Thirty years and a great deal of caution later, I've completed a self-taught journey from absolute beginner to professional teacher. This book contains all the information I wish I'd had at the start – it would have made that journey a great deal easier.

Depending on how you count them, about 300-400 European species of wild fungi are considered edible (although some aren't that tasty). This book gives detailed information on about 250 of these, including all the best ones, as well as more than 50 poisonous species. How you count them really does matter, as a surprising number of mushrooms that are considered edible in one region are dismissed as poisonous in another; and a few that have been prized historically are now known to be seriously hazardous (and in some cases they have only fallen from grace very recently). Some good edible species have been dismissed because they resemble something dangerously poisonous. There is also one species, only discovered in 2004 but already common in north-west Europe and spreading fast, that can provisionally be added to the edible list – although at the time of writing, very few people have actually tried eating it.

We're continually learning more about the toxicology of wild fungi – identifying mycotoxins (poisonous chemicals in fungi), their effects on the human body, and what treatments can be used to deal with cases of poisoning. At the same time, the genetic research that has become affordable and widespread in recent years has caused severe disruption in many areas of mycology; Latin names and taxonomy (what's believed to be related to what) are changing very rapidly. This can be confusing, but in the long run will lead to a better understanding of how fungi are related to each other.

The main goal of this book is to provide guidance on how to get the widest possible variety of good edible wild fungi, *safely identified*, into your kitchen. So while it was tempting to devote half the pages to my favourite wild mushroom recipes, I have given only basic advice on cooking methods and focused on the fungi themselves. The species guide in Part II is accompanied by explanatory notes and has a visual index displaying species in the order that they appear. Part I offers an introduction to fungi, explaining their life cycle, ecology and evolutionary history. It also comprises chapters on equipment and safety, European fungi foraging culture and relevant rules and regulations, and general edibility and toxicity issues. A glossary of terminology is included at the back of the book.

I've tried to achieve a balance between caution and adventure that a forager needs. On the one hand, it's important to be aware of inherent dangers and the limits of your knowledge, and not allow overconfidence and carelessness to get you into trouble. On the other hand, if you are willing to pay attention to detail and take your time, there is no need to let fear stop you from discovering and exploring this ancient and hugely gratifying way of relating to nature.

Geographical scope

The geographical scope of this book is determined by the natural boundaries of general ecosystems known as “biomes”. The four main European biomes are:

- temperate deciduous/mixed forest of most of central and northern Europe
- temperate coniferous forest of the areas further north and the mountains
- cold temperate coniferous forest (or “taiga”) of the extreme north – the “boreal” zone
- Mediterranean forest/scrub

Coniferous woodland has been widely introduced by forestry operations in the area that is naturally deciduous/mixed, and the mountainous zones (such as the Scottish Highlands, the Alps, the Pyrenees and the Balkan Mountains) either lie within the wider temperate zone or on its border.

This book covers all the important edible and toxic species that occur in the three temperate biomes. South of the three main Continental European mountain ranges, the climate changes significantly, and so do the plants and fungi. European fungi restricted to the Mediterranean biome are not included in this book, although the most important ones are mentioned in the text. The eastern boundary of the area covered is another mountain range – the Urals. While the temperate woodland biomes continue east of the Urals, accurate information about fungal biodiversity is harder to come by; we don’t know how far east into the vast Russian forests the range of many species extends.

A note on names

As recently as the 1970s, most of the English common names for the fungi in this book didn’t exist. There has since been an effort to invent and popularize common names in an attempt to make fungi more accessible and fun, so few species have no common name. With help from Liz Holden from the British Mycological Society (BMS), new names have been provided for all the featured species that lacked them at the time of writing.

Throughout the book, species that have their own entry in the guide are referred to by their English common name. Species that do not have an entry in the guide are referred to by both common and Latin name; if no common name is supplied, there is no common name. Similarly, where possible I give both Latin and common names for fungi families, but many do not have a common name. See Part II, page 86 for further information about fungi taxonomy and names.

Common Puffball, *Lycoperdon perlatum*.

Part I: Fungi and foraging

1. What are fungi?

Fungi belong to Eukaryota (or the eukaryotes) – a large group of living things that includes plants, animals and all multicellular organisms. Fungi are actually more closely related to animals than plants, which might seem strange but only because fungi cannot move. Animals and fungi both derive their sustenance from external sources, whereas plants generate food internally, using energy from sunlight to photosynthesize carbohydrates.

The life cycle of fungi

For most of their lives, fungi are almost invisible. They exist in the form of a "mycelium" – a network of fine fibres ("hyphae") that colonizes whichever substrate the particular species prefers: wood, soil, dung or any sort of organic matter (dead or alive, plant, animal, even other fungi). During this part of their life cycle they are very hard to study, and even in the 21st century very little is known about them. Only when the time comes for them to reproduce do they make their presence known to us, when their "fruit bodies" appear as if from nowhere and sometimes in a very short space of time.

These fruit bodies, of which mushrooms (things with a stem and a cap) are just one variation among many, are not analogous to the fruits of plants. In sexually reproducing, flowering plants, the seeds already have a full complement of genes (the male half from the pollen and the female half from the ovule) and they are ready to grow into an adult organism the moment they arrive in a suitable habitat. By contrast, fungal fruit bodies produce spores, and these, like the sperm and egg cells of animals, have only half a set of genes. The spores are produced in their millions from the spore-bearing surfaces of the fruit bodies, which in the case of mushrooms are usually gills. Nearly all those spores end up in the wrong place, but a few get lucky and there follows a frantic battle for survival. Spores of many other species will have landed nearby, as well as other spores from the same species, and there may well be mature fungi already in residence. Most fungi are highly specialized, and will only prevail if they find themselves in the precise habitat that evolution has adapted them for (which is why we have to sterilize the growing medium for the familiar cultivated mushrooms – eliminate the competition). But even if a spore outcompetes its immediate neighbours, the process still isn't finished, as the unmated (or "primary") mycelium it becomes as it starts growing still needs to find a mate – another primary mycelium of its own species. So not just one but two compatible spores have to land in roughly the same area. If and when they find each other, the two primary mycelia can combine to form a secondary mycelium with a full complement of genes, enabling it to get on with the business of growing, fighting off the competition and acquiring resources. This is the adult organism, and when the conditions are just right, its life cycle is completed with the production of more fruit bodies.

A fruit body of Giant Polypore completely obscuring the old stump it is growing on.

The life cycle described above is typical of the fungi featured in this book. There are many variations, but mostly among microscopic fungi not relevant to foragers, so I won't go into any further details here.

Fairy rings

Sometimes fungi appear in rings, which can be hundreds of metres across. Why do they do this? The answer is simple: the mycelium started growing in the centre of the circle and is steadily getting bigger; then it runs out of food in the original patch, and there is only one place for it go – outwards, creating a small ring. As it continues to feed, the ring has to continue expanding outwards. The largest of these rings have been growing for centuries. They are usually incomplete because parts of them have bumped into something, leaving a gap in the ring that might eventually close again if the ring continues to expand beyond the obstruction.

When the rings are in grass, you can sometimes see their position even when there are no fruit bodies, because of various effects the mycelium has on the grass. In some cases it damages the roots, or uses up all the nitrogen, leaving a zone of dead or withered plants. In others, the fungi produce hormones that stimulate lush growth. Often, both effects are present at the same time.

The largest mushroom ring I've ever seen. The species is Trooping Funnel, and the ring is over 20m in diameter.

A ring of St George's Mushrooms, and the same patch of ground the following spring (before the mushrooms appeared), showing the effect of the circular mycelium on the grass. Note that the ring has grown a little.

Evolution and ecology

Because fungi very rarely leave a fossil record, it is only recently that palaeontologists have developed their evolutionary history. In the last few decades, the first hazy theory emerged – the so-called "modified spike" theory of how effectively the spores are protected and dispersed. The first large fungal fruit bodies were simple "spikes" (or "clubs", as we call fruit bodies of this form that exist today), where the spores were produced on the surface. Then a cap slowly appears at the top of the spike to provide the most basic protection for the spores, and innovations such as wrinkles, gills and tubes increase and further protect the spore-bearing areas. Eventually "veils" of one sort or another protect the developing fruit body, especially gills. (Different sorts of veil leave different sorts of features on the mature fruit body – see Chapter 2, page 37.)

The first organisms to stand tall on the Earth were not plants. Four hundred million years ago, plants grew no taller than an adult human today, but there were club-shaped fungi called *Prototaxites* 1m across and 8m tall.[1] The first plants that matched the height of *Prototaxites* weren't trees, but giant, segmented relatives of the horsetail ferns (*Equisetum* species) that now rank among the most ancient of plants. Trees finally appeared at the start of the Carboniferous period, around 360 million years ago, growing far higher than anything had before, safely out of the reach of the herbivorous dinosaurs that themselves grew to be the tallest animals ever to walk the Earth. Wood had arrived on the scene, and to make it, the trees used a new and very tough organic molecule we call lignin – the first substance strong enough to support structures of such great height.

Nothing in those first great forests could break down lignin. When they died and fell over, the trees just piled up on top of each other, and continued to do so for the next 60 million years. The resulting gigantic heap of wood was destined to become the vast coal deposits after which the Carboniferous is named, and the wood deposit only stopped growing when finally something evolved that could decompose lignin. That something was the ancestor of today's wood-decomposing fungi, without which coal would still be forming at the same rate and our woodlands would look very different.[2] Even now, those fungi capable of degrading lignin only do so when they've run out of easy sources of nutrition – they degrade lignin to gain access to more cellulose, though this may require energy in the form of glucose to do so.[3] However, lignin clearly contains plenty of energy, as we can see when wood burns. These issues are also of key interest to biofuel technologists, who are finding lignin just as troublesome.

The wood-decomposing fungal species are called "saprophytes" (from the Greek *sapros*, putrid). They feed on organic matter that is already dead, turning it into food for the animals and microbes that feed on the mushrooms, and releasing the rest as raw nutrients into the local environment. ("Dead matter" includes the heartwood of trees, which is why still-living trees can end up almost completely hollow.)

Ancient and modern woodland. The brackets are fruit bodies of Artist's Fungus.

Some fungi have pursued a more aggressive strategy and become parasitic as well; these are best known for causing problems for forestry and horticulture. They attack living trees and shrubs – especially those that are already sickly, genetically inferior, or growing in a habitat to which they aren't best suited (which can include exotic garden plants). Many parasitic fungi, unlike most animal parasites, will switch to a saprophytic existence, feeding on their hosts' remains for a while after they have died.

The rest of the fungi are symbiotic or "mycorrhizal" – as well as breaking down organic debris in the soil, they form mutually beneficial relationships with plants, especially trees. In this relationship the plants provide the fungi with sugar and the fungi vastly extend the root system of the plants, enabling the plants to take up far more water and nutrients from the soil than they could on their own. In most cases the relationship is not entirely equal, as the tree can survive without the fungus, while the fungus cannot survive without the tree, but trees with fungal partners do much better than trees without them. It is likely that this relationship has existed almost as long as there have been plants and fungi, and that plants and their fungal symbiotes evolved together as codependent organisms.

Fungi are an essential part of all ecosystems. They eliminate weak and sickly plants, work symbiotically with the healthy ones, and will find a way to exploit any organic material that other organisms have left unused. They are the ultimate agents of recycling and rebirth.

2. How to identify fungi

If you're serious about getting into fungi foraging, then you should consider investing in a good field guide in addition to this book. A field guide is designed to be as portable and comprehensive as possible, so you can take it out with you and hopefully identify the fungi you find. This book is not a field guide, partly because it hasn't been designed with portability in mind, but mainly because it focuses on edible, poisonous, medicinal or otherwise useful species, leaving out thousands of others that are of little or no interest to a forager.

A good field guide on fungi will feature at least 1,000 species. Even if most of those species have limited appeal from a strictly foraging point of view, having information about them will make your job easier. Standing a better chance of identifying what you find, even if it is inedible, helps to dispel the overwhelming feeling of having no idea what all those fungi are. You will also need a field guide if you want to identify the edible species that are mentioned in this book, but are not illustrated or described in detail.

Getting started

So how do you learn to identify wild mushrooms? It's an iterative process:

- Start by choosing a short list of species from this book that are common, reasonably easy to identify (next page) and of interest to you. We'll call this your "hit list".
- Go out and look for some fungi (see Chapter 3 for information on where to look) and hope that you can find a few of the species on your hit list. Take a few specimens home. When you're out searching, have a good look at whatever you see, even if you aren't going to take it home. Feel it. Smell it.
- You'll find loads of fungi you have no idea about. Take photos of these, or put a couple in plastic boxes with lids to take home.
- At home check your finds very carefully. If you've correctly identified the species on your hit list, you now know how these fungi feel and smell, and you've seen the sort of place in which they grow. Next time you find them, you'll be more confident. For the unknowns, have a look through this book or turn to your reference books (see Resources) and try to work out what they are.
- Then start the loop again: sit down and browse through your books, and maybe you'll recognize something you saw in the field or the forest. Add a few things to your hit list.

This becomes addictive, and can go on for years as you approach the task from both directions: you've got an evolving list of things you're looking for, and you're learning about whatever fungi you happen to find. Slowly but surely, species by species, you get better at recognizing the fungi you find when you're foraging, without having to refer to a book (though of course you will always check when you get home if you have any doubts). At the same time, you'll be learning about the culinary uses of the edible fungi you do find.

This book was designed with both functions in mind: to help you to build your hit list and safely identify your finds. It contains unambiguous photos and detailed information about all the relevant lookalikes to guide you. However, no book can take the place of practical experience, and there is no quick and easy way to become a master fungi forager. Some things take time, and this is one of them.

Best (easiest and safest) edible wild fungi for absolute beginners

- Hedgehog Fungus and Terracotta Hedgehog
- Chanterelle
- Horn of Plenty
- Trumpet or Winter Chanterelle
- Penny Bun
- Bay Bolete
- Brown Birch Bolete and other *Leccinum* species
- Slippery Jack and other *Suillus* species
- Giant Puffball
- Common Puffball and other *Lycoperdon* species
- Shaggy Inkcap or Lawyer's Wig
- Porcelain Fungus
- Beefsteak Fungus
- Cauliflower Fungus

Identifying fungi

The scientific study of fungi is called mycology. The only way to accurately determine many species of fungi involves the use of two scientific aids – microscopy and chemical testing. When I started working on this book, I wanted to see how far a practical forager could progress without a microscope or chemicals, so I took a conscious decision not to use them. Because most readers will do the same, the book doesn't cover the microscopic properties of fungi or chemical means of identification.

The fungi in this book fall into two broad categories:

- Those that can be identified to species level with a very high degree of certainty without microscopes and chemicals.
- Those that can't. I have included some that are of interest from a foraging point of view, because even though it isn't always possible to nail down the exact *species* without microscope or chemicals, you might be able to narrow it down to a specific *group* (see 'Taxonomy', Part II, page 86). I've chosen the groups either because the whole group can be viewed as edible, or the whole group is likely to be toxic and therefore must be avoided.

When identifying a fungus, it's important to remember that many fruit bodies are quite variable. The features that vary depend on the species, but variations in colour, size and shape are common. A fruit body's appearance may also change during the course of its (usually short) life, and you may not realize at first that the large thing you found today is the same species as the small thing you found last week. It

is often only after you've found a particular species on several occasions that you start to get a handle on all its guises. In one or two infamous cases (see The Deceiver, Part II, page 327) their variability can go on testing you for years. Bearing that in mind, any or all of the following can be important:

Spore-bearing structures Does the fungus have gills, tubes or teeth? "True gills" are individual plate-like structures, such as those on familiar cultivated mushrooms. "False gills" are mere folds, of one sort or another, on the lower surface of the cap. Tubes look like foam. Teeth are little spikes.

Forking false gills on a Pale Chanterelle.

Gill morphology

- Are there lots of gills (“crowded”) or just a few (“distant”)?
- Are they thick or thin?
- Do they fork (see photo)?
- Do they join and branch in a random fashion (“interveined”)?
- Are they brittle, or flexible?
- Do they feel greasy?

A brittlegill with very distant gills.

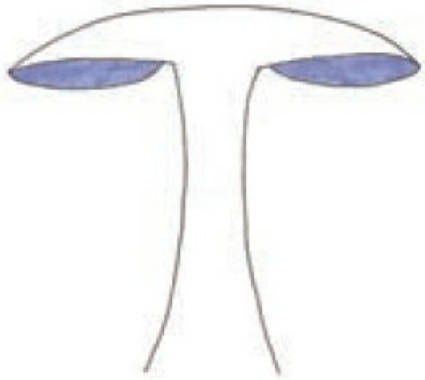
Note: If the gill spacing is not specified in the species guide in Part II, this means the gills are averagely spaced, and if the thickness is not mentioned, then they have an average thickness, etc.

The term “lamellae” is sometimes used as a synonym for “gills”, but technically only refers to gills that run all the way from the edge of the cap to the stem. Those that only extend part of the way are called “lamellulae”, and in some species the exact number of both gill types is always the same.

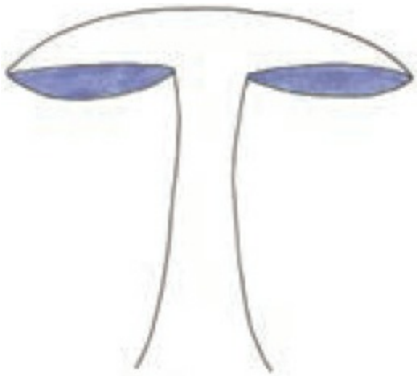
Gill attachment How are the gills attached where the cap meets the top of the stem? There are various types of arrangement:

- Free: gills stop short of the stem.
- Adnexed: gills are narrowly attached to the stem.
- Emarginate: gills have roughly the same height for most of their length, then suddenly become much narrower just before reaching the stem. This is also sometimes described as “notched”, because it looks like a notch has been cut out of the gills near the stem.
- Adnate: gills are broadly attached to the stem.
- Decurrent: gills run down the stem. Deeply decurrent gills run a long way down the stem.

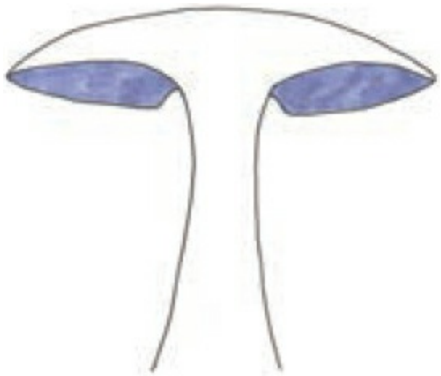
These arrangements are shown on the below.



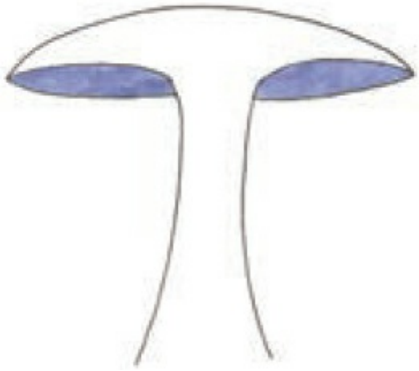
FREE



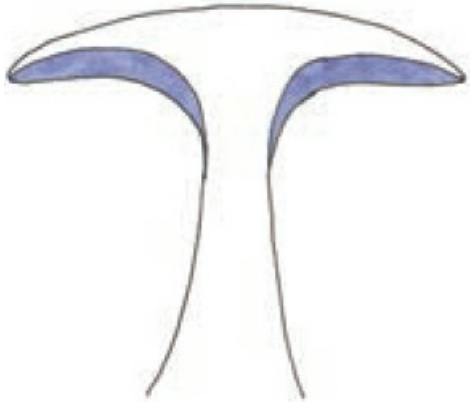
ADNEXED



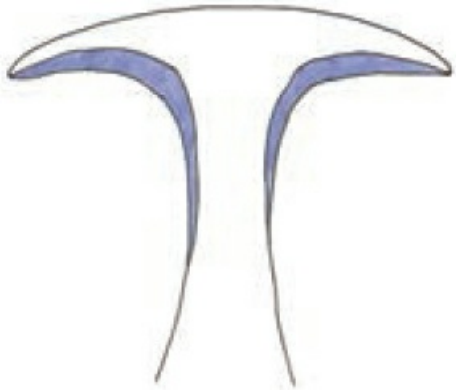
EMARGINATE



ADNATE



DECURRENT



DEEPLY DECURRENT

Be aware of a term used elsewhere: “distant” can sometimes mean that the gills are “very free” (ie they are distant *from the stem* rather than distant from each other). This is confusing, so I don’t use it. I do use the term “adnate with a decurrent tooth”, which refers to gills that are almost adnate, but become sharply decurrent very close to the stem. I also use the term “adnexed/free”, which means right on the border between these two attachments.

There are other terms in use, such as “sinuate”, but their definition tends to be inconsistent and they border on unhelpful. If the attachment doesn’t clearly fall into any of the categories shown here, I’ve left it out.

Tubes and pores Some mushrooms have tubes beneath the cap, rather than gills. The tubes are sometimes literally tubular, but not all of them have a circular cross section. The spores form on the surfaces of the tubes and fall out through openings at the bottom – the “pores” – which can be large or small, round or angular. This type of mushroom is known as a “bolete”. You will also find tubes on bracket fungi – fungi that produce stemless bracket, shelf or circular-shaped fruit bodies, usually in tiers or rows. They are generally quite tough, and nearly all of them grow on wood. Bracket fungi with tubes are called “polypores”.

A bolete with large, angular pores.

Gleba Some fungi don't have any spore-bearing structures. These are the "gasteroid" (as in stomach-like) fungi such as truffles and puffballs, and the entirety of their insides is a mass of spores known as a "gleba". This usually starts out white and becomes brown or black as the spores mature.

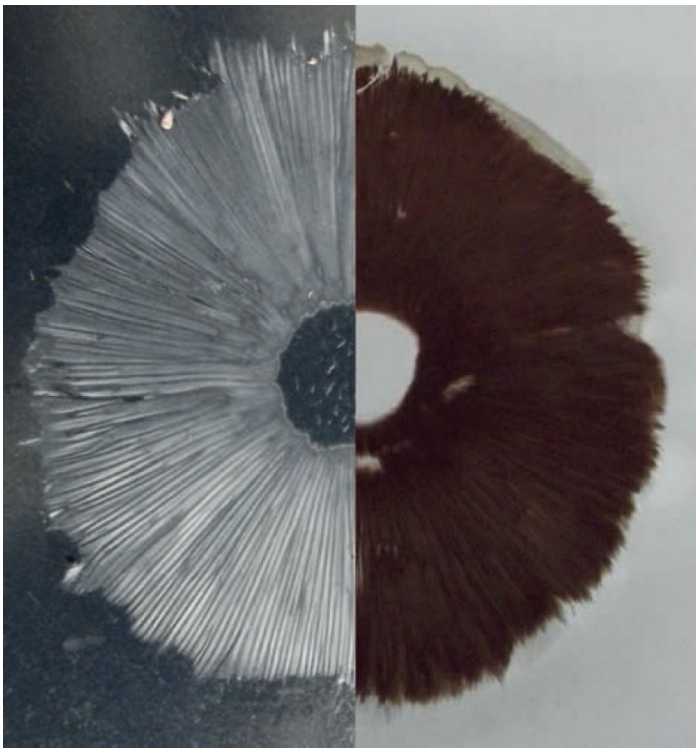
Colours

- What colours are the cap, stem and gills/tubes/pores?
- Are there any patterns visible?
- Are there any changes in colour when you *touch or bruise* the mushroom?
- Are there any colour changes where the flesh has been *exposed to oxygen* due to slug damage or when you cut the mushroom open? (Colour changes can be instantaneous or take hours, and some parts of the flesh may change in different ways from others.)
- Some mushrooms are "hygrophanous", which means their caps change colour *when they get wet* and change back as they dry out again (they're usually darker when wet). Certain hygrophanous mushrooms dry from the edge first, while others dry from the centre. The arrangement of this two-tone colour scheme (lighter in the centre or darker in the centre?) can be an important identifying feature.

A Lurid Bolete: like many of the larger boletes, the flesh turns blue when exposed to oxygen, and other parts of the mushroom bruise blue-black when touched.

Spore colour This can be very useful for narrowing down which group a fungus belongs to, as it does not vary in the way some other features do. Sometimes the spore colour is immediately obvious because you can see a dusting of spores on the top of fruit bodies that were below others in a cluster. If not, then you need to take a spore print. This is easy:

- Cut the stem, as close to the cap as possible.
- Put the cap on a smooth surface (paper works well).
- Place a bowl over the mushroom, to help to minimize air currents and other disturbances.
- Leave for a few hours, or overnight. When you lift the mushroom, you should see the spore print on the paper, and the colour will be revealed.



A white spore print on a black surface and a dark brown spore print on a white surface.

Macro Mushroom: could be mistaken for any old button mushroom if you don't know how big it is. The coin is a British pound. Size alone is enough to determine which *Agaricus* species this is.

Size It is easy to forget that photos are at different scales compared with real life. Therefore you need to note the dimensions of the fungus you've found and compare it with the maximum and minimum dimensions of any fungi you think it might be. If you're taking photos of your own, then you can use a coin or other handy object to give some scale.

Cap shape What shape is the cap? It helps if you've got both young and mature specimens, so you can see how the shape of the cap changes. Many fungi develop a hump in the centre of the cap, called an "umbo". Fungi with umbos are described as "umbonate". An "inrolled" cap, is a cap where the margin (edge) curves downwards. A "deeply inrolled" cap curves back under itself and "persistently inrolled" means it remains that way even when the mushroom is old.

Cap peeling For a few species, particularly the brittlegills, how far you can peel the cap cuticle from the edge to the centre before it breaks can give a clue to the identity of the mushroom.

A brittlegill cap that peels half to two-thirds.

Cap surface Is it cracked, rough, smooth, shiny, sticky, scaly, slimy, etc?

Cap debris Are there patches of debris ("warts") on the cap? These are usually the remains of the upper portion of a universal veil (see page 37). Note: Be aware that these warts can wash off in the rain, which can be misleading.

- If there are warts, what colour are they?
- How are they distributed?

Stem

- Does it have scales or other markings, eg lines ("reticulations")?
- Is it fibrous?
- Is it tough or fragile?
- What shape is it? Cylindrical, club-shaped, spindle-shaped? "Barrel-shaped" is sometimes used to describe a stem that is wholly bulbous, as opposed to just the base being bulbous. Is it fatter at the top or the bottom (does it "taper")? Is it "rooting"? No fungi have real roots. Most mushrooms start forming where the mycelium encounters light – at the surface of the ground or substrate. But in some cases the mushrooms start forming a little way underground, and in a very few they start forming quite a long way underground. They then grow towards the surface, and the result is a buried stem base, reminiscent of the taproot of a plant. See below and next page.

ROOTING

CLUB-SHAPED

CYLINDRICAL

TAPERING UPWARDS

TAPERING DOWNWARDS

SPINDLE-SHAPED

BARREL-SHAPED

Ring (or "annulus") Does the fungus have a ring around the stem? Be careful when collecting, because rings can detach or disintegrate. (Those that tend to disappear are called "ephemeral rings", those that hang around are called "persistent rings".)

- What is the size of the ring?
- How is the ring attached? Can it be moved up and down the stem ("movable" or "detachable") or is it stuck in one place ("immovable")?
- A superior ring is near the top of the stem.
- A median ring is near the centre of the stem.
- An inferior ring is near the bottom of the stem.
- A sheathing ring clings to the stem, like a sheath.

Double ring Beware this treacherous piece of terminology! You will often see rings described as "double", but "double ring" has more than one meaning. It usually means "double" in the sense that the planet Saturn's rings look "double" from a distance – there is an outer ring outside an inner ring.

Double ring on a Parasol Mushroom.

“Double” can also mean that a single inner ring splits into two, often with one of the outer rings pointing upwards and the other pointing downwards. This can also be called a “double-lipped” or “double-edged” ring.

Finally, “double” can also mean two rings at different places on the stem.

Double-lipped ring on a Brown Parasol.

Two rings on a Pavement Mushroom; the lower one is usually less substantial and harder to see.

Volva Is there a sac-like structure from which the base of the stem emerges? If present, this is the remains of the lower portion of a universal veil (see page 37).

Flesh texture Is the flesh brittle or flexible? If you try to break the flesh, is it granular (like a sugar cube) or fibrous (like a sugar cane)?

Smell This is often irrelevant, but if it is important, then the species guide in Part II points this out. Always smell a fungus when you pick it up because you might get a big clue to its identity. In a few cases, it is a key way of telling a good edible species from an inedible or poisonous lookalike. The smell is often easiest to distinguish by turning the mushroom upside down and sniffing the gills, although this can be a bit hazardous with one or two species and could cause irritation if you do it a lot, or even infection (see Splitgill, Part II, page 403).

Taste This is a slightly tricky one because there are some poisonous fungi that you definitely shouldn't put in your mouth, even if you immediately spit them out. It pays to be familiar with these species before tasting a fungus you have yet to identify. However, within some groups, notably the Russulaceae (Brittlegill family), taste is an important identifying feature. Descriptions of taste given in the species guide refer to raw taste as a means of identification. "Do not taste" is self-explanatory, and does not correspond to "deadly poisonous". Some species will kill you, but only after 20 years of harmless consumption; others cause no long-term harm but swallowing even a small amount will make you violently sick. So we can have four different cases:

- "Do not taste" and "deadly poisonous": examples being the deadly amanitas, including the Deathcap, and Destroying Angels.
- "Deadly poisonous", but safe to taste: Brown Rollrims and Angel's Wings, for example, both of which become dangerous only after repeated consumption or consumption in large quantities.
- "Do not taste", even though not deadly poisonous: for example, The Sickener, which is capable of causing nausea in very small quantities, but causes no serious or long-term health problems.
- Neither: most of the fungi in this book, including popular edible species such as Penny Buns, Chanterelles and Field Mushrooms.

Habitat The habitat of a fungus can be an important clue to its identity, but this is often overlooked by beginners:

- Where *exactly* was it growing?
- What substrate was it growing on (wood, soil, compost, leaf litter, dung, etc)?
- If growing on wood, was it dead wood or living wood?
- Can you tell what sort of tree the wood came from? (Even knowing whether it was deciduous or coniferous can be a key determining factor.)
- If the fungus is growing on the ground, what species of plants or trees are nearby? This is particularly important when trying to identify the symbiotic fungi, some of which are very particular about which sort of tree or shrub they set up home with.
- Other things to note about habitat are the soil type (is it acid/sandy or alkaline/chalky?). Some species are also adapted to salty habitats – these are called "halophilic".

Season Some fungi can turn up at any time of year, while others more reliably appear at a specific time of year (as defined by the weather rather than the calendar).

A young Grisette, recently emerged from its universal veil. The base of the veil becomes the volva, with traces of the rest left attached to the cap.

Veils Some of the most important distinguishing features of mushrooms are the remains of various sort of veil that protected the developing fruit body.

A "universal veil" is a bit like a soft egg that envelops the whole mushroom as it initially forms. Mushrooms at this stage have been mistaken for puffballs (see photo in Part II, page 237). The young mushroom soon breaks through the veil and its remnants can end up as a "volva" – a sac-like structure at the base of the stem – and/or various sorts of debris on the cap.

A "partial veil" is a sheet of tissue – or in the case of webcaps, a dense web of fibres called a "cortina" – that is connected to the edge of the cap and some point on the stem (see Part II, page 310). It covers and protects the developing gills or tubes. As the cap expands, the partial veil ruptures, leaving a ring on the stem and sometimes a shaggy edge around the cap. In webcaps, remains of the cortina on the stem trap spores in the "ring zone", which can be seen if the spores are coloured differently from the stem.

Wood Mushrooms: as the cap goes from a sub-spherical button to almost flat, the partial veil is stretched, in this case forming a pattern called a "cogwheel" that is characteristic of this species and a couple of its closest relatives. The veil of the mushroom on the right has just ruptured, and though still partly connected to the edge of the cap, you can see how it becomes the large, pendulous ring that is another identifying feature of this species. The lines ("striations") on the upper surface of the ring are an imprint of the gills – either a physical impression or lines of spores, depending on the species – and whether or not a ring has striations can also be diagnostic.

3. Where and when to find fungi

It's not until people actually start looking for fungi that they realize how diverse they are and how widespread. Once you've got your eye in, and you're consciously on the lookout, you are likely to find them all over the place – in your own back garden, by the side of roads and paths, on waste ground, or anywhere that has grass, trees or damp wood.

Fungi tend to be distributed rather unevenly. It is not unusual to walk for miles and see very few, and then stumble across a patch where there are a dozen species growing in a few tens of square metres. One tract of woodland can be very productive, while another on exactly the same soil, with exactly the same type of tree, less than a mile away, can be devoid of fungi. I've given up trying to work out why; this is just the way it is.

A few species can appear almost anywhere, but most are considerably fussier about habitat and you can expect to have specific selections. The following sections cover the various habitats and the types of fungi most likely to be found there.

Woodland

About 5,000 years ago, Europe was covered by an enormous forest – the primeval wildwood, with its attendant species of fungi. By the time of the Romans the landscape had been transformed to suit the needs of agriculture, most of the wildwood had gone, and the remaining woodland was already intensively managed.

Today, the surviving pockets of ancient woodland, unsurprisingly, tend to have the richest variety of fungi. Even in the case of secondary woodland (woodland on land that had previously been something other than woodland, whether planted or naturally recolonized by trees), the longer it has been there, the greater the variety of fungi you are likely to find. This also depends on which types of tree are present. Some tree species rarely or never form mycorrhizal relationships with fungi that produce large fruit bodies, making them less attractive hunting grounds for fungi foragers; ash, sycamore, elm, horse chestnut, box, yew and elder all fall into this category.

The Weald

Given the population density of south-east England as a whole, you might assume that this region lost its woodland first, but nothing could be further from the truth. The area between the two bands of hills known as the North and South Downs (the Weald) was one of the places in Britain where the impenetrable wild woodland survived the longest – the word *weald* is Old English for "woodland". Its remnants lie in an arc that starts in the area around Guildford, passes through Surrey and Sussex and ends just east of Hastings, where the sandstone ridge in the middle of the Weald (the High Weald) meets the sea. Sussex and Kent remain to this day the most heavily wooded counties in the UK, and the woodlands of the High Weald are among the best places in England to look for fungi.

You'll find that woodland overgrown with brambles tends to be poor foraging country, not just because of the obvious accessibility

problems, but because both the variety and abundance of fungi is poorer. It's much better in places where there are low-growing plants, bare soil or, best of all, mosses and lots of woody debris.

Woodland monocultures created for commercial forestry can be good or bad. Fewer tree species does tend to mean a smaller variety of fungi, but on the other hand you will sometimes find a plantation where one or two good edible species are very abundant indeed.

Mixed woodland is generally quite good, especially if there are plenty of clearings or wide, grassy paths. Many of the best places have a variety of habitats in close proximity: plenty of different native tree species, a few conifers here and there, or maybe chunks of conifer plantation within a larger forest, with mixed deciduous woodland elsewhere. It's even better if there are areas of grassland within or near the woodland, and another very good place to look is at the edges of fields adjacent to woodland.

Fungi species to look out for in woodland habitats

All types of woodland

- Ochre Brittlegill
- Hedgehog Fungus
- Chanterelle
- Bay Bolete
- Common Earthball
- Common Puffball
- Stump Puffball
- Blushing Wood Mushroom
- Shaggy Parasol
- Sulphur Tuft
- The Deceiver
- Butter Cap
- Spotted Toughshank
- Honey Fungus (*Armillaria* species)
- Clouded Funnel
- Trooping Funnel
- Wood Blewit
- Tawny Funnel
- The Miller or Sweetbread Mushroom
- False Deathcap
- Destroying Angel
- The Blusher
- Grey Spotted Amanita
- Common Stinkhorn
- Turkeytail

Coniferous woodland (general)

- Rufous or Red Hot Milkcap
- Terracotta Hedgehog
- Trumpet or Winter Chanterelle
- False Chanterelle
- Slimy Spike
- Conifer Tuft
- Plums and Custard

Pine

- The Sickener
- Humpback Brittlegill
- Primrose Brittlegill
- Saffron Milkcap
- Rosy Spike
- Copper Spike
- Pine Bolete
- Slippery Jack
- Jersey Cow Bolete

- Cauliflower Fungus

Deciduous woodland (general)

- The Charcoal Burner
- Blackening Brittlegill
- Brown Rollrim
- Matt Bolete
- Suede Bolete
- Shaggy Scalycap
- Sheathed Woodtuft
- Dryad's Saddle

Oak

- Oakbug or Oak Milkcap
- Penny Bun
- Oak Bolete
- Orange Oak Bolete
- Deathcap
- Beefsteak Fungus

Beech

- Beechwood Sickener
- Geranium Brittlegill
- Mild Milkcap
- Beech Milkcap
- Horn of Plenty
- Penny Bun
- Amethyst Deceiver
- Porcelain Fungus
- Rosy Bonnet / Lilac Bonnet
- Oyster Mushroom
- Deathcap
- Ivory Woodwax
- Artist's Fungus / Southern Bracket

Birch

- Yellow Swamp Brittlegill
- Ugly Milkcap
- Orange Birch Bolete
- Brown Birch Bolete
- Fly Agaric
- Tawny Grisette
- Orange Grisette
- Birch Polypore or Razorstrop Fungus

Grassland

You'll notice this section is shorter than the woodland section. That doesn't mean grassland is no good for fungi foraging, but there are some important differences.

Grassy areas where there are also trees are classed as "open woodland", and the species you're likely to find there are a subset of those you'll find in denser woodland with the same types of trees. This sort of open woodland is one of the best habitats for finding fungi, especially amanitas, brittlegills and boletes.

Scarlet Waxcaps doing their thing in a good waxcap year.

In “pure” grassland, such as pasture, downland, or cemeteries and churchyards well away from trees, you can often find a similar volume of fungi as in woodland, but fewer species. This is a reflection of the greater diversity of habitat available *within* woodland, where there are different species of trees, different types of dead organic matter, and differing temperatures and moisture levels. Grassland isn’t quite “all the same”, but it’s a considerably more uniform environment than natural woodland.

In grassland during summer and early autumn (see ‘Seasons’, page 45) you are likely to find members of the Agaricaceae – Field Mushrooms and their relatives, and various types of puffball and parasol – sometimes in vast quantities. You can also find a wide selection of small fungi that are of minimal interest to foragers, although there are a few good ones to look out for, such as the Fairy Ring Champignon. In “unimproved grassland” (grassland where fertilizers haven’t been applied) you are likely to find waxcaps.

Fungi species to look out for in grassland habitats

- Puffballs
- Shaggy Inkcap
- Field Mushroom and other *Agaricus* species
- Parasol Mushroom
- Liberty Cap
- Fairy Ring Champignon
- Fool’s Funnel
- Field Blewit
- Stubble Rosegill
- Waxcaps (*Hygrocybe* species)

Roadsides

I find a lot of mushrooms growing by the sides of roads. Admittedly this isn’t the best place to go foraging, especially if it’s very close to a busy road, but by quieter roads, or if the fungi aren’t right next to the carriageway, then I sometimes stop and take a few; and if it’s photos you’re after, then this is a perfectly good hunting ground. I know, you think I should keep my eyes on the road rather than looking for fungi, but the human brain is preprogrammed to pick out items of interest from complex, rapidly changing visual scenes, and I can’t help noticing fungi. Some common species are identifiable at 80kph. And, of course, you could be walking or cycling.

But why are roadsides such a great habitat for fungi? Partly it’s an illusion – you just cover much more ground in a car than you do on foot – but that isn’t the whole story. A handful of the species that particularly like roadsides are naturally coastal dwellers, adapted to a saline environment that has been accidentally replicated inland by the process of salting roads in the winter. Others, such as parasols, puffballs and Clouded Funnel abound for different reasons. Roadsides tend to fall into the category of grassland or, if there are trees nearby, open woodland – a good place for fungi anyway. They are usually undisturbed (people don’t walk there much, or turn over the soil) and unimproved (no fertilizers have been applied). But probably the most important factor is the role of tyres as transporters of fungal spores. Spores are released and end up on the roads. They are then picked up on tyres, especially when the road is wet, and transported somewhere else, before being deposited and, with a bit of luck, splashed back on to another suitable verge.

Adapted by nature to live by the sea, Salt-loving Mushrooms are very much at home beside roads.

Finding good locations

There is one reliable rule about where to forage – or rather where *not* to. The very last thing a forager wants to see is another forager, so avoid the most popular places. It's far better to search in a less productive location, where nobody else has been collecting, than somewhere well frequented by fungi foragers. Some of the very best places I know are where almost nobody else ever goes. They tend to be inaccessible, far from car parks, at the tops of hills, or across streams where there are no bridges. There is, therefore, little point in providing a list of specific places where it's good to go foraging for fungi; to do so would be self-defeating – everywhere on the list would immediately become one of the last places I could recommend you try.

So how do you go about finding good locations? The internet is an invaluable resource. The first ports of call should be the Forestry Commission or the Woodland Trust (see Resources), which can tell you about publicly accessible woodland in your area. A map with satellite imagery is also very useful, as any decent-sized area of woodland is immediately obvious – although you must then check whether public access is allowed. Other websites can provide you with information about local rights of way (eg Rowmaps), and if there's a footpath crossing a particular chunk of woodland or other open space, then there's a good chance you'll be able to access the adjacent land (although sometimes there will be a sign asking you to stick to the public right of way). Once you've found a general location, you'll need to find the best places within it for fungi.

There is another general rule about foraging: if you're not doing well in a particular habitat, try somewhere different. If you aren't finding much in an area of beech woodland, head towards those conifers you can see in the distance (and vice versa). If the ground is very dry because it hasn't rained in a while, try damper places lower down slopes or in valleys near streams. If it's nearing the end of the autumn and cold weather has finished off most of the fungi in more open spaces, try dense woodland where the temperature might have stayed a bit higher.

Seasons

Fungi, including edible varieties, can be found at any time of year, although they are most abundant in the autumn. There is another burst of productivity in the spring.

The seasons I'm referring to here are defined by the weather, not the calendar. If it feels to you like the depths of midwinter, even in springtime, then it will feel that way to the fungi also, and most of them will (fail to) react accordingly. In north-west Europe, in an average year, the lowest winter temperatures occur during the first half of February, just before the lengthening of the days starts to become noticeable. From this period of minimum average temperatures until the arrival of significantly milder weather is the leanest time for fungi foraging.

Spring foraging: St George’s Mushrooms growing beside ramsons (wild garlic). Their strong flavours complement each other very well.

There are some famous edible spring species. They include the highly esteemed but elusive and ephemeral morels, and St George's Mushrooms, which typically appear in England on St George's Day (23 April). In many years I have indeed first found them on or very close to that day, although there are plenty of reports of them appearing unexpectedly at other times of the year. There are several hundred other species that usually fruit around this time, in some cases exclusively.

The first really hot weather spells the end of the spring peak in fungal activity, and the spring-specializing species give way to another group, which can be found throughout the summer and into the autumn. The timing of their arrival in any particular location is a bit mysterious – they aren't always about, sometimes they appear early, sometimes late, and sometimes at different times in different places, even though conditions aren't that different in any obvious way. Edible members of this group include Chicken of the Woods, Field Mushrooms and Horse Mushrooms. Then there are the Fairy Ring Champignons, which can persist all summer, as they are able to withstand repeated desiccation and rehydration.

Midsummer can be quite a good time for fungi, or a very bad time, depending primarily upon rainfall. There are a handful of (non-edible) species that actually favour fruiting during droughts, but it's usually during a damper year that fungi can be found throughout the summer months. Occasionally, north-western Europe suffers a really miserable year when it hardly stops raining all summer. This doesn't bode well for fungi, partly because the sun-loving trees on which many fungi depend don't like it, and partly because relentless wet weather is great news for slugs – and slugs love eating fungi.

The main mushroom season sometimes ramps up slowly, and sometimes starts explosively. In a typical year it gets going in grassland and open woodland before there's much happening in denser woodland. And everything happens earlier the further north you are (in Britain, for example, northern Scotland runs about a month ahead of southern England).

Mushroom season peaking. All these fungi are edible woodland species (Larch Boletes, The Miller, Penny Bun). The woodland starts just beyond the edge of the photo.

What happens next is, again, heavily dependent on the weather. People tend to assume that if the main mushroom season runs from September to November (as it does in most of the British Isles), then it will peak in the middle of October. And sometimes it does, but frequently it doesn't. In 2011, for example, the weather in September, and particularly October, was so freakishly hot and dry that by 20 October the only fungi to be found were the ever-present woody, perennial species; that year the best time for fungi foraging in England was the middle of November. In an exceptionally bad year, the autumn mushroom season simply doesn't happen. The European summer of 2003 was the hottest since the 16th century, and from the start of August to the end of October there was almost no rainfall, especially further south and east. Many fungi did not fruit at all that year.

In a more typical autumn there is a succession of species that appear and disappear as the temperature drops, provided there is enough moisture available. In any particular year some species will find conditions to their liking, and do well, while others have a bad year. Now and then a species will skip a year entirely, and quite often this means it will do very well the following year. Some only fruit once every five or ten years, but in a good year they turn up all over the place. Every year is different; that is part of the joy of watching fungi.

Mushroom season ends in northern Europe with the first hard ground frost, after which most of the autumn fungi will not produce any new fruit bodies, although often you can still find older specimens of the more robust species well into winter. The end point in temperate areas is best measured by the appearance of an edible mushroom specially adapted to freezing conditions: Velvet Shanks can survive being frozen solid, and then produce more spores when the thaw comes. When I find them, I take it as a sign that the autumn fungi season is all but over for another year. From that point until the start of spring, the only other edible fungi you are likely to find are Jew's Ears, Elfcups and Oyster Mushrooms.

Velvet Shanks in January.

4. Safety and equipment

The topic of safety is covered throughout this book. Chapter 2 contains cautionary advice about using smell and taste when identifying fungi. Chapter 6 focuses on poisonous fungi, and Chapter 7 deals with food safety matters that apply to correctly identified edible species. In this chapter I look at more general safety issues for a fungi forager, including practices that ought to be common sense, and describe the basic equipment you'll find helpful.

Safety and common sense

The first rule is to wear sensible clothing: you're going out into the countryside and you aren't necessarily going to stick to the paths. Expect to encounter brambles, nettles and mud, and choose your clothes and footwear accordingly.

In Europe there are multiple fungi foraging fatalities every year that have nothing to do with eating anything poisonous. In Italy in 2010, there were 18 such deaths in the space of 10 days – the result of people venturing into remote areas of woodland and falling down steep slopes or over cliff edges, often after they'd gone foraging in unfamiliar territory, wearing inappropriate footwear or in really bad weather.

Eye injuries

An accident that fungi foragers are particularly prone to, and the one I most fear, is a branch in the eye. As you walk around looking at the ground, it is very easy not to notice an out-of-place branch hanging down in your path. If there happens to be a stray twig or leaf exactly at your eye level, then you are liable to walk straight into it. This has happened to me on several occasions, and I am lucky not to have suffered a serious eye injury as a result. Glasses with plain lenses might be an option.

Getting lost

Fungi foragers are also rather prone to getting lost. When your focus is on looking for fungi, you may not be noticing landmarks, and you'll often be tempted to wander in whatever direction seems the most promising, rather than a straight line. While this can pay dividends in terms of finds, it is easy to lose track of where you are or how to get back to where you started, especially in overcast weather when you can't even see the position of the sun. Modern technology can obviously help, but if you're relying on a mobile phone, beware the possibility of finding yourself in a remote area where there's no signal. A good old-fashioned map is never a bad idea, together with a compass to help you figure out your current location and orientation. If you've visiting an area for the first time, it's a good idea to look at an online satellite image of the area before you start out – and if you do get lost, it's well worth looking at one later so you can try to figure out where you've actually been.

Equipment

You can get by with very little equipment – just a knife and something to put the mushrooms in**.** But there are a few more bits of kit to help you identify, collect, clean and transport the fungi you find.

Hand lens A hand lens is useful to examine fine details of fungi. It's more important for a field mycologist interested in trying to identify very small, or hard-to-identify fungi, but can come in useful for a forager too, especially if, like me, their short-range vision is not so good.

A naturalist’s hand lens.

Knives A knife is essential, and it must be a folding knife, or have a sheath. Walking around in the woods with an exposed blade is asking for trouble. Sooner or later you will trip or lose your footing on a slippery slope, and an unshielded knife in your hand or your pocket could cause you or a companion a serious injury.

The knife is for cutting the base of the stem, which is usually discarded to minimize the amount of debris that ends up in your basket. It can also be used to trim damaged parts of fungi. **Caution:** Before cutting, always check the base of the stem. In some cases it is an important identifying feature – it might have a volva, the flesh might change colour, the stem base might have a distinctive smell, etc. You might want to keep it for examination later.

A combined folding knife and brush.

It is widely believed that you should cut mushrooms instead of pulling them out of the ground, because this protects the mycelium and means more mushrooms will sprout in the same place. This is wrong; it makes no difference to the bulk of the mycelium whether you pluck it or cut it. The mycelium is already resident in that location, and the only thing that can displace it is another fungus. Taking a small chunk of mycelium and soil does not make it any easier for rival fungi to establish themselves, because there is no newly available habitat to colonize. However, excessive trampling of the surrounding area can cause significant damage. See Chapter 5, page 58 for further details.

Brushes Brushes are used both in the field and in the kitchen to remove dirt and grit. A soft-bristled paintbrush works, but there are also brushes specifically designed for this purpose. The long-handled types are best for use when you are out foraging. When you are cleaning your finds back at home, it is easier to use a hemispherical brush. This is designed so it fits snugly in your palm, leaving three digits free to handle the mushrooms.

Containers You'll need something in which to store your fungi finds. Plastic bags aren't the best option, because they make the fungi "sweat" and accelerate their decomposition (although I sometimes use them as a last resort, in heavy rain). A hessian or cloth bag is better, but some sort of basket is best.

Plastic containers, with lids, are also very handy for carrying delicate edible species and small specimens you can't identify (which you will examine more closely at home, and want to ensure they arrive in one piece!). **Caution:** Suspected poisonous fungi should be kept separate from edible species.

A mushroom brush, for use in the kitchen.

A classic mushroom collector’s basket: the trug.

5. Culture and laws

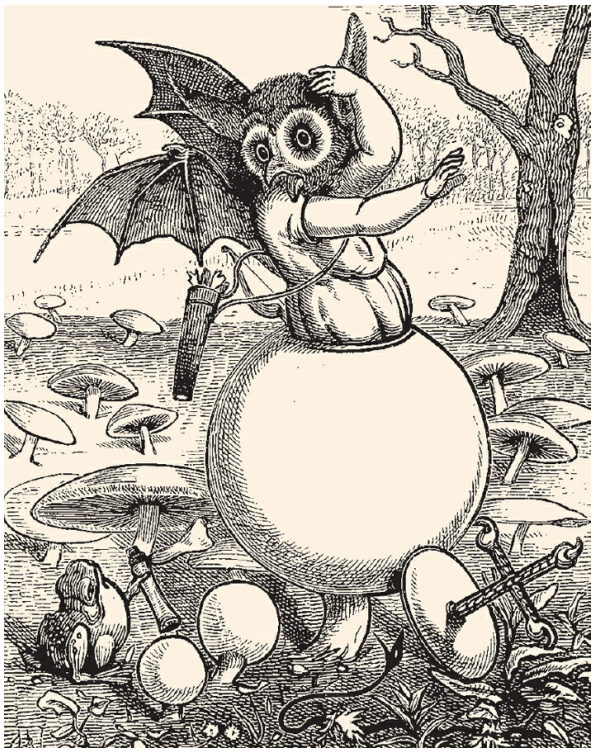
In this chapter I reveal the cultural differences regarding wild fungi foraging in Europe, uncovering a historical link with languages along the way. I also explain our scientific knowledge of the impact of fungi foraging, the regulations in different European countries, and suggest a code of conduct for ethical foraging.

Fungi foraging culture

Attitudes towards fungi, especially foraging for and consuming wild species, have varied enormously in different parts of Europe, and sometimes even between different parts of one country. At one end of the scale (eg Italy, especially the north) fungi foraging is something like a national pastime. The British have historically been at the other end. The existence and complexity of laws and regulations governing the collection and sale of edible wild fungi reflect these cultural differences.

Mycophobia and mycophilia

Not so long ago, the only wild fungus that the British even thought about picking was the humble Field Mushroom, and many were so scared of eating something dangerous that they wouldn't touch even those. This attitude had been prevalent for more than a century: I have a book by Jason Hill published in 1939 – *Wild Foods of Britain* – which laments that "for the last fifty or sixty years we have confined ourselves to two species" (the other being the Horse Mushroom). In fact, the British have always been rather hostile to fungi, compared with most Continental Europeans. One proposed reason is that the druids were the only class of people allowed knowledge of fungi in ancient Britain, and everybody else was taught to fear them. Certainly the British have historically associated wild mushrooms with evil and black magic, and creatures such as bats, snakes and toads – toads being regarded as highly poisonous. (The word "toadstool" has no meaning beyond "like a mushroom, but you wouldn't want to eat it" and is liable to be applied to any sort of mushroom that isn't an *Agaricus*, although it sometimes more specifically refers to a Fly Agaric.)



A wood engraving from Francis Quarles' *Emblems* (1861), showing a child's torso and arms, with an owl's head and the wings of a bat, emerging from a spherical mushroom. Looking up at the chimerical monster are a black snake with open jaws and a toad that appears to be offering it a scroll. The caption is "To Whom Will Ye Flee", a Biblical reference to Isaiah 10:3 ("What will ye do in the day of your visitation, to whom will ye flee for help and where will ye leave your glory?").

This cultural fear of mushrooms is called "mycophobia" or "fungophobia", a term coined in 1887 by British mycologist and novelist William Delisle Hay. Hay, who lived in New Zealand for several years, noted that when the British had colonized North America and Australasia, they'd taken their mycophobia with them. The contrasting term "mycophilia" refers to fungi-loving cultures.

In the words of Hay:

> *[In England, all mushrooms apart from the Field Mushroom] are lumped together in one sweeping condemnation. They are looked upon as vegetable vermin only made to be destroyed. No eye can see their beauties; their office is unknown; their varieties not regarded; they are hardly allowed a place among Nature's lawful children, but are considered something abnormal, worthless and inexplicable. By precept and example children are taught from earliest infancy to despise, loathe and avoid all kinds of "toadstools." The individual who desires to engage in the study of them must boldly face a good deal of scorn. He is laughed at for his strange taste among the better classes, and is actually regarded as a sort of idiot among the lower orders. No fad or hobby is esteemed so contemptible as that of "fungus-hunter" or "toadstool-eater."*
>
> *This popular sentiment, which we may coin the word "fungophobia" to express, is very curious. If it were human – that is, universal – one would be inclined to set it down as an instinct, and to revere it accordingly. But it is not human – it is merely British. It is so deep and intense a prejudice that it amounts to a national superstition.*
>
> (*An Elementary Text-book of British Fungi*, 1887)

A link with languages

There is a link between languages and cultural attitudes to fungi that runs deep, and mycophobia is not merely a British phenomenon. "Toadstool" has a Dutch ("paddenstoel") and German ("Krötenstuhl") equivalent, and the Danish "paddehat" ("toad's hat") is similar; but in most European languages, spoken by more mycophilic peoples, the only corresponding term is "poisonous mushroom/fungus".

A wide-ranging study[4] of rules and regulations governing the trade of wild mushrooms in various European countries demonstrated this link between languages and attitudes to fungi. People that speak Germanic languages tend to be mycophobic, the most mycophobic of all being speakers of west Germanic languages (English, Dutch and German). Speakers of north Germanic languages (including Norwegian, Swedish and Danish) aren't far behind.

Three other language families correspond to cultural attitudes to fungi – the Romance group (including Italian, Spanish and French) and two Slavic groups. The south Slavic group (Slovenian, Bulgarian and the languages of former Yugoslavia) and the north (or east and west) Slavic group (Polish, Czech, Slovak, Ukrainian and Russian) are physically separated by speakers of Romanian (Romance language family) and Hungarian (which, along with Finnish and Estonian, belongs to a completely different family from all other European languages). All the Romance and Slavic-speaking cultures are mycophilic, but there is also a strong correlation between fungi foraging preferences and which of these three families the local language belongs to. The Romance speakers, for example, like to eat amanitas that the Slavic speakers reject, while the latter are fond of brittlegills and slimy *Suillus* boletes that aren't so popular with the former (with the exception of Romania, which is influenced by the Slavic group to the north). There are similar differences and correlations between the preferences of the southern Slavic group, and those of the north.

This link between languages and fungi foraging culture should not come as a surprise. It points to a long history of collecting wild fungi for food, and suggests that the associated knowledge has evolved at the same slow rate that languages do. Given the inherent risks, there will have been few willing pioneers, so most people will have restricted themselves to whichever species their immediate peers and ancestors collected. When groups of people migrated, they will have taken this knowledge with them, along with their languages. Another factor is that even if you are going to try to share information more widely than that, or your people move to a new region, it is easier to communicate with somebody who speaks a similar language to yourself than with somebody who speaks a much more alien tongue.

Historically mycophobic countries
(mainly speakers of Germanic languages):

- Albania
- Belgium
- Finland (most areas)
- Germany (most areas)
- Greece
- Ireland
- The Netherlands
- Norway
- Sweden (though less so than Norway)
- UK

Historically mycophilic countries
(mainly speakers of Romance and Slavic languages):

- Austria

- Bavaria (south-eastern Germany, bordering Austria and the Czech Republic)
- Czech Republic
- Finland (eastern area, near the Russian border)
- France
- Hungary
- Italy
- Latvia
- Lithuania
- Poland
- Russia
- Slovakia
- Spain
- Switzerland

A cultural transition

Whatever the origins of this historical mycophobia, there is currently a dramatic cultural change of heart. Fungi foraging has never been more popular in the UK, and a similar transition is occurring in other historically mycophobic parts of Europe, including Ireland, Finland and The Netherlands. Even traditionally mycophilic places are showing an increased interest in fungi foraging.

Why has this happened? Why now? As far as the British are concerned, there are two parts to the answer. The first is a food revolution: a great diversity of restaurants has sprung up, serving food from all around the world. Pubs have become gastropubs. Cookery competitions dominate prime-time television. No surprise, then, that the foodies among us are taking a greater interest in the possibility of finding fresh, free delicacies that cost a small fortune and can only be bought dried – if at all. The second is a broad cultural trend towards sustainability, self-sufficiency and a desire to reconnect with the natural world. There is a sense that our civilization is an out-of-control monster, heading towards catastrophe, both economic and ecological. And we've responded with a desire to relearn ancient and forgotten skills, from growing our own food to making essential items using pre-industrial technologies, knitting and mending old clothes, right back to "bushcraft" – tracking animals, lighting fires without matches, and all the other things our distant ancestors must have known how to do. Foraging fits very well into this cultural backdrop.

There are Europe-wide reasons too:

- There is an increasing amount of information available, from books and the internet, and advances in toxicology and taxonomy mean this information is becoming more reliable. This allows people to be a bit more experimental in their foraging habits, whereas in bygone times people stuck to inherited folk knowledge.
- There has been much greater freedom of movement across Europe than was historically the case, and people have taken their foraging habits with them.

There is still a lingering fear of eating the wrong fungus and ending up in hospital – or worse. This isn't entirely a bad thing: in some traditionally mycophilic countries, cases of poisoning are counted in their tens of thousands annually. Fear, leading to caution, can sometimes be a lifesaver. Of course, foraging for fungi *can* be done safely. Fungi don't kill people; ignorance, wishful thinking and foolishness do.

One major benefit of our mycophobic history is that we approach foraging with no pre-existing ideas of what is edible and what isn't. Most of the people I take foraging start off knowing absolutely nothing about wild fungi. Contrast that with a family from a mycophilic nation temporarily living in London, who hired me because they wanted to introduce their five-year-old daughter to foraging and find some of the fungi they knew from back home. When I tried to teach them about other edible species – good ones – they just said, "People don't eat those where we come from." Those of us whose only tradition is to reject almost everything have the chance to approach this topic with an open mind, and that can only be a good thing.

Science and the ethics of foraging

This changing cultural landscape has led to some serious problems. In the UK, there is a polarized and acrimonious public debate about the ethics of foraging. One side contends that foraging does no ecological damage whatsoever, and actually *helps* fungi because carrying mushrooms around in open-weaved baskets disperses the spores more widely. Their view is that the countryside is not a museum. On the other side are conservationists and amateur field mycologists, many of whom have been recording wild fungi for decades and never, or very rarely, take anything for food. They tend to regard foraging as a modern-day equivalent of historically acceptable activities that are now illegal/taboo, a bit like collecting the eggs of wild birds. They usually accept that occasional, small-scale fungi foraging won't do much harm, but insist that regular or large-scale foraging must surely be harmful, and are deeply troubled by current trends.

To stand the best chance of arriving at a balanced view about these matters, we should avoid emotionally charged polemic, and start with available scientific evidence. Very few studies have even attempted to investigate possible links between foraging and the abundance or biodiversity of fungi, and most of the evidence we do have is unclear, ambiguous and wide open to interpretation. Fungal populations increase and decrease for all sorts of reasons (changes in climate, pollution levels, etc) and vary greatly over geographical areas, so even if you can show that a particular species is in decline or spreading, it is very difficult to prove any link with foraging.

However, one important scientific study[5] has shed at least some useful light. It provided strong evidence for the following:

- Systematic picking of fruit bodies (*all* of them) makes no detectable long-term difference to future fruit-body production *at the picking location*.
- This is true, whether mushrooms are plucked whole from the ground or cut with a knife, leaving the base of the stem in place.
- Trampling of the forest floor where the fungi are fruiting negatively impacts future fruit-body production at that location.

The study was conducted in a conifer plantation, where the forest floor typically consists of thick, spongy organic debris, and it is probable that fungal mycelia inhabiting it are particularly vulnerable to damage by trampling. Where the ground is firmer, or where fungi are growing in some other substrate (eg a stump), then trampling will make less or no difference. The results of the experiment did not suggest that mycelia are actually killed – fruit bodies continued to be produced (there were just fewer of them) and production returned to its original level when the trampling stopped.

The second finding debunks two widely believed and mutually contradictory myths. One is that uprooting fungi damages the mycelium, so the stem should always be cut with a knife. The other is that leaving the stump of a stem to rot exposes the mycelium to an increased risk of infection. The scientific evidence suggests both claims are wrong.

An important question remains unanswered: how much does taking fruit bodies compromise the ability of fungi to colonize new locations? Devising an experiment to answer it is very hard, because there are too many uncontrollable or unknown factors. We can apply reason though. If we took every single fruit body of a particular fungus in a specific location before the spores matured, then the probability of that fungus spreading is zero. But if there are 2,000 fruit bodies, it is hard to see how picking 200 of them would have much impact. The main factors limiting the spread of the fungus in this case would be the availability of suitable habitat and the prevalence of competing fungi. Somewhere between these two extreme cases, foraging must have an impact, but that is about all we can say.

But let us accept, for the sake of argument, that a handful of the most popular edible species *are* in decline because of "over-harvesting" and trampling. What might the ecological consequences be? Chanterelles and Penny Buns aren't internationally rare – their survival as species is not threatened. And if *they* don't colonize a newly available spot, some other fungus surely will, so one could contend that reducing the reproductive capacity of these common species is likely to help rarer species by reducing the competition, thereby increasing biodiversity. This is not science, but it is not an unreasonable argument.

Fungi have a reproductive strategy that guarantees they will bounce back quickly, just as soon as the right habitat becomes available. They produce vast quantities of spores, and if the habitat is available, fungi will exploit it. There are still gaps in our scientific knowledge, but we can hopefully all agree that *the biggest enemy of fungi is habitat loss, not foragers.*

Foraging is a great way for people to engage with the natural world – an engagement that our society has gradually been losing, to the detriment of our physical and mental health. My own view is that anything that encourages people to learn about these mysterious and fascinating things we call fungi, *with respect*, is a good thing.

Foraging and the law

There are two broad categories of laws/regulations concerning edible wild fungi, each with subdivisions:

Laws and regulations governing what you can pick, where and when you can pick it, and how much of it you can pick:

- Laws and regulations governing who has a right to pick wild fungi on privately and publicly owned land (protecting the rights of landowners and/ or the public – the "commons").
- Fungi conservation laws and regulations (protecting the fungi).

Laws and regulations governing which species of wild fungi can be traded:

- Which species are believed to be safe to eat.
- Which species aren't likely to confused with poisonous species.

There are varying degrees of laws and regulations in most mycophilic countries. Yet there is also a great deal of inconsistency, right down to a local level (and this isn't necessarily a bad thing, because not everywhere suffers from the same problems). There tend to be fewer laws and regulations in traditionally mycophobic countries, because until recently they were not needed.

Below I have given a rough outline of the range of laws and regulations in force across Europe. However, these laws and regulations are presently in flux, due to the increasing popularity of fungi foraging and wild food consumption all over Europe.

European laws and regulations "Red Lists", or "Red Data Lists", are nationally compiled lists of rare species, including fungi. They are maintained by the International Union for Conservation of Nature (IUCN), and they exist to inform people about the relative danger of extinction of all wild species. Species on a national Red List are considered *threatened* in that country according to three levels, from "vulnerable" to "critically endangered". For all countries listed below, it is assumed that picking threatened or otherwise protected species is not permitted, even on private land. It is also assumed that picking fungi is not permitted in nature reserves.

While no forager should pick red-listed fungi, range is a relevant factor. Some fungi have an extremely restricted range, while others are found worldwide. In some cases, they are quite common across much of their range but very rare at its periphery; in others, including some very widely distributed species, they are rare across their entire range. Picking fungi that are rare only because they are right at the edge of their range is of much less concern than picking fungi that are rare everywhere, or have a very restricted range.

It should also be assumed that, unless stated otherwise, these laws and regulations apply only on publicly owned/accessible land. On

private land it is assumed that the landowner takes responsibility (apart from in the case of protected species).

Countries that didn't have any available relevant information have not been included in the list.

Disclaimer: The following information is collected from a wide variety of sources, the reliability of which it was not always possible to check. It should not be taken as legal advice. Please check your national/regional/local laws and regulations.

UK and Ireland The legal situation in most of the UK and the Republic of Ireland is relatively clear. Unless local by-laws state otherwise, it is legal to forage for wild-growing fungi, fruit, flowers and foliage, even without the landowner's permission, although not if the landowner has explicitly prohibited it. If you take cultivated crops, or collect wild food with a commercial motive (which is usually taken to mean an intention to sell whatever you're collecting, or trade them for some other reward), then it becomes theft. You must also not disturb anything in a Site of Special Scientific Interest (SSSI) that has anything to do with its SSSI status (although exactly what this means is highly specific to each SSSI). In Scotland there is an additional law that makes it illegal to forage in a National Nature Reserve or an SSSI without the permission of Scottish National Heritage, and the written permission of the landowner.

Illegal commercial collecting, mainly for the restaurant industry, is a significant problem in the UK. The worst practice of all involves gangs of people literally trawling the forest – they move across the woods in a line, sweeping up all the fungi they find. Somebody sorts out the saleable stuff later and dumps the rest, including rare and inedible species, not unlike the vile practice of trawling for fish and discarding most of the catch (dead) as "by-catch". Even apart from the ecological and legal objection, this is antisocial, as it deprives everybody else of the experience of seeing the autumn woodland covered in fungi. It is *vandalism*.

Regardless of the scale, the profit motive is a problem. If you are foraging for yourself, with a bit of self-control, you can restrict how much you take. Most foragers have no problem with leaving at least half the fruit bodies in place. However, when you are paid by the kilogram and every mushroom earns you a bit more, the temptation to take everything saleable may be irresistible.

It should also come as no surprise that the nearer you get to large cities and other densely populated areas, the more prevalent are illegal and irresponsible foraging. For example, in the UK there is already a total ban on fungi foraging in Epping Forest (the only decent-sized bit of woodland within 40 kilometres of London), and it is likely that further bans will be deemed necessary in other places where the number of people so vastly outweighs the suitable land available to forage on.

Finland, Norway, Sweden, Estonia, Latvia, Lithuania: "everyman's right" Scandinavia and the Baltic states are a forager's dream. In Finland, Norway, Sweden and Iceland, there is a legal concept known as "everyman's right": it doesn't matter who owns the land – nature belongs to everyone, and every person has a right to enjoy it. It couldn't be much simpler: you can go anywhere apart from farms and gardens, and do anything you like that "doesn't harm nature". Foraging for mushrooms is not deemed to harm nature, although the situation regarding commercial collecting varies from country to country.

Austria, Denmark, Germany, Hungary, The Netherlands, Poland, Portugal, Romania, Serbia, Slovakia There is no right to roam, but fungi foraging is unregulated, apart from protected species and nature reserves.

France, Italy, Spain The laws in France governing mushroom picking are determined at a regional/local level, and are notoriously confusing. Spain and Italy also have regional/local laws, and it is beyond the scope of this book to go into that much detail.

Belgium In Flanders and Brussels, fungi foraging is strictly forbidden on public land. In Wallonia it is permitted, provided you don't stray more than 10m from the path and/or pick more than a 10-litre bucketful.

Luxembourg In Luxembourg you can collect up to 1kg per day of around 50 mushroom species, for personal use only. Only three specimens of any other species can be collected, and commercial collecting requires permission from the Environment Ministry.

Switzerland All Swiss forests are open to everybody, but there are closed seasons and weight limits for fungi foraging that are determined regionally.

Czech Republic Picking mushrooms for private consumption is legal on both private and public land in the Czech Republic. Commercial collection requires the landowner's permission and passing of a mushroom identification test.

Slovenia Slovenia has a complex legal framework, brought in partly to control foreign pickers. No picking of hard-to-identify species is permitted and the use of rakes or other equipment that might cause damage to mycelia is banned. There's also a 2kg limit per person per day, and a permit is required to transport wild fungi across national borders. The deliberate destruction of any mushroom is also prohibited.

Bulgaria In Bulgaria, on public land any person is permitted to collect fresh wild mushrooms for their own consumption free of charge and no special permit is required for this activity. Quantities above 5kg are assumed to be for trade and for this a special permit is required from the Forestry Commission.

Croatia There is a limit of 2kg per person per day (100g of truffles) in Croatia, the youngest and oldest specimens should not be picked, and you must always leave one out of three fruit bodies.

Regulations revisited

What *should* be the rules regarding wild fungi, especially given the changing cultural landscape?

- **One size doesn't fit all.** From a foraging point of view, it would be nice if the whole of Europe was as sparsely populated, and as rich in woodland, as Scandinavia. The reality is that some parts of the Continent are very densely populated, and "everyman's right" simply

wouldn't work everywhere. This also applies within many of the larger European countries – what is appropriate for the sparsely populated north-west of Scotland and what is appropriate in Epping Forest, right next to London, are very different things. So regulations decided on a regional or local level, as they are in France and Italy, are reasonable … provided they make sense (they aren't much use if people don't understand them, they aren't based on science/reason, or they are unenforceable).

- **Don't pick rare fungi for the pot.** This one is fairly obvious and self-explanatory, although it does depend on the availability of accurate information (in the form of national Red Lists).
- **There is no "correct method of picking".** Regulations governing how you should pick fungi are based on unscientific mythology.
- **Commercial collecting should be regulated.** There is a big difference between foraging for personal use and foraging in order to make money from selling mushrooms. Given the increasing popularity of wild food, this needs to be controlled in those places where it is not already (although the most remote areas of the far north might be an exception). Weight limits per person per day are a useful tool in controlling commercial collecting – they have minimal impact on personal collectors, but are a disincentive to commercial pickers, providing enforcement officers with a way to minimize commercial collecting without actually having to prove the fungi are destined for sale.
- **Habitat protection is key.** This doesn't just mean the obvious protection of woodland, establishing nature reserves and making efforts to reforest areas where woodland has been lost. Fungi (along with a whole host of other wildlife) benefit from fallen trees being left in place instead of cleared up. That's the general theme – we need to resist the urge to clear up after nature: that's what fungi are for.
- **We could establish the woodland equivalent of marine protected areas (MPAs).** Fungi have a similar reproductive strategy to a lot of marine creatures: they produce billions of spores/larvae, etc, in the hope that a tiny proportion will survive. The reason MPAs are a success is that they act as reservoirs, capable of increasing biodiversity in neighbouring, unprotected areas, especially if new habitat becomes available. It is not unreasonable to expect something similar would work for fungi.
- **Sale of wild fungi should be regulated.** In those countries where no regulations govern the sale of wild fungi, they need to be implemented and kept updated, reflecting advances in toxicology.

Finally, online identification of fungi has led to a new ethical/conservation problem. Sometimes people try to bypass the time and effort needed to learn how to forage safely and responsibly. They pick everything they can find, including large amounts of fungi, edible or not, which they haven't identified. Then they post a picture online, asking "Which ones can I eat?" "Which ones", I might reply, "are so rare that in nearly 30 years of doing this, I've never seen them in the flesh?" The correct response should be to explain why it is wrong, rather than encouraging this activity by identifying whatever has been found. This is not a hypothetical situation: I have seen people post pictures of fungi they have picked in the blind hope they were edible, which were not only poisonous, but very rare.

Suggested code of conduct for mushroom pickers

As well as considering the points above, it's socially responsible for foragers to follow a few common-sense rules:

- **Leave at least half the fruiting bodies in any one location.** Foraging is not supposed to be a competitive sport, where the winner is the person who collects the most.
- **Don't pick singletons** unless the species is very common.
- **Don't pick mature fruit bodies that are past their best for eating** – they're busy producing millions of spores.
- **Try to minimize trampling.**
- **Don't pick rare species.**
- **Don't "pick and hope".** You should avoid picking more than a couple of specimens of a fungus you can't identify. Whatever you do, don't go out and pick all the fungi you can find and then post a photograph on the internet and expect somebody to tell you which ones you can eat!
- **Avoid moving dead wood around** – it disturbs other wildlife.
- **Obey the law, including local laws and by-laws.**
- **Follow the country code.** Close gates, don't litter, don't disturb livestock, and so on.

Weeping Widow.

6. Poisonous fungi

"All mushrooms are edible, but some only once." (Croatian proverb)

Some people deliberately knock over poisonous fungi in a misguided attempt to rid the world of them. It should go without saying that fungi poisonous to humans have as much right to exist as any other living thing. We should not need to point out that they provide food for various sorts of wildlife, recycle waste, or are symbiotic partners of trees.

There is an enormous variety of fungi (there are far more species of fungi than there are plants) and the edibility of most of them is unknown. However, we can still make informed inferences. Very toxic fungi – the ones that kill people – naturally get people's attention. For much of our history, the threat of starvation was very real for the common people, and anything that looked like it might be edible was, sooner or later, eaten. Therefore it's likely that we already know about all the seriously poisonous fungi that are even remotely common somewhere in the world. (More precisely – we know about fungi that kill people quickly and consistently; those that do so slowly or inconsistently are another matter!)

Of approximately 15,000 species of non-microscopic fungi occurring in Europe, fewer than 20 are deadly in the short term. Of these 20, the majority of fungi-related deaths in Europe are caused by just *one* species. That number-one killer is a mushroom whose English common name says it all: the Deathcap. I'm often asked how toxic the most toxic fungi are – can they make you ill just by touching them? The answer is no, they can't, but nevertheless it is wise to treat them with the utmost respect. To get into serious trouble you do need to eat them, but you don't need to eat very much. One Deathcap is more than enough to cause liver and/or kidney failure in an adult human about a week after consuming them. There is currently no antidote, although a new treatment may be available soon (see Part II, page 414).

Two other amanitas are just as potent – the Destroying Angel and Spring Destroying Angel only kill fewer people because they are less easily mistaken for commonly collected species (although there's an exception to this in the south of the Iberian peninsula – the esteemed Heavy Amidella (*Amanita ponderosa*)).

Some other species – not closely related to the amanitas – contain the same type of toxins (amatoxins). The dapperlings are significantly smaller than the most similar edible lookalikes (parasols); and Funeral Bell, which grows on wood, is only likely to be confused with a species that very few people eat. Fool's Conecap is also known to contain amatoxins. Another group – the webcaps – contain a toxin known as orellanine, which is chemically related to the weed-killer paraquat. They are also potentially deadly, causing kidney failure within three weeks, sometimes much more quickly.

Deathcaps: the most dangerous poisonous mushroom.

Nearly all the other fungi that kill people relatively quickly do so within a few hours, although fatalities are far less frequent with these, and if you survive, there will be no permanent damage. Most of them contain a toxin called muscarine, which causes a sequence of highly unpleasant symptoms leading, in the worst cases, to death by heart or respiratory failure. Many fungi contain this toxin, but only a few contain a potentially lethal dose; the worst of these are Fool's Funnel and the Deadly Fibrecap.

Poisonous fungi, in approximate order of danger

If you eat even a small amount of the following, you will be very lucky to escape liver/ kidney failure, leading to death in about a week:

- Deathcap
- Destroying Angel
- Spring Destroying Angel
- Funeral Bell
- Fool's Webcap
- Deadly Webcap
- Splendid Webcap
- Deadly Dapperling (*Lepiota brunneoincarnata*)
- Fatal Dapperling (*Lepiota subincarnata*)
- Chestnut Dapperling (*Lepiota castanea*)
- Star Dapperling (*Lepiota helveola*)
- Dark Dapperling (*Lepiota fuscovinacea*)
- Fool's Conecap

The following can cause death by heart or respiratory failure within a few hours:

- Deadly Fibrecap
- Fool's Funnel or Ivory Funnel
- Frosty Funnel
- Panthercap
- Jewelled Deathcap

These fungi are also potentially deadly in some circumstances (see the species guide in Part II), although historically the first three have been considered edible:

- False Morel and related species
- Brown Rollrim and other *Paxillus* species
- Angel's Wings
- Sulphur Tuft

These whole genera should be avoided. In addition to containing some extremely dangerous species, lots of them – many of which are only slightly less toxic – are hard to identify to species, and very few, if any, are worth eating:

- Webcaps (*Cortinarius* species)
- Dapperlings (*Lepiota* species)
- Fibrecaps (*Inocybe* species)
- Pinkgills (*Entoloma* species)

For more details, see their respective sections in the species guide.

These species do not kill, but they are well known for making people sick:

- The Yellow Stainer
- Inky Mushroom
- The Sickener
- Beechwood Sickener
- Devil's Bolete
- Bilious Bolete
- Oldrose Bolete
- Green-spored Parasol or False Parasol
- Poisonpies (*Hebeloma* species)
- Fly Agaric

Not as dangerous as it looks: the Fly Agaric seems to advertise its toxicity, but it doesn't work like that. There's no connection between "what looks poisonous" and what actually is poisonous (and no consistency regarding what different people think poisonous looks like). Fly Agaric will give you a nasty stomach ache and hallucinations, but it won't kill you.

Poisonous fungi – rules of thumb

While very few fungi are likely to kill you, the number of poisonous species increases rapidly as their relative toxicity decreases. And since so many mushrooms appear, at least at first, to be very similar to each other, how are you supposed to know where to start identifying the ones you should leave alone?

It would be very convenient if we had rules of thumb to short-circuit the process of learning how to identify what you find. There are lots of common rules doing the rounds, but *as general rules* all of them are completely useless. Worse than useless, in fact, because they breed a false sense of security. Here are the ones I have encountered:

- "The red ones are all poisonous." False. Rosy Spikes and Scarlet Waxcaps are edible, to name just two.
- "Anything growing on wood is safe to eat." False. Funeral Bell is deadly.
- "If the cap peels, then it is safe to eat." False. You can peel the cap of a Deathcap.
- "If wildlife has eaten some of it, then it is safe to eat." False. Deer and rabbits can eat Deathcaps with impunity.
- "Poisonous mushrooms taste bad." False. Deathcaps allegedly taste rather nice.
- "The more attractive a mushroom is, the more dangerous it is." False. Deathcaps are drab; many beautiful waxcaps are edible.
- "Poisonous mushrooms have pointed caps; edible ones have flat, rounded caps." False. Most poisonous mushrooms have flat caps.
- "Poisonous mushrooms tarnish a silver spoon" or "Poisonous mushrooms will turn black if touched with a silver spoon." False (and ridiculous). A variation replaces the silver spoon with an onion.
- "Fungi growing out in the open are edible; fungi growing in the woods are poisonous." False. Fool's Funnel grows in the open; countless prized edible species are found in woodland.
- "Any mushroom can be made safe by sufficient cooking." False. Most of the mushrooms listed in this book as being deadly remain so regardless of how long you cook them for.
- "Poisonous mushrooms change colour when cut open." False. Deathcaps don't change colour, but edible Lurid Boletes and Shaggy Parasols do. Another version is "Poisonous mushrooms change colour in your hand."

The only rule of thumb you can rely on is that *all general rules of thumb about the edibility of wild fungi are dangerous nonsense.*

There is just one way to avoid poisonous species: you need to learn how to identify fungi. The usual advice (along with "if in doubt, throw it out") is that you shouldn't eat anything unless you know *exactly* what it is. It is advice worth heeding, although there is some room for experimentation if you are 100 per cent certain a fungus you can't identify to species belongs to a particular genus or other grouping. While there are no useful rules that apply to all fungi, there are some that can be applied *within a genus* – the most important of these being *Agaricus* and *Russula*.

How mushroom poisonings happen and how to avoid them

There are some common reasons why mushroom poisonings occur, and being aware of them can help to minimize the risk.

Misplaced trust and other people's mistakes In a recent high-profile poisoning, British ethnobotanist Gordon Hillman ate some poisonous brittlestems supplied by another department at his university, saying they were something else. Apparently the fungi had originally been correctly identified, and the mistake was the result of a mix-up by technical staff.

If you aren't able to identify a wild fungus yourself, think twice about the reliability of the person or system you are trusting with your life, because as the above example shows, sometimes you can be let down by a system that is normally dependable.

Accidents involving young children The poisoning of a child is the most feared, but rarely happens (thankfully). It is, of course, entirely possible that a small child might find and eat a poisonous mushroom growing on a lawn, but it's unlikely. Most fungi are not seriously toxic, and most of the really dangerous ones are woodland species that don't normally turn up in people's gardens. The worst two you are likely to encounter in your garden are Fool's Conecap and Fool's Funnel.

There is a greater risk of children eating poisonous plants, especially juicy, colourful berries like those of the nightshades, which look so delicious. Ironically, the antidote to the toxin in Fool's Funnel (muscarine) is none other than the toxin in the nightshades (atropine).

Fool's Funnel growing in a ring.

Jumping to conclusions / wishful thinking The number-one reason people end up eating Fool's Funnel is because they didn't look very hard at the mushroom itself, but jumped to an incorrect conclusion based on the way it was growing. The Fairy Ring Champignon is one of hundreds of species that grows in rings; it's quite small, brownish, and inhabits grassland. Unfortunately, the same description applies to Fool's Funnel. These two mushrooms are not close lookalikes – if you compare pictures of them, or have read about how to tell them apart in a book like this one, then it is unlikely you'll mistake one for the other. But on finding a ring of Fool's Funnel, some people, aware that there's a good edible grassland species that grows in rings, jump straight to the conclusion that they've found Fairy Ring Champignons. They don't even bother to check whether the mushroom they've found looks like the mushroom they were hoping to find, or whether there's anything poisonous they might mistake for it.

Another recent well-known poisoning was the result of both misplaced trust and wishful thinking. Nicholas Evans, author of *The Horse Whisperer*, was on holiday in Scotland when a local lady told him there were "Chanterelles and Ceps up there in the woods". Evans had very limited experience of picking wild fungi. In the woods he found Chanterelles and a few other brown mushrooms that looked very different from the Penny Buns (Ceps) he'd seen before, but he assumed they were some sort of Scottish variety. The next day, as he began to feel very ill, the lady told him that she called all brown mushrooms "Ceps", and at that point Evans did a bit of research and quickly concluded he'd eaten a deadly species of webcap. He is lucky to still be alive, although he required dialysis for several years, before eventually receiving a kidney transplant.

When looking for something in particular, there is a natural human tendency to believe you've found it – even if you have merely found something that just vaguely resembles it. This sort of optimism is potentially lethal. You must always check that what you've found matches the description of what you are looking for in every respect: if anything is wrong, even slightly, then *don't eat it*.

Taking your eye off the ball at a critical moment Sometimes people correctly identify a fungus and they or their companions start picking but don't realize that there is more than one species growing together. This was the cause of another well-known poisoning involving a deadly Scottish webcap, this time eaten in the belief it was one of the Chanterelles growing nearby.

Do not assume that everything growing in the same patch of ground, or on the same stump, is the same species. Somebody who knows what they are doing needs to check every mushroom before it is consumed.

A variation on this lookalike-species problem is where the edible mushroom is much more common than the poisonous one. The Blusher, for example, is edible, very common and also very variable; the rather similar but much rarer Panthercap is poisonous enough to leave you in hospital. To avoid this sort of mistake, pay close attention every time you pick The Blusher.

The tourist trap This book only advises of European lookalikes and indeed most people only forage in their home region. This can lead to problems if you go foraging elsewhere, with a different selection of poisonous species to the ones you are familiar with.

There are two well-known examples. The mushroom that causes the most poisonings in North America is the Green-spored Parasol, which is very similar to the edible European Parasols. Europeans, unaware of the existence of a poisonous lookalike, are particularly prone to making this mistake (the Green-spored Parasol *does* occur in Europe, but usually in greenhouses/polytunnels).

Fortunately, nobody dies from Green-spored Parasol poisoning, but the same cannot be said of the other example. Deathcaps do not occur in large parts of Asia, but a lookalike – the Paddy Straw Mushroom (*Volvariella volvacea*) – is both foraged for and cultivated. This lacks the Deathcap's ring and is a saprophyte (feeding on dead organic matter) rather than growing with deciduous trees. But if you don't know about the Deathcap, then it is still a fatal accident waiting to happen. This is a problem not only for Asians in Europe, but increasingly in North America and Australia, where the Deathcap has been introduced.

The above are just two common cases. There are many more, especially if you are thinking of foraging for fungi in places with a significantly different climate to home.

Stubble Rosegill: edible, but too similar to a Deathcap for most European foragers. There aren't any Deathcaps in South-east Asia, where the Stubble Rosegill's doppelgänger – the Paddy Straw Mushroom – is widely eaten.

What to do in case of poisoning

If you suspect you have eaten a poisonous fungus, you should immediately go to the nearest hospital. When you get there, the crucial bit of information the medical staff need to know is what sort of poisonous fungus you have eaten. For this reason, some people suggest you should keep an uneaten specimen, so you can show it to the medical staff (well, the saying goes that you should actually keep two – the other one being for the coroner). If they don't know what you've eaten, they'll have to run a set of toxicology tests, and the delay while waiting for results could prove damaging. Early diagnosis is crucial when dealing with serious cases of mushroom poisoning.

7. Edible fungi

There is a myth circulating among some bushcrafters and survivalists that in a survival situation, wild mushrooms aren't worth bothering with because there's too great a chance of poisoning yourself and not enough nutrition to justify that risk. In reality, if you know your fungi, there is very little risk, and even if they had no nutritional value, then just making other food taste nicer would make them worthwhile. But the myth isn't true anyway. While most mushrooms do not have much in the way of *calories* (which admittedly tend to be important in survival situations), they *are* a valuable part of a balanced diet, typically containing plenty of protein, vitamins (especially D and some of the B complex) and trace elements. Of course, different species have different concentrations of these nutrients.

Penny Bun (aka “Cep” or “Porcino”).

What does “edible” mean?

The risks associated with eating wild fungi do not stop at the point of a correct identification. Some of the most popular edible species are known to cause allergic or gastric reactions for a significant minority of people (eg Wood Blewits and Shaggy Parasols).

Unless you restrict your wild fungi consumption to a very limited selection of species that have been traditionally consumed for a long time and are known to be in the “least risk” category, then you could still have a problem. In fact, even if you eat only Penny Buns and Chanterelles, you can’t be certain of this, because somebody out there is allergic to any food you can think of. You will usually only find out whether you belong to this minority by eating the fungi (although there are allergy tests for some of the very common species), which is why it is wise to try only a little of any new species before you eat a whole plateful. It is also inadvisable to eat more than one new species in one sitting; otherwise, if you do have some sort of reaction, you won’t know which of them was responsible.

A large number of species fall into the category of “edibility disputed”. Different sources sometimes provide contradictory information, and frequently the original source of the information is unknown. Some species that have been traditionally considered poisonous in one region are considered edible in another. Other species are believed to be poisonous, even though there’s no information on the toxins involved or their effects.

In some cases the conflicting information about edibility has more to do with identification problems than the presence, or not, of toxins. This happens when a poisonous species is easily mistaken for something edible, and the edible species gets blamed when people consume the poisonous one. It also happens when somebody has been advised to avoid the edible species because of the danger of misidentification, but they wrongly remember the edible species to be poisonous.

There’s also a growing number of species that have been struck off the edible list, having been found to be responsible for poisonings, or after toxicology tests proved they contain carcinogens or are unwise to consume for some other reason. Others will be declared unsafe in the future.

Perhaps the most sobering example is a pretty white species, common in Scotland and listed as edible on some current websites, as well as in books that are still in print. Angel’s Wings make good eating, but where a person with weak kidney function consumes an abundance of them, it can cause massive brain damage, and has caused at least 17 deaths in recent years (see Part II, page 340 for a detailed description of the mushroom’s biochemical effect on humans).

The term “presumably edible” is occasionally used in the species guide. This is where a rare species of unknown edibility can be very easily mistaken for a related popular edible species. Because of the similarity, the rare species must have been regularly consumed accidentally, so that if it was poisonous, we would *almost certainly* know about it. However, we cannot be 100 per cent sure.

Edibility disputed: regarded by some as poisonous, even though it is edible, the Grey Spotted Amanita is very variable and easily confused with the dangerously poisonous Panthercap.

The information in this book about edibility and toxicity is therefore provisional. It is the best that can be provided at the time of writing, but readers must be clear that consuming wild fungi is not a risk-free activity. Then again, there aren't many zero-risk activities and the vast majority of problems associated with eating wild fungi are the result of mistaking a known-to-be-toxic species for something believed to be safe to eat.

Fungi in poor condition You should only eat wild fungi that are in good condition, because certain cases of poisoning are the result of people eating wild mushrooms that have started to decay. Common sense should guide you here: if they are in the sort of state that you wouldn't buy them from a supermarket, then don't eat them picked from the wild either. And, of course, don't pick wild mushrooms anywhere near where dogs (or other animals) have been doing their business, or from locations that are likely to be otherwise polluted (eg right next to a very busy road).

Some people advise that you shouldn't eat any fungi that contain "maggots" or "worms", usually on the grounds they must be too old to eat. This is wrong: the "maggots" are grubs of various species of beetle and fly that specialize in eating fungi, and they can set up home so quickly that there are already sizeable holes in the stem while the mushroom is still in the button stage. Obviously if they've been so busy that when you cut the mushroom open there is more hole than flesh, then you should discard it, but there are no recorded instances of people being poisoned by insect grubs in fungi. You don't have to cut open the cap of a mushroom in order to check it for grubs. The grubs always seem to enter the cap via the stem, so if there are no holes in the stem, then there are usually no holes in the cap either.

Be careful when storing wild mushrooms in a fridge. Even if they appeared completely grub-free when you picked them, they may not be. Leave them unattended for too long and you might just end up with "maggots" crawling all over your fridge – or further afield. The same applies if you put wild mushroom waste in your kitchen compost container: if the grubs run out of mushroom bits to eat and can escape from the container, they are likely to go off in search of more food, and the result isn't pretty.

Good advice with most wild fungi is to use them as soon as possible. A few species store well in a fridge for a week or longer (these tend to be the ones that the insects don't like), but most are best eaten or preserved within two days of being picked.

Methods of preserving fungi

Fungi are very seasonal, and you will often come across a glut of something that can't all be used in the short time they remain edible fresh. There are many ways to preserve them, some traditional, some very modern. The different methods work better with some species than others, and where appropriate these are specified in the species guide.

Drying Firstly, avoid getting the fungi wet wherever possible to reduce the drying time needed. Brush them instead of washing them. Your goal is to get them *completely* dehydrated as quickly as possible, because slightly damp mushrooms will go mouldy. They should be "cracker dry" – brittle enough to break like crackers. Those with thin flesh (such as Horn of Plenty or Winter Chanterelles) can be dried whole; more substantial fungi must be sliced. The flavour of many species, particularly the boletes, actually improves during the drying process. Morels, Jew's Ears, Oyster Mushrooms and Fairy Ring Mushrooms are all also good candidates for drying.

There are several ways to dry fungi:

- **Sun-dried** If you are lucky enough to have the location and the weather (hot and calm, but not humid) to sun-dry fungi, there are obvious advantages – it's free and natural. The method couldn't be simpler – just chop up the mushrooms and leave them out in the sun. You'll need to choose somewhere clean, where they won't be disturbed. Then allow them to dry on a cloth or a tray (making sure they aren't stacked on top of each other), which will take 2-3 days in ideal conditions.

Dried Chanterelles, Winter Chanterelles, Penny Buns and Horn of Plenty.

- **Airing cupboard** Put the fungi in an airing cupboard, on a baking tray, or hanging threaded on a piece of cotton, or in metal cages/baskets.
- **Against a radiator** If you can improvise or buy a metal cage/basket that hangs off the top of radiators, this works quite well.
- **Food dehydrator** Follow the manufacturer's instructions.
- **Oven** Put the fungi on dry, unoiled trays and heat at about 140°C, leaving the door ajar so moisture can escape. Turn them over every 30 minutes or so until they are crispy.
- **Wood-burner** A rather effective method is to put a cake-drying rack inside a roasting tin, place the mushrooms on the drying rack and then put the tin on top of a wood-burning stove or range cooker.

Freezing fresh There are a few fungi that will stand being frozen fresh. Blewits can be frozen fresh for a few weeks and Penny Buns will last for up to a year when preserved this way. Morels are another species that can be frozen fresh. The best way to do this is at the lowest temperature your freezer can manage, on trays that keep the individual mushrooms apart – so-called "dry freezing". When frozen, put them in labelled bags and keep them in the freezer.

Freezing cooked This is probably the easiest method of preserving wild mushrooms. A lot of water is removed when you fry fungi, greatly reducing the storage space needed. You can either freeze them on their own, or make up a duxelles mixture (see page 83) and freeze that. Another option is to steam them for 3-5 minutes (depending on how big the mushrooms or chunks are), then freeze them in labelled bags.

Pickling You can pickle any mushroom, but firmer varieties such as Chanterelles, Hedgehogs and Honey Fungus work particularly well. They're popular throughout eastern Europe as appetizers, and in Italy as antipasti. I recommend this pickling method:

Pickled Chanterelles.

1 The secret to good pickled mushrooms is to dry-fry them first. Clean the mushrooms, cut them into large pieces and put them in a hot frying pan without any oil. Shake them around until they start to release their water – it improves the flavour, and prepares the mushrooms to soak up the vinegar.

2 Add hot water, white wine vinegar, salt and sugar, and bring them to the boil.

3 Simmer for a few minutes – you can add bay leaves, thyme or peppercorns.

4 Pack them tightly into hot, sterile jars, ensuring the liquid covers the mushrooms. Seal the jars.

For maximum safety, or to make the pickled mushrooms last longer, they can then be processed in a hot-water bath. This is the same as the procedure for canning food – immerse the whole jar in boiling water for long enough to kill any microbes that may still be present.

Salting Salting is very popular in Slavic countries, especially for brittlegills and milkcaps, but also Hedgehog Fungus, Winter Chanterelles, Oyster Mushrooms, blewits and boletes. A typical traditional method is described below, but there are many variations, dependent on taste, the variety of mushroom, and how long you want them to keep for.

1 Clean the mushrooms, boil them for 10 minutes and then discard the water. (If the mushrooms are hot/acrid brittlegills or milkcaps, then boil twice for 5 minutes, discarding the water each time.)

2 Rinse under cold running water, then drain the mushrooms and squeeze the water out of them.

3 Layer the mushrooms in a jar, adding layers of salt in between (you can add juniper berries, or even blackcurrant leaves, for extra flavour). Use 100-200g of salt for every kilogram of mushroom.

4 Place a weight on top (eg a sealed food bag with small, clean pebbles in). More water is squeezed out of the mushrooms, and the resulting brine pickles them.

5 Store in the fridge, adding more brine if it doesn't cover the mushrooms, which will be ready to eat in a month or so. Rinse in fresh water to reduce the salt content before eating.

Mushrooms preserved in this way have a rich, meaty texture, and the procedure turns inedibly acrid, even poisonous, milkcaps into an unusual delicacy. The Russians serve these salted milkcaps with vodka, as an appetizer.

Preserving in oil Preserving mushrooms in olive oil is particularly popular in Italy, but a bit risky due to the possibility of botulinum poisoning. For this reason it is not advisable to leave fungi preserved in oil for more than a couple of weeks before eating them, at least unless you've done your research and preparation very carefully. There are plenty of recipes and techniques, most of which involve the following:

1 Clean and chop the mushrooms, then boil them in brine or white wine vinegar with garlic, bay leaves, peppercorns, etc.

2 Allow to cool, then put the mushrooms in sterile jars and cover with good-quality olive oil – maybe with a couple of red chillies thrown in. They should be ready for eating within a day or two, but will taste better if left a little longer.

Preserving in butter Wild mushrooms can be preserved in butter for up to a month using this method:

1 Peel and chop a few shallots, and clean and chop the mushrooms. Fry the shallots in butter.

2 Add the mushrooms to the shallots along with herbs and seasoning. Fry for 2 more minutes.

3 Allow the mushrooms and shallots to cool, then fold them into more butter that has been softened at room temperature. Gently mix together and store in the fridge.

Preparing and cooking fungi

Suggestions on what to do with fungi once they've arrived, properly identified, in your kitchen are distributed throughout this book:

- This section contains general information about preparation and cooking that applies across the whole spectrum of edible fungi.
- Information that applies to whole groups of fungi appears in the introductory section for the group in the species guide in Part II.
- Information for individual species is included in the notes for that species in the guide.

Preparation You should avoid washing mushrooms if at all possible: most of them soak up water like sponges, and they are harder to cook when waterlogged. Trim with a knife and brush them with a mushroom brush.

Rehydrating dried fungi is very simple – put them in boiling water (enough to rehydrate them, but not much more) and leave for 20 minutes. Any excess water left after they are fully rehydrated can be used as flavouring, but be aware that there's sometimes grit left at the bottom of the bowl. Mushrooms can also be used dried in many recipes, or ground up into a powder and used as a flavouring.

Frozen mushrooms tend to be best cooked from frozen, rather than defrosted first.

Cooking Even when not washed, mushrooms tend to release a lot of water when cooked. The lazy way to deal with this is to discard the water and add more oil/butter; the "proper" way is to take the mushrooms out of the pan for a while, to avoid overcooking, and then boil the liquid until it is reduced to a concentrated sauce.

If you're trying a mushroom for the first time, it is best not to use it in a fancy recipe where the flavour of the mushroom merges with other flavours. It's better to familiarize yourself with the mushroom itself first, by cooking it on its own with nothing more than oil/butter, salt and pepper. You can be more ambitious later, when you know what you're experimenting with.

The firmer the flesh of the mushroom – the thicker and more robust it is – the more suited it is to roasting or grilling, whereas the thinner-fleshed, delicate types are better sautéd. You can use oil (preferably mild olive oil) or butter, but the best option is often a bit of both – the butter is tastier, the oil more resistant to burning.

Duxelles Duxelles is mushroom paste used in sauces, canapés, pies and Beef Wellington. It is made of finely chopped mushrooms, onions/shallots and seasoning, cooked in butter for about 20-25 minutes, until the mixture is almost dry. There are many variations, involving ingredients such as garlic, herbs (eg tarragon, thyme, parsley), lemon juice, soy sauce, sherry or white wine and even dried fruit. Duxelles can also be puréed to make a thick, rich mushroom sauce.

Horn of Plenty, *Craterellus cornucopioides*.

Part II: The fungi

How to use this guide

Taxonomy – the formal classification of fungi

Fungi do not fossilize well. Apart from a few mushrooms that ended up encased in amber, the fossil record for fungi is pretty much non-existent. Historically this put fungal taxonomists at a disadvantage compared with plant and animal taxonomists, because they had no way of judging what might be related to what, apart from the macroscopic and microscopic characteristics of the fruit bodies of modern-day fungi. In the last couple of decades, that has all changed with the arrival of "molecular phylogenetics" – cheap, readily available genetic testing in order to determine the evolutionary relationships between organisms. This has caused a taxonomic upheaval across the whole of biology, but especially in mycology. On the plus side, it is likely that the current period of changeability is a temporary phenomenon that will result in a much more accurate and stable taxonomic hierarchy in the future. This can't come too soon for anyone who is trying to learn about fungi, because the Latin names are supposed to be what we can rely on. Common names are fundamentally unreliable; any one species can have several of them, and a single common name can refer to multiple species – sometimes even multiple species found in the same place.

The species in this guide are divided into two **phyla**. A "phylum" is the first taxonomic level beneath "kingdom" (humans are in the animal kingdom and the phylum "Chordata", which contains all the vertebrates plus a few other creatures with a primitive spinal chord). Most of the larger fungi belong to the phylum Basidiomycota and everything else in this book belongs to Ascomycota. This division of fungi is based on fundamental differences in the microscopic structures that produce the spores. The Basidiomycota have "basidia" – club-like structures which grow from the surface of the gills or other spore-bearing surface, usually in fours, and eject the spores, one from each basidium. The Ascomycota have "asci" – sac-like structures which burst at the tip to release the spores, usually eight at a time.

Within these two phyla, species are arranged according to taxonomic **order**. An "order" is two major levels beneath a phylum (humans belong to the order "primates" – the apes, monkeys, lemurs, etc). Within the orders they are arranged by **family** (our family is the hominids – the great apes), and within families they are arranged according to **genus** (plural: genera). The genus is the first part of the Latin name (humans are the only living members of the genus "Homo") and the species is the second part of the Latin name, known as the "specific epithet" ("sapiens" in humans, which means "wise" and is probably the least appropriate specific epithet ever assigned). I have tried to place species that resemble each other as close together as possible, even if they belong to different families or orders.

Other taxonomic terms/symbols

- "Type species" and "type genus" refer to the species (or genus) that gets to keep the name of the genus (or family) in the event of a break-up.
- "Species complex" refers to a group of closely related species that have only recently (in evolutionary timescales) become independent from one another; and, in many cases, taxonomists are still trying to figure them out.
- The "/" symbol indicates two species that are sufficiently similar from a foraging point of view that there is no point in a forager trying to distinguish them.

The Greasy Green Brittlegill *Russula heterophylla* (above) is very similar to Green Brittlegill *R. aeruginea* (page 119).

Foreign common names

For some species I have provided foreign common names as well as English common names for the following reasons:

- **European:** (a) The European name is commonly used in English (eg Cep, Porcino) or their use in English can cause confusion (eg Chanterelle). (b) The species is a popular edible in a specific European country, but not very well known or eaten elsewhere (eg Pioppino, which actually falls into another category too, because it is the common name used in the USA).
- **US:** With the exception of "Hideous Gomphidius", because they are creeping into British/international English.
- **Japanese/Chinese:** These species are cultivated for food or medicine in Japan/ China, and are sometimes referred to in English by their Japanese/Chinese names when talking about their food or medicinal uses. For example, an English mycologist would probably call *Ganoderma lucidum* "Lacquered Bracket", but if you want to search the internet for information about its medicinal properties, you need to search for "Reishi" or "Lingzhi".

Edibility and/or other uses

Edibility is indicated under each species name, with further information given in the notes. I have provided information about raw edibility where it is available. In many cases where fungi are poisonous raw, this is well known and is specified in the guide. A few species are known as being good to eat raw, and these are also specified (wild fungi should only be eaten raw if they are in perfect condition and come from a pristine environment). This leaves a large number of species that are usually cooked, and I could find no specific information about their raw edibility, nor have I tried eating them raw myself. To be safe, if I do not mention raw edibility, you should assume they must be cooked, even though it is probable that most of them are indeed edible raw.

"Poisonous->edible" means the mushroom is poisonous if eaten raw or cooked normally, but can be made edible by boiling and discarding the water (twice, to be safe) and/or pickling or salting. See Chapter 7, page 81.

The Fly Agaric *Amanita muscaria* is classified as poisonous.

Medicinal uses

A few fungi have been included in the guide because they have medicinal relevance. In most cases they are important in terms of both traditional medicine (mainly Asian) and modern Western medicine. (Some medicinal species are surrounded by a wealth of scientific controversy and literature, and it is beyond the scope of this book to provide references for these.) No information is provided on the practical use of these medicinal fungi, and you should consult a medical expert before using wild-gathered fungi for medical purposes.

Other uses

Fungi have been and, in some cases, still are used for myriad other purposes. Two species are included because they are well known for making dyes or tinder, and I also mention if edible fungi have other uses. One modern use is as a "soil inoculant". Fungal soil inoculation involves the inclusion of mycorrhizal fungi spores when backfilling soil during landscaping, with the goal of benefiting freshly planted trees and shrubs. Theoretically, the spores will produce symbiotic mycelia, which will then promote growth, or at least reduce the shock of transplantation. However, there is disagreement about the effectiveness of these treatments.[6]

Key identifying features

In the species descriptions and "similar species" sections, **highlighted text** indicates a key identifying feature.

Chicken of the Woods *Laetiporus sulphureus* is relatively easy to identify.

Difficulty rankings

Edible fungi are ranked according to their difficulty or danger level. Inedible and poisonous species, as well as those included purely for their medicinal properties, are not ranked. The five levels are as follows:

- Beginner: A total novice can forage for these fungi with very little chance of getting the identification wrong, and/or no chance of confusing them with anything seriously toxic. They are either very distinctive in some way, or they don't even remotely resemble any of the dangerously poisonous species. (But don't confuse "beginner" with "foolproof", as there is no such thing in fungi foraging.)
- Basic: A novice can put these fungi on their hit list, but with a healthy dose of caution, because either there are known historical cases of them being confused with something poisonous, or it's feasible that this might happen in the future. They are relatively easy to identify, but if there is a poisonous lookalike, then it isn't one of the really dangerous ones.
- Intermediate: Beginners should forage for these fungi only with great care; they are best left until you're familiar with some of the easier species and/or you've already found the poisonous lookalike(s) and are confident that you know how to tell them apart.
- Advanced: These fungi are only suitable for experienced foragers who have done their research and familiarized themselves with – and preferably found – the poisonous lookalikes.
- Expert: These fungi are easily confused with deadly species, but definitely worth eating if you can do so safely.

Warning icons

 indicates that the species is potentially lethal.

 is a less serious warning, details of which are provided. For example, it can indicate the species is poisonous but non-lethal, requires cooking or special preparation to render it safe to eat, or is known to cause allergic reactions in a significant minority of people.

Distribution

The distribution data applies only to the three temperate biomes of Europe – so "temperate area" refers to all three biomes, and "widespread and common" means widespread and common throughout Europe.

I also refer to regions of Europe, including "the British Isles". Although this term is falling out of favour in Ireland, it is a precise geographical term that refers to a group of more than 6,000 islands lying off the coast of north-west Europe – including Britain and Ireland. Because a similar selection of fungi can be found on all of them, the term is a useful shorthand; I refer to Ireland explicitly only when appropriate.

The term "far north" refers to northern Scandinavia, although most fungi species occur considerably further north very close to the coastlines than they do inland. "Extreme north" means the far north of Scandinavia. "Southern Europe" refers to the southern half of Europe, rather than just the Mediterranean biome.

Information about British fungi distribution is provided in greater detail than for other parts of Europe, as offering a similar level of detail for the whole of Europe would have resulted in a considerably larger book. Regarding global distribution data, the availability of reliable biodiversity information varies enormously across the world. There's a relative abundance of up-to-date information for Europe and North America, but very little reliable information about fungal biodiversity for some parts of Africa and South America. Also, with the advent of genetic testing causing such widespread changes to fungal taxonomy, there are many questions about whether collections of some species from different parts of the world really are the same species, or whether molecular phylogenetics might demonstrate them to be different. The global distribution data should therefore be taken as a rough guide only.

Visual index

Phylum: Basidiomycota
Order: Russulales
Russulaceae (Brittlegill family)
Genus: Brittlegills

Order: Thelophorales
Bankeraceae

Order: Cantharellales
Hydnaceae (Hedgehog family)

Order: Boletales

Hygrophoropsidaceae (False Chanterelle family)

Order: Agaricales
Agaricaceae (Mushroom family)
Genus: Puffballs

Physalacriaceae (Bladder Fungus family)
Genus: Honey Fungus

Entolomataceae (Pinkgill family)
Genus: *Entoloma*

Hygrophoraceae (Woodwax family)
Genus: Woodwaxes

Order: Phallales
Phallaceae (Stinkhorn family)

Order: Hymenochaetales
Hymenochaetaceae

Order: Polyporales
Fomitopsidaceae (Red-belted Bracket family)

Order: Auriculales
Auriculariaceae (Ear family)

Phylum: Ascomycota
Order: Hypocreales
Hypocreaceae

Order: Xylariales
Xylariaceae
(Candle-snuff Fungus family)

Order: Pezizales
Pezizaceae (Cup family)

Phylum: Basidiomycota

Russulales

Russulaceae (Brittlegill family)

The Russulaceae are a large and diverse family of fungi, mainly comprised of two groups of mushrooms – brittlegills and milkcaps – that, although they have true gills rather than mere wrinkles, are only very distantly related to the rest of the gilled mushrooms in this book. This is an example of convergent evolution, where natural selection produces the same basic design on more than one occasion, entirely independently of each other.

A major difficulty posed by both these groups is that there are loads of them, and while they are relatively straightforward to identify as brittlegills and milkcaps, it is often difficult or impossible to identify the exact species without microscopy and/or chemical tests. However, apart from the easily recognized Ugly Milkcap, no European members of the Russulaceae are dangerously poisonous. Those that are edible without special preparation taste mild and/or pleasant, and those that aren't (and some aren't edible at all) taste hot and/or acrid, apart from Fenugreek Milkcap (see page 143). They all have granular flesh (it breaks apart like a sugarcube) and nearly all have fragile gills – The Charcoal Burner being an important exception. None have rings or volvas and the spores are white or cream.

Many of the mushrooms in this family don't easily fit into our normal categories of edible and poisonous. Some are good edible species by any standards, but others are both unpleasant-tasting and poisonous, unless specially prepared by parboiling twice, discarding the water and salting down. Even then, some are still only suitable for use as spices. The mushrooms in this category have traditionally been consumed in eastern European countries, and especially Russia.

The selection featured in this book is not even close to a complete survey of the European Russulaceae. These are just the best known and most important for a forager.

Brittlegills

The genus *Russula* has recently been given the self-explanatory common name "brittlegill". All of them are mycorrhizal. They come in just about every colour under the sun, and in many cases they have multiple colour forms, or multicoloured caps. Apart from colour and size, they tend to look rather alike, and you won't have to find that many of them before you're confidently identifying them as brittlegills. Identification to species level is much harder; some people dismiss them as "JARs" – Just Another *Russula*. However, some are very good to eat, so it's worth making an effort. To maximize your chance of identifying the species you'll need to take a careful note of the habitat (especially which trees are they near), the smell and taste, and how far you can peel the cuticle of the cap from the edge until it breaks off (see Chapter 2, page 30) – although this is an inexact science. The precise spore colour (white or what variety of off-white?) can also help narrow it down.

This may sound tricky – and it is – but don't despair: you can break the general rule of not eating anything unless you know exactly what it is, and apply a rule of thumb here. Some of the red/pink/white ones can give you a nasty stomach ache and it is best to avoid putting those in your mouth, but the rule for the others is *if it tastes like it is edible, then it is edible*. Or, to be more precise, since some of the edible species are slightly poisonous raw, *if it tastes like it is edible when raw, then it is edible when cooked*. The species requiring special preparation to render them safe to eat are acrid and/or hot but **be warned**: you need to leave them in your mouth for at least 40 seconds before deciding whether they qualify as hot/acrid or not. If they do, then spit them out. **Caution: There are some brittlegills in North America and Asia known to be dangerously poisonous.**

All the brittlegills, including those that taste bad to humans, are popular with slugs and other wildlife. You will rarely find them in perfect condition.

Cooking advice (for all edible brittlegills): Fry them in butter on their own, or in olive oil with onions and garlic. The mildest-tasting ones can also be eaten raw and are good in salads. They dry well, and make a dried mixture more colourful. Cooked brittlegills can also be frozen as well as stored in oil or salted down.

The Birch Brittlegill is a very close relative or subspecies of The Sickener.

A flush of Purple Brittlegills (*Russula atropurpurea*), covered with a dusting of white spores.

The Sickener

Russula emetica

The Sickener, *Russula emetica*.

Poisonous->edible.

Cap 3-10cm, hemispherical, becoming flat with a central depression, bright red but the colour can fade, especially after rain, slightly sticky/greasy when wet, smooth, shiny, margin grooved when older, easily peeling one-third to whole cap, revealing red-tinged flesh. **Stem** 4-9cm, cylindrical, usually slightly swollen towards base, white turning slightly yellow. **Flesh** white, brittle. **Gills** white/cream, adnexed/free, sometimes forked near the edge. **Spore print** very pale cream. **Smell** sweet/fruity. **Taste** very hot and acrid. **Habitat** damp acidic woodland/heath, usually with conifers, especially pine and spruce, but sometimes with other trees/shrubs or in sphagnum moss. **Season** late summer to late autumn. **Distribution** widespread and common in Europe. Also present in the temperate and subtropical zones of north Africa, Asia and North America.

Similar species: Easily confused with other small red/pink brittlegills. Its closest relative is the similarly poisonous Birch Brittlegill (*R. betularum*) (see photo on previous page), which is one of the smallest members of the genus, pale pink and always found with birch. The Alpine Brittlegill (*R. nana*) is another closely related, small, red, poisonous brittlegill, confined to Scotland in the British Isles and northern/mountainous areas of Continental Europe. The Scarlet Brittlegill (*R. pseudointegra*), which is technically edible but neither tasty nor common, and the inedibly bitter, pink-stemmed Bloody Brittlegill (*R. sanguinaria*) are both also found with pine. All of these red/pink brittlegills are superficially similar to the unrelated (and edible) Rosy Spike (see page 181), although that is a mild-tasting species with deeply decurrent false gills, and it bruises grey-black.

Notes: The Sickener is a well-known species – the type species of *Russula*, and one of the very few fungi in this book with a historic English common name. The symptoms of poisoning are mainly gastrointestinal, starting up to three hours after ingestion and usually ending soon after the fungi are expelled. The toxins have not been identified, but are probably some sort of sesquiterpene – a large group of organic compounds including turpentine, which typically have the biological purpose of deterring predation in plants, and are pheromones in animals. This species is widely consumed in Russia and elsewhere after parboiling twice to remove the toxins, then salting. Not recommended.

Beechwood Sickener

Russula nobilis (syn. *R. mairei*)

Poisonous.

Beechwood Sickener, *Russula nobilis* (syn. *R. mairei*).

Cap 3-9cm, convex becoming flat with a slightly depressed centre, red/pink to entirely white, slightly sticky, smooth, shiny, margin smooth to very slightly grooved, one-third to half peeling to show firm, pink flesh. **Stem** 2.5-5cm, usually stout but rather variable, sometimes slightly club-shaped, frequently bent, white. **Flesh** white, brittle. **Gills** white with a faint green tinge, then cream, initially crowded, adnexed/free. **Spore print** white. **Smell** of coconut when young. **Taste** very hot and acrid. **Habitat** *always* **with beech**. **Season** late summer to autumn. **Distribution** common in those parts of Europe where beech is native, rare or absent elsewhere (including much of Scandinavia and most of the Iberian peninsula). Also present in Asia, eastern United States and south-eastern Canada.

Similar species: Easily confused with other red/pink/white brittlegills, especially the Dawn Brittlegill (next page) and The Flirt (see page 104), which are good edible species but maybe better avoided for this reason. The inedibly bitter and hard-fleshed Rosy Brittlegill (*R. rosea*) is quite similar, but larger and usually with a rose-flushed stem. Another very similar poisonous red/pink-capped relative is *R. luteotacta*.

Notes: Toxicity as for The Sickener. It is possible that this species can be rendered edible by boiling, but I can find no records of people actually doing so. Avoid.

Dawn Brittlegill

Russula aurora

Dawn Brittlegill, *Russula aurora*.

Edible (good). Advanced.

Cap 4-12cm, convex becoming flat with a slightly depressed centre, usually pink with a cream centre, margin often distorted and grooved when old, half peeling. **Stem** 4-7cm, slightly tapering upwards, white. **Flesh** white, brittle. **Gills** pale cream, crowded, adnate to adnexed, forked near the stem. **Spore print** pale cream. **Smell and taste** mild. **Habitat** deciduous woodland. **Season** summer to autumn. **Distribution** occasional to frequent in most parts of Europe, rare/absent in northern Scandinavia. Frequent in south of the British Isles, especially south-east England, rarer further north.

Similar species: Very similar to many other members of this genus, including two good edible species – the Coral Brittlegill (*R. velenovskyi*) and The Flirt (next page) – and one that's not so good, the Bleached Brittlegill (*R. exalbicans* syn. *pulchella*). Distinguishing between these mushrooms, all of which are rather variable, without scientific aids is very difficult, and from a foraging point of view there is not much point in trying. The edible Golden Brittlegill (*R. risigallina*) can also be similar, but has yellow gills and usually a much yellower cap. Application of the brittlegill general rule is the only way to determine what is edible in this tricky area: *what does it taste like*? The inedible *R. decipiens* is visually almost identical, but tastes hot, as do all the poisonous pink-red brittlegills, the most similar of which is the Beechwood Sickener (previous page), which tastes very hot.

Notes: The Dawn Brittlegill used to be known as *R. rosea*, but another brittlegill (the Rosy Brittlegill) now has that Latin name.

The Flirt

Russula vesca

The Flirt, *Russula vesca.*

Edible (good). Advanced.

Cap 5-10cm, convex becoming flat with a slightly depressed centre, colour variable pink/purple/brown, cuticle doesn't reach the margin, revealing the "bare teeth" of the gills, half peeling. **Stem** 3-10cm, usually cylindrical and tapering at the base, white. **Flesh** white, brittle. **Gills** pale cream, rather crowded, adnexed. **Spore print** very pale cream. **Smell** faint. **Taste** mild, nutty. **Habitat** deciduous woodland. **Season** summer to autumn. **Distribution** widespread and frequent in Europe. Also present in north Africa, Asia and North America.

Similar species: See entry for Dawn Brittlegill (previous page).

Notes: The Flirt is a decent and well-known edible mushroom, but can be hard to identify to species.

Hintapink or Tall Brittlegill

Russula paludosa

Hintapink or Tall Brittlegill, *Russula paludosa.*

Edible (good). Advanced.

Cap 4-17cm, convex becoming flat with a slightly depressed centre, typically wine-red with paler areas but the colour is rather variable, sticky when wet, peeling half or more. **Stem** 4-15cm, cylindrical, sometimes swollen in the centre or lower half, white or flushed red/pink. **Flesh** white, brittle. **Gills** cream becoming yellow, sometimes with a red tinge at the edge, adnexed to slightly decurrent, interveined at the base. **Spore print** dark cream. **Smell and taste** mild. **Habitat** with conifers, often in boggy places with mosses, particularly in upland areas. **Season** summer to autumn. **Distribution** primarily a northern/montane cold temperate species, absent in the warmer parts of southern and central Europe but common in Scandinavia. Frequent in the Scottish Highlands, very rare or absent elsewhere in the British Isles. Also present in the temperate zone of Asia.

Similar species: Could be confused with The Sickener (see page 100), although it is considerably larger than that species and usually a duller or more vinaceous red. The Burning Brittlegill (*R. badia*) is visually more similar, and shares a habitat and range in Scotland. In both cases the key distinguishing feature is the taste.

Notes: One of the better brittlegills, a popular edible mushroom in Scandinavia, and commercially collected in Finland.

Gilded Brittlegill

Russula aurea

Gilded Brittlegill, *Russula aurea*.

Edible (delicacy). Intermediate.

Cap 4-9cm, convex becoming flat with a depressed centre, colour variable red/pink/yellow, often paler in the centre, sticky when wet, quarter to half peeling. **Stem** 3-8cm, usually cylindrical or slightly club-shaped, but rather variable, white, sometimes flushed yellow. **Flesh** white, brittle. **Gills** cream becoming yellow, especially at the edges, rather distant, adnexed/free. **Spore print** yellow. **Smell and taste** mild. **Habitat** deciduous and coniferous woodland. **Season** summer to mid-autumn. **Distribution** widespread and occasional to frequent in Continental Europe and Turkey, but rare in the British Isles. Also present in North America.

Similar species: The yellow colouring distinguishes it from the poisonous red/pink brittlegills, making this one of the easier members of its genus to identify to species.

Notes: Threatened in Britain and Ireland, but a popular edible species in many European countries, especially Italy. Can be eaten raw, but take care not to confuse with the Olive Brittlegill (see page 120), which must be cooked.

Copper Brittlegill

Russula decolorans

Copper Brittlegill, *Russula decolorans.*

Edible (good). Basic.

Cap 4-11cm, hemispherical becoming flat with a central depression and a furrowed margin, usually copper-orange but can be purple, red or yellow, bruising grey or black, slightly sticky when wet, hardly peeling. **Stem** 3-10cm, usually cylindrical or club-shaped, usually stout, white, **becoming grey and eventually black, also bruising grey**. **Flesh** white, brittle. **Gills** white then cream, bruising grey-black, rather crowded, adnexed, interveined. **Spore print** cream-yellow. **Smell and taste** mild. **Habitat** with conifers. **Season** summer and autumn. **Distribution** common in Scandinavia and mountainous areas of central Europe, rare or absent elsewhere. Very rare in lowland Britain, absent in Ireland, but frequent in the Scottish Highlands. Also present in the temperate zones of Asia and North America.

Similar species: Could be confused with other brittlegills, but the colour scheme makes this one of the easier to identify.

Notes: Commercially collected in Finland.

Stinking Brittlegill

Russula foetens

Stinking Brittlegill, *Russula foetens*.

Edibility disputed.

Cap 5-18cm, sub-spherical becoming flat with a central depression, often lopsided, usually an unevenly washed-out yellow-brown, usually distinctly lined at the margin, sticky/slimy when damp, one-third to two-thirds peeling. **Stem** 5-12cm, stout, variable shape but usually cylindrical, white bruising yellow, brittle and developing cavities. **Flesh** white, brittle. **Gills** dirty cream, discolouring brown, rather thick and distant, adnexed. **Spore print** pale cream. **Smell** strong – oily, rancid, fishy, decaying cheese. **Taste** very hot. **Habitat** usually with beech or oak, but occasionally conifers. **Season** late summer to autumn. **Distribution** widespread and frequent in Europe. Also present in north and west Africa and North America.

Similar species: Several closely related foetid brittlegills share the same general colour scheme and smell. They are generally considered inedible. The slightly toxic Bitter Almond Brittlegill (*R. grata*) is visually similar, but smaller and smells strongly of almonds.

Notes: Often dismissed as poisonous, but probably isn't. Recorded[7] as being eaten in a few places, and although I can't imagine many people wanting to eat a mushroom that smells like a cross between overripe cheese and rotting fish, there's no accounting for taste.

Nutty Brittlegill / Rosewood Brittlegill

Russula integra / R. melitodes

Nutty Brittlegill, *Russula integra*.

Edible (good). Intermediate.

Cap 5-15cm, convex becoming flat and slightly depressed, **colours very variable**, sticky when wet, slightly grooved at the margin, half peeling. **Stem** 3-11cm, cylindrical or slightly tapering upwards, white, discolouring yellow/brown. **Flesh** white, brittle. **Gills** white becoming yellow, rather distant, thick, adnexed, almost free. **Spore print** cream-yellow. **Smell and taste** faint, sweet, pleasant. **Habitat** with conifers and birch (Nutty Brittlegill) / oak, hornbeam, beech or lime (Rosewood Brittlegill). **Season** late summer and autumn. **Distribution** widespread in Europe but only common in northern and mountainous areas. Both species are uncommon in Britain and absent in Ireland, but more frequent in the Scottish Highlands. Also present in the temperate zones of Asia and North America.

Similar species: These two species are very hard to distinguish, apart from their preferred habitat, although the Rosewood Brittlegill is also slightly smaller and rarer across its entire range (Europe only). The Nutty Brittlegill is globally more widespread and common in some parts of Europe. The Russet Brittlegill (*R. mustelina*) is also similar, a popular edible species in Italy and Poland, rare in the British Isles.

Notes: The Nutty Brittlegill is a popular edible species in Europe, but must be well cooked. Poisonous raw.

Crab Brittlegill

Russula xerampelina

Crab Brittlegill, *Russula xerampelina.*

Edible (good). Intermediate.

Cap 5-15cm, convex becoming flat with a depressed centre, colour variable but most often dull purple/red/brown, sticky-slimy when wet, matt when dry, one-quarter peeling. **Stem** 3-11cm, cylindrical or tapering slightly upwards, firm, white, sometimes flushed red/pink and bruising yellow/brown. **Flesh** white, brittle. **Gills** cream to pale yellow, variable spacing, rather thick, adnexed. **Spore print** pale yellow. **Smell and taste** fishy, becoming more like shellfish with age. **Habitat** coniferous and deciduous woodland. **Season** late summer to autumn. **Distribution** widespread and common in Europe. Also present in Asia and North America. This is a species complex.

Similar species: If you have found a mild-tasting brittlegill that smells rather fishy/crab-like, then it is definitely edible and probably one of these. Other European members suspected of belonging to this complex include *R. graveolens*, *R. cicatricata*, *R. faginea*, *R. favrei*, *R. elaeodes* and *R. barlae*. Different members of the complex grow with different types of tree. "*Russula xerampelina*" technically no longer refers to those found with deciduous trees (as in the case of the mushrooms illustrated here), but this is of little relevance to a forager.

Notes: The shellfish smell and taste persists after cooking, and this species is often used in recipes where its characteristic taste belongs. Usually free of grubs.

Purple or Blackish-Purple Brittlegill

Russula atropurpurea

Purple or Blackish-Purple Brittlegill, *Russula atropurpurea*.

Edible. Intermediate.

Cap 4-10cm, hemispherical becoming flat with a depressed centre, dark red-purple with an even darker centre, sometimes mottled with cream, especially at the edge, shiny, sticky when wet, margin initially smooth, grooved when older, one-third to two-thirds peeling. **Stem** 3-6cm, usually cylindrical, sometimes slightly club-shaped, white then greyish, sometimes flushed slightly pink near the base. **Flesh** thick, white, brittle. **Gills** pale cream, crowded, adnexed, forked. **Spore print** white. **Smell** faintly of apples. **Taste** slightly hot. **Habitat** usually with oak, beech or pine on acid soil, but sometimes with other trees, including conifers. **Season** summer to late autumn. **Distribution** widespread and common in northern Europe, becoming less common further south. Uncommon in Scotland, but very common elsewhere in the British Isles. Also present in the temperate zones of Asia and eastern North America.

Similar species: Edible purple brittlegills include the Honey (*R. melliolens*), Darkening (*R. vinosa*) and Lilac (*R. lilacea*) brittlegills and *R. brunneoviolacea*, *R. turci*, *R. azurea* and *R. romellii*. The Purple Swamp Brittlegill (*R. nitida*) and Yellowing Brittlegill (*R. puellaris*) inhabit damper woodland, the Yellowing Brittlegill having more faded/white areas on its cap. Hot/acrid-tasting poisonous lookalikes include the Fruity and Brawny brittlegills (see page 113) – both of which smell of fruit/apples, and have purple-flushed stems – and the very hot and acrid Fragile Brittlegill (*R. fragilis*). The poisonous Burning Brittlegill (*R. badia*) looks very similar but tastes very hot.

Notes: A passable edible species if not a delicacy, slightly toxic raw.

Humpback Brittlegill

Russula caerulea

Humpback Brittlegill, *Russula caerulea*.

Edible. Basic.

Cap 3-10cm, initially bell-shaped, becoming flatter **with a distinct umbo**, consistently purple, although sometimes with brown areas, smooth and shiny, only very slightly sticky when wet, one-quarter to two-thirds peeling. **Stem** 4-9cm, cylindrical or slightly club-shaped, sometimes with a tapering base, white, discolouring yellow. **Flesh** white, brittle. **Gills** white then yellow, initially rather crowded, adnexed, almost free. **Spore print** pale yellow. **Smell** faint. **Taste** mild, cuticle slightly bitter. **Habitat** **with pine**. **Season** late summer to autumn. **Distribution** widespread and frequent in temperate areas of Europe, rarer or absent in the far south. Frequent in the British Isles, but somewhat unevenly distributed. Also present in the temperate zone of North America.

Similar species: No other brittlegill has an umbo like this, making it the easiest of the purple species to identify.

Notes: The cap cuticle is rather bitter when chewed, so is best removed.

Fruity/Primrose/Brawny brittlegills

Russula queletii / R. sardonia / R. torulosa

Poisonous. ⚠

Fruity Brittlegill, *Russula queletii.*

Cap 3-8cm, convex becoming flat with a central depression, hard, usually purple but colour is often patchy and/or variable, sticky when wet, half to two-thirds peeling. **Stem** 3-8cm, variable shape, **flushed lilac or vinaceous**. **Flesh** white, brittle. **Gills** white/yellow becoming darker, crowded, adnexed to decurrent. **Spore print** pale cream. **Smell** mild, fruity. **Taste** **very hot**. **Habitat** **with conifers**. **Season** summer to autumn. **Distribution** The Fruity and Primrose brittlegills are frequent to common in the temperate areas of Europe; Brawny is rarer but its range extends further south.

Similar species: The Fruity Brittlegill is described here (and shown in the photograph, *probably*). I've grouped it together with the Primrose and Brawny brittlegills because they are all rather similar in size, looks (although the Primrose Brittlegill has primrose-yellow gills), taste, odour and toxicity. The very rare *R. fuscorubroides* might also have been included in this group. From a foraging point of view, there is no need to distinguish between these species – they are all to be avoided. There is a vivid yellow variant of the Primrose Brittlegill called *R. sardonia* var. *mellina* that has a reputation for fooling both mycologists and foragers of the edible yellow brittlegills. The rule *avoid purple brittlegills with purple/pink-flushed stems* is a good one for keeping you out of trouble in this area – but see the next species.

Notes: All three of these brittlegills cause gastric upsets.

The Charcoal Burner

Russula cyanoxantha

The Charcoal Burner, *Russula cyanoxantha*.

Edible (delicacy). Intermediate.

Cap 5-15cm, convex becoming flat, sometimes with a central depression that can be quite pronounced, colour extremely variable, greasy when wet, hard and smooth or slightly velvety when dry, half peeling. **Stem** 5-10cm, stout, usually tapering upwards slightly, usually white but sometimes flushed purple/pink. **Flesh** white, brittle. **Gills** white to cream, crowded, adnexed or slightly decurrent, sometimes forked, greasy to the touch and flexible (run your fingers over them and they should flip like the pages of a book, instead of breaking like those of most brittlegills). **Spore print** white. **Smell and taste** mild. **Habitat** woodland, usually deciduous, and especially with beech or oak, prefers acidic, nutrient-rich locations. **Season** midsummer to late autumn. **Distribution** widespread and common in Europe. Also present in Asia, Africa, North America and Australia.

Similar species: Hard to distinguish from other brittlegills at first, but identification gets much easier with familiarity. The cap is typically a mixture of purple and green, with bits of pink, grey or brown, but can sometimes be completely purple or completely green (the green variant has its own name of *R. cyanoxantha* var. *peltereaui*). The common name is usually considered to refer to the multicoloured flames of burning charcoal, although I've also been told it refers to the face of the charcoal burner as he huffs and puffs and gets covered in carbon. The specific epithet *cyanoxantha* means "cyan and yellow" – two colours this mushroom is usually not ("*viridopurpurea*" would have made more sense). This distinctive colour scheme, combined with the greasy-feeling, flexible gills allows identification to become fairly straightforward with a bit of experience. Its rare relative *R. langei* is macroscopically very similar, although generally more purple (and presumably just as edible), and the next most similar species are the Oilslick Brittlegill and False Charcoal Burner (see next entry).

Notes: This is the most important edible brittlegill, popular across the whole of Europe and Asia, and a personal favourite. Lovely fried and served with steak or sausages. Also goes well in omelettes, stews and soups, as well as making a delightful addition to a salad, sliced raw.

Oilslick Brittlegill / False Charcoal Burner

Russula ionochlora / R. grisea

False Charcoal Burner, *Russula grisea.*

Edible (delicacy). Intermediate.

Cap 4-8cm, convex becoming flat with a slightly depressed centre, margin usually lobed or irregular, colours variable and mixed, sticky when wet, one-third to half peeling. **Stem** 3-7cm, usually stout, cylindrical, white, sometimes tinged lilac. **Flesh** white, brittle. **Gills** white becoming cream, fairly crowded, adnexed to almost free, usually forked. **Spore print** pale cream. **Smell** mild. **Taste** slightly hot when young, becoming milder. **Habitat** deciduous woodland, usually with beech. **Season** midsummer to autumn. **Distribution** Both species are widespread and frequent in Europe. In the British Isles they are most common in the south-east, becoming rarer further north and west.

Similar species: These two species are not reliably distinguishable from each other without microscopy. Some mycologists consider Oilslick Brittlegill to be a subspecies of False Charcoal Burner. Also see notes for the Green Brittlegill (page 119).

Notes: The Oilslick Brittlegill and False Charcoal burner are both highly rated in Germany, and commercially collected in other European countries.

Powdery Brittlegill

Russula parazurea

Powdery Brittlegill, *Russula parazurea*.

Edible. Intermediate.

Cap 3-8cm, convex becoming flat with a slightly depressed centre, usually grey-green but sometimes with violet tints, powdery when dry, half to three-quarters peeling. **Stem** 3-7cm, sometimes red-spotted at the base. **Flesh** white, brittle. **Gills** white becoming pale buff, crowded, adnexed, usually forked. **Spore print** pale cream. **Smell** mild. **Taste** slightly hot. **Habitat** with deciduous trees and pine. **Season** summer to autumn. **Distribution** widespread and common in much of western and central Europe, but rarer in the far north, south and east, and apparently not present in Asia. Frequent in the British Isles, particularly south-east England.

Similar species: See note about Deathcaps in the Greencracked Brittlegill 'similar species' description (next page). The edible *R. medullata* is visually similar.

Greencracked Brittlegill

Russula virescens

Greencracked Brittlegill, *Russula virescens.*

Edible (good). Intermediate.

Cap 5-14cm, convex becoming flat with a central depression, often lobed, dry and velvety, surface soon cracking into a mosaic of scurfy scales, margin wavy/cracked and smooth or slightly grooved, half peeling. **Stem** 4-9cm, stout, cylindrical, browning slightly from the base, powdery at apex. **Flesh** white, brittle. **Gills** cream, initially crowded, adnexed to almost free, interveined at the bases. **Spore print** pale cream. **Smell** mild, nutty, eventually a bit fishy. **Taste** mild, fruity. **Habitat** deciduous woodland, especially oak and beech. **Season** late summer to autumn. **Distribution** widespread and occasional to frequent in Europe, becoming rare or absent in the far north. Frequent in south-east England, becoming less so further north and west in the British Isles. Also present in the temperate and subtropical zones of north Africa and Asia.

Similar species: The distinctive cap makes this one of the few members of this genus that is usually easy to identify to species (North American lookalikes are now known to be different species). The biggest risk here is that somebody mistakes a Deathcap (see page 412) for one of the green brittlegills. They inhabit deciduous woodland, and share a colour scheme. The Deathcap has a volva and a ring, so this mistake shouldn't happen, but it is possible.

Notes: This has long been a popular edible species in Europe and eastern Asia, and can be eaten fried, grilled or raw.

Green Brittlegill / Greasy Green Brittlegill

Russula aeruginea / R. heterophylla

Green Brittlegill, *Russula aeruginea.*

Edible (good). Intermediate.

Cap 4-12cm, convex becoming flat and only slightly depressed, variable shades of green, with fine radiating lines, sometimes with red spots, centre usually darker, slightly sticky when damp, margin smooth or slightly grooved, half peeling. **Stem** 4-8cm, cylindrical or tapering downwards, smooth, often with red-brown spots near the base. **Flesh** white, brittle. **Gills** white then pale cream, crowded, adnexed to almost free, usually forked. **Spore print** cream. **Smell** mild. **Taste** very slightly hot. **Habitat** woodland, usually with birch and especially with birch **and** conifers. **Season** late summer to autumn. **Distribution** widespread and frequent in northern Europe, rarer in the south. Also present in Asia and North America (both species).

Similar species: The species described is the Green Brittlegill. The cap of the Greasy Green Brittlegill is more variable in colour and hardly peels, it is not associated with conifers, and has a more southerly distribution (but frequent in northern Scotland). The Velvet Brittlegill (*R. violeipes*) is also similar, but with yellow and purple colours overlaid on the green. Also see comments on the previous page about Deathcaps.

Notes: All three of these brittlegills are good edibles, but are mildly poisonous raw.

Olive Brittlegill / Yellow-gilled Brittlegill

Russula olivacea / R. alutacea

Olive Brittlegill, *Russula olivacea.*

Edible (delicacy). Intermediate.

Cap 5-16cm, sub-spherical becoming flat or slightly depressed, variable in colour from olive to purple, robust, smooth, dry, peeling one-quarter to one-third. **Stem** 5-10cm, stout, cylindrical, sometimes tapering upwards or club-shaped, white, usually flushed pink, especially at the apex, and brown at the base. **Flesh** firm, white, brittle. **Gills** cream becoming yellow, fairly crowded, adnexed, forked and interveined. **Spore print** dark yellow. **Smell** nutty. **Taste** mild. **Habitat** woodland, usually deciduous, especially with beech. **Season** summer and autumn. **Distribution** widespread and frequent in Europe. Frequent in the south and east of England, less so elsewhere in the British Isles. Also present in Asia and North America.

Similar species: The species described here is the Olive Brittlegill. The Yellow-gilled Brittlegill is almost indistinguishable from it without microscopy, although the stem is flushed pink only at the base and is usually slightly smaller. It too is regarded as a good edible species (probably since Roman times) and has a similar distribution, though less common. Other brittlegills commonly confused with these species are significantly smaller. Also see the Green Brittlegill ‘similar species’ description (previous page).

Notes: Poisonous raw, causing serious gastric problems.

Yellow Swamp Brittlegill

Russula claroflava

Yellow Swamp Brittlegill, *Russula claroflava*.

Edible (good). Basic.

Cap 4-10cm, sub-spherical becoming flat with a slightly depressed centre, slightly sticky, shiny, margin smooth then grooved, half to two-thirds peeling. **Stem** 4-10cm, sometimes longer if growing in thick sphagnum, stout, tapering slightly upwards, white discolouring dark grey when bruised or cut. **Flesh** hard, white, brittle. **Gills** cream then ochre, discolouring dark grey, fairly crowded, adnexed to almost free. **Spore print** pale ochre. **Smell and taste** mild/fruity. **Habitat** boggy deciduous woodland, usually with birch, sometimes in sphagnum moss. **Season** late spring to autumn. **Distribution** widespread in temperate areas of Europe, but more common in the colder, wetter areas of the north and becoming much rarer further south and east. Frequent in Britain and Ireland, and locally common. Also present in the temperate and subtropical zones of Asia and North America.

Similar species: Could be confused with other yellow brittlegills (see the Ochre Brittlegill 'similar species' description, next page), although the bright colour and distinct habitat help with the identification. The edible Golden Brittlegill (*R. risigallina*) is sometimes very similarly coloured (and sometimes with a pinker cap) but quite a lot smaller.

Notes: One of the better edible brittlegills.

Ochre Brittlegill

Russula ochroleuca

Ochre Brittlegill, *Russula ochroleuca*.

Edible (poor). Basic.

Cap 4-12cm, convex becoming flat with a central depression, ochre yellow or slightly greenish, sticky when wet and often covered in debris, margin smooth then grooved, up to two-thirds peeling. **Stem** 4-7cm, cylindrical or tapering upwards, white but greying slightly with age or when wet. **Flesh** white, fragile. **Gills** white/cream, variable density, adnexed. **Spore print** white to pale cream. **Smell** mild. **Taste** mild or slightly peppery. **Habitat** deciduous or coniferous woodland, usually in relatively dry areas. **Season** summer to late autumn. **Distribution** widespread in temperate areas of Europe and very common in the north-west, particularly in drier parts of the British Isles. Less common in southern Europe. Also present in Africa and North America.

Similar species: Easily confused with other yellow brittlegills, especially the edible Yellow Swamp Brittlegill (previous page), although that has a brighter yellow cap, prefers a damper habitat and tastes better. The Geranium Brittlegill (next page), which on top of smelling of geraniums is also inedibly hot and bitter, is also similar. The same (except the odour) applies to the yellow form of the Primrose Brittlegill (see page 113). Also watch out for the Bitter Almond Brittlegill (*R. grata*), which smells strongly of almonds and tastes acrid, and *R. farinipes*, which has a paler yellow cap and tastes very hot – both are poisonous. The general brittlegill rule applies: *if it tastes mild raw, then it is edible when cooked*.

Notes: No delicacy, but extremely abundant in northern Europe. Slightly toxic raw.

Geranium Brittlegill

Russula fellea

Geranium Brittlegill, *Russula fellea*.

Toxicity disputed.

Cap 3-9cm, convex becoming flat with a central depression or a broad umbo, dirty yellow or honey-coloured, slightly sticky when damp, lined at the margin, one-third peeling. **Stem** 2-7cm, usually stout, cylindrical, colour as cap. **Flesh** white, thick, brittle. **Gills** pale yellow, crowded, adnexed. **Spore print** white. **Smell** geraniums (ie *Pelargonium* species) or stewed apples. **Taste** bitter, very hot. **Habitat** woodland, usually with beech on acid soil, less frequently with spruce or other trees. **Season** late summer to autumn. **Distribution** widespread in temperate areas of Europe, frequent in the British Isles and southern coastal areas of Scandinavia, becoming rarer or absent further north and south. Also present in the temperate zone of Asia.

Similar species: Visually similar to numerous pale yellow brittlegills, but they don't smell of pelargoniums.

Notes: There is conflicting information about the toxicity of this species. It may be slightly poisonous, but more likely merely inedible due to its unpleasant taste.

Milk White Brittlegill / Blue Band Brittlegill

Russula delica / R. chloroides

Milk White Brittlegill, *Russula delica*.

Edible (culinary value disputed). Intermediate.

Cap 5-16cm, convex then flat, eventually with a deep depression, white becoming yellow-brown, hard, thick, matt, dry, margin remaining inrolled, hardly peeling, often covered with debris, and sometimes partially buried. **Stem** 2-6cm, very stout, hard, white, sometimes with a faint blue band at the apex. **Flesh** white, hard and more robust than most brittlegills. **Gills** white, fairly distant, slightly decurrent. **Spore print** white. **Smell** quite strong, fruity becoming fishy. **Taste** sweet/spicy/tangy. **Habitat** woodland, usually deciduous. **Season** autumn. **Distribution** widespread and frequent in Europe, particularly the south-east. Also present in the temperate and subtropical zones of Asia, North America and Australia.

Similar species: The species described is the Milk White Brittlegill. Often mistaken for a small, white milkcap and it's just possible a novice might think a small (and deadly) Destroying Angel (see page 416) was this species. The Blue Band Brittlegill is very closely related and possibly just a subspecies. It is slightly smaller, with a more distinct blue band at the stem apex, and also more acrid-tasting.

Notes: Widely dismissed as not worth collecting, but nevertheless very popular in the Greek Islands, Cyprus and Turkey, where it is very common. Usually pickled, salted or preserved in oil.

Blackening Brittlegill

Russula nigricans

Blackening Brittlegill, *Russula nigricans*.

Edible when young (caution). Basic.

Cap 5-20cm, convex becoming flat, then developing a deep central depression, initially light grey, but soon becoming darker and eventually completely black, matt/dry, three-quarters peeling. **Stem** 3-7cm, stout, cylindrical or tapering downwards, same colours as cap. **Flesh** thick, hard, robust, white, slowly discolouring red upon cutting, turning black within two hours. **Gills** white, bruising dirty red, very distant, very thick, adnate. **Spore print** white. **Smell** faint, fruity. **Taste** mild, then slightly hot. **Habitat** woodland, usually deciduous. **Season** summer to autumn. **Distribution** widespread in Europe but more common in the north-west. Very common in the British Isles. Also present in eastern North America and the temperate zones of Asia and Australia.

Similar species: There are several other brittlegills with an initially similar cap colour. The Crowded Brittlegill (*R. densifolia*) is much smaller and has crowded gills, as does the very rare, acrid-tasting *R. acrifolia*. The edible Winecork Brittlegill (*R. adusta*) is also similar, but smells of wine corks, and the Menthol Brittlegill (*R. albonigra*) has gills that taste of menthol. The most similar of these lookalikes is *R. anthracina*, which has acrid-tasting, crowded gills and lacks the red stage of colour changes when cut. The Blackening Brittlegill is the only member of this group with a reasonably pleasant taste and **distant gills**. **Warning: In eastern Asia and North America there is a seriously poisonous lookalike called *Russula subnigricans* (causes rhabdomyolysis – see Grey Knight, page 374).**

Notes: When very young the Blackening Brittlegill might be described as "pleasantly nutty", in both taste and texture, but even then it is a bit indigestible and bland. As it turns black it becomes completely inedible. This species is suspected of causing gastrointestinal problems in some individuals. The Blackening Brittlegill sometimes plays host to tiny, parasitic, white mushrooms called piggybacks (see page 393). The blackened fruit bodies persist for months, barely recognizable as mushrooms.

Milkcaps

Milkcaps are, in most cases, easily identified as such by the way the gills weep white, yellow or cloudy, watery liquid (the "milk" or "latex") when broken. This is a defence mechanism against slug and insect attack, and the abundance, exact colour, and taste of the milk (often bitter, hot or acrid) can give clues to the identification. There are a few choice edible milkcaps, but plenty that aren't much to write home about … even if you do manage to figure out which species you've found. Some are very aromatic and are dried, powdered and used as spices, and these also tend to be mildly poisonous and should only be consumed in small quantities. Others are rendered edible by parboiling. The rule of thumb for edibility described for the brittlegills is also applicable to the milkcaps, but with the exception of the Fenugreek Milkcap, which doesn't taste too bad raw but will give you an upset stomach if you eat quite a lot of it.

Milk weeping from a Fleecy Milkcap *Lactarius vellereus*.

There's a long list of milkcaps not featured in this guide that are eaten only after boiling/salting – these tend to be more popular with Slavic foragers than the brittlegills that require similar treatment. They include the Rollrim (*Lactarius resimus* – highly regarded in Russia), Orange (*L. aurantiacus*), Fleecy (*L. vellereus*), Spotted (*L. scrobiculatus* – not present in the British Isles), Grey (*L. vietus*), Alder (*L. obscuratus*), Larch (*L. porninsis*), Northern Bearded (*L. repraesentaneus*), Tacked (*L. trivialis*) and Stumpy (*L. flexuosus*) milkcaps; also *L. violascens*, *L. luridus*, *L. insulus*, *L. zonarius*, *L. uvidus*, *L. hysginus* and *L. flavidus.* Another species not included here is the Pale Milkcap (*L. pallidus*), which is poisonous raw but edible after normal cooking.

Some are inedible (they taste horrible) regardless of preparation. They include the Liver (*L. hepaticus*), Sooty (*L. fuliginosus* / *L. azonites* / *L. romagnesii* / *L. pterosporus* – indistinguishable without microscopy) and Fruity (*L. evosmus*) milkcaps and *L. zonarius*.

Woolly Milkcap

Lactarius torminosus

Woolly Milkcap, *Lactarius torminosus.*

Poisonous->edible (good, caution). Basic.

Cap 4-15cm, initially convex, then flat with a depressed centre, eventually funnel-shaped, concentrically zoned with oranges and pinks, sticky when wet, covered in woolly fibres, which hang over the edge. **Stem** 3-8cm, cylindrical or tapering downwards, paler than cap, smooth, becoming hollow. **Flesh** whitish, firm and brittle, becoming more flaccid. **Gills** pale pink, crowded, slightly decurrent, sometimes forked near the stem. **Milk** white. **Spore print** white or slightly pink. **Smell** faint. **Taste** hot, acrid. **Habitat** acidic deciduous woodland, usually with birch. **Season** late summer and autumn. **Distribution** widespread and common in temperate areas of Europe, including the extreme north, but becoming rarer in the far south. Also present in the sub-arctic and temperate zones of Asia, north Africa and North America.

Similar species: This is one of the more easily identified milkcaps, due to its colour scheme and woolliness, but there are still plenty of slightly hairy milkcaps you might mistake for it. It is ranked “basic” because none of those species are any more poisonous than it.

Notes: Significantly poisonous raw and capable of causing oral blisters, only edible after boiling twice and throwing away the water, then salting down. This is a popular edible species in Slavic countries, especially Russia. It has been widely dismissed in western Europe, but is worth eating if properly prepared, if perhaps something of an acquired taste.

Bearded Milkcap

Lactarius pubescens

Bearded Milkcap, *Lactarius pubescens*.

Poisonous->edible (good, caution). Intermediate.

Cap 4-10cm, convex becoming flat with a depressed centre, similar to, though paler and less woolly than, a Woolly Milkcap. **Stem** 2-7cm, short, stout, usually tapering downwards, same colour as cap, smooth. **Flesh** white to pale cream, thick. **Gills** white to pale cream with pink tinges, becoming darker, crowded, adnate to slightly decurrent. **Milk** white. **Spore print** very slightly pink. **Smell** faint. **Taste** very hot. **Habitat** with birch, usually on sandy soil. **Season** late summer and autumn. **Distribution** widespread and frequent in temperate areas of Europe. Also present in the temperate zones of Asia and North America, and introduced in New Zealand.

Similar species: Could be confused with other milkcaps, but none that are any less edible than itself.

Notes: Edibility/toxicity as for Woolly Milkcap (previous page).

Saffron Milkcap

Lactarius deliciosus

Saffron Milkcap, *Lactarius deliciosus*.

Edible (delicacy). Basic.

Cap 4-15cm, convex becoming flat then funnel-shaped, margin initially inrolled, covered in blotches and concentric rings, orange bruising pistachio grey-green, slightly sticky when wet. **Stem** 3-6cm, stout, cylindrical or tapering slightly towards the base, colours as cap, with darker orange pits, developing cavities. **Flesh** pale yellow-orange, turning duller, darker near the surfaces, lighter in the centre. **Gills** colours as cap, crowded, slightly decurrent. **Milk** sparse, carrot-coloured. **Spore print** pale yellow. **Smell** spicy, fruity. **Taste** fruity, slightly bitter. **Habitat** with pine. **Season** summer to autumn. **Distribution** widespread and frequent to common in Europe. Also present in the temperate and subtropical zones of Asia, and introduced in Australia, New Zealand and South America.

Similar species: The False Saffron Milkcap (next entry) and *L. salmonicolor* are very similar, but grow with spruce and fir respectively. The Bloody Milkcap (see page 133), *L. vinosus* and the rare *L. semisanguifluus* are also similar. Another rare lookalike, but with a darker cap, is the Carrot Milkcap (*L. quieticolor*), which grows with various conifers. All these mushrooms are edible, although some are rather bitter, and/or have an unappealing grainy texture, and none are as highly regarded as the Saffron and Bloody milkcaps.

Notes: This is the best edible milkcap that is common in the British Isles, and one of the few that can be eaten raw. It is commercially collected in many parts of Europe, and especially admired in the Pyrenees and Cyprus. Depending on whose tradition you consult, it should be fried either in butter but definitely not olive oil, or in olive oil with garlic and parsley but definitely not butter. It can be blanched before cooking in order to remove the slight bitterness, and makes a superb accompaniment to white fish. It also dries well. In Russia it is considered the unrivalled King of the Milkcaps (rightly so, in my opinion) and is usually salted down to produce a classic hors d'oeuvre, to be served with vodka. Unfortunately, it is equally popular with insect grubs.

False Saffron Milkcap

Lactarius deterrimus

False Saffron Milkcap, *Lactarius deterrimus.*

Edible (good). Basic.

Cap 4-15cm, convex becoming flat then funnel-shaped, margin initially inrolled, covered in blotches and concentric rings, orange, bruising pistachio grey-green, slightly sticky when wet. **Stem** 3-6cm, stout, cylindrical or tapering slightly towards the base, colours as cap, with darker orange pits, developing cavities. **Flesh** carrot-coloured, **slowly turning red**. **Gills** colours as cap, crowded, slightly decurrent. **Milk** sparse, carrot-coloured, slowly discolouring, **becoming wine red after 30 to 60 minutes**. **Spore print** pale yellow. **Smell** sweet, fruity. **Taste** carroty, slightly bitter. **Habitat** **with spruce**. **Season** summer to autumn. **Distribution** widespread and frequent in temperate areas of Europe, but more common in the north and restricted to mountainous areas further south. Common in British (and Irish) spruce plantations. Also present in southern Asia.

Similar species: See Saffron Milkcap (previous entry).

Notes: The poor man's Saffron Milkcap, inferior to the real thing in both texture and flavour, but still worth collecting. This species can turn urine red if consumed in large quantities, but there are no associated health risks. Prone to infestation.

Bloody Milkcap

Lactarius sanguifluus

Bloody Milkcap, *Lactarius sanguifluus.*

Edible (delicacy). Basic.

Cap 4-11cm, convex-flat with a depressed centre, or sometimes funnel-shaped, margin initially inrolled, blotchy orange-pink, bruising pistachio grey-green, sticky when wet. **Stem** 2-5cm, cylindrical or tapering downwards, colours as cap, sometimes with pits. **Flesh** pale, slightly darker beneath the cuticle and above the gills. **Gills** colours as cap, crowded, adnate to decurrent. **Milk** blood red. **Spore print** pale yellow. **Smell** very mild. **Taste** slightly bitter. **Habitat** with conifers, especially Douglas fir. **Season** summer to autumn. **Distribution** widespread but uncommon in central Europe, more frequent in the south. Extremely rare in Scandinavia and the British Isles. Also present in north Africa and Asia.

Similar species: Could be confused with *L. semisanguifluus*, which has milk that takes 10 minutes to turn red, and the very similar *L. vinosus*, both of which are edible.

Notes: This species is commercially collected in Spain, although there is some concern that over-picking is becoming a problem there. Regarded by some as the best edible milkcap.

Oakbug or Oak Milkcap

Lactarius quietus

Oakbug or Oak Milkcap, *Lactarius quietus.*

Edible. Intermediate.

Cap 3-8cm, convex, becoming flat with a slight central depression, concentric zones of lighter and darker brown/grey, dry/matt, not sticky. **Stem** 3-8cm, cylindrical, sometimes tapering at the base, smooth, dry, similar colour to cap or slightly darker, becoming hollow. **Flesh** white, thick. **Gills** white/cream, turning red-brown, crowded, slightly decurrent. **Milk** plentiful, white, drying cream. **Spore print** cream. **Smell** "of bedbugs" or old cooking oil. **Taste** mildly of carrots. **Habitat** with oak. **Season** late summer to autumn. **Distribution** widespread and frequent to common in Europe. Common in the British Isles, particularly in southern England.

Similar species: The smell, cap colours and habitat, taken together, make the Oakbug Milkcap relatively easy to identify after you have found it a few times, and it is common enough that this probably won't take very long. It would be easy to mistake a Yellowdrop Milkcap (next page) for it, as it is a similar size and colour, and also grows with oaks, but the milk is a different colour, and the taste is also different.

Notes: Generally dismissed as not worth collecting, but it is liked by John Wright, author of *Mushrooms: River Cottage handbook no. 1* (see Resources). He has tried to improve its reputation by removing the "bug" part of the name and describing its smell as "carroty" rather than bug-like. Not bad.

Yellowdrop Milkcap

Lactarius chrysorrheus

Yellowdrop Milkcap, *Lactarius chrysorrheus.*

Poisonous->edible. Intermediate.

Cap 3-9cm, convex, becoming flatter with a depressed centre, pink/salmon with faint concentric bands/spots, smooth and shiny. **Stem** 3-8cm, stout and sometimes swollen at the base, hollow, smooth, cream, becoming darker, especially at the base. **Flesh** white, becoming yellow. **Gills** cream with a pink flush, crowded, slightly decurrent. **Milk** abundant, white, rapidly turning lemon yellow. **Smell** faint. **Taste** bitter, slightly hot. **Habitat** deciduous woodland, almost always with oak. **Season** midsummer to late autumn. **Distribution** widespread and frequent in Europe. Also present in the temperate zones of Asia, Africa and North America.

Similar species: Could be mistaken for an Oakbug Milkcap (previous page).

Notes: Described as edible in some older Western guides but poisonous in more recent ones, this is one of the milkcaps traditionally boiled and salted in Russia. Poisonous raw.

Coconut Milkcap

Lactarius glyciosmus

Coconut Milkcap, *Lactarius glyciosmus*.

Edible (good). Basic.

Cap 2-6cm, convex, becoming flatter and depressed but margin remaining slightly inrolled, sometimes with a small umbo, grey-lilac, finely felty, not sticky. **Stem** 2-7cm, cylindrical or tapering upwards, rather fragile, colour and texture as cap. **Flesh** pale grey-brown. **Gills** colour as cap, crowded, slightly decurrent. **Milk** white, plentiful, slowly becoming acrid. **Spore print** very pale cream. **Smell and taste** of coconut, variable strength. **Habitat** deciduous woodland, usually with birch. **Season** late summer to autumn. **Distribution** widespread and frequent to common in temperate areas of Europe, including the extreme north. Rare or absent further south. Also present in the temperate zones of Asia and North America. Introduced in New Zealand.

Similar species: There is one other coconut-scented milkcap present in Europe – a widespread but uncommon edible species, which normally grows with conifers rather than birch, called the Pap Milkcap (*L. mammosus*).

Notes: I have no idea why this species is described by various sources as “inedible”. It tastes fine, has been traditionally eaten in some places and none of those sources state that it is poisonous.

Birch Milkcap

Lactarius tabidus

Birch Milkcap, *Lactarius tabidus*.

Inedible or mildly toxic.

Cap 2-5cm, convex, becoming slightly depressed, sometimes with a small umbo, dry/matt, sometimes wrinkled, orange-brown, usually darker in the centre. **Stem** 2-6cm, usually cylindrical, brittle, becoming hollow, darker at the base than the apex. **Flesh** white, thin. **Gills** pale buff becoming darker, rather crowded, adnate to slightly decurrent. **Milk** white, **turning yellow on fabric**. **Spore print** pale cream. **Smell** faint. **Taste** slightly acrid, becoming more so. **Habitat** deciduous woodland, but not exclusively with birch, regardless of its name. **Season** late summer to late autumn. **Distribution** widespread in temperate areas of Europe and common in the British Isles and Scandinavia, becoming rarer further south. Also present in the temperate zone of North America.

Similar species: The closest lookalike is the Mild Milkcap (next page). To tell them apart, test colour changes of the milk.

Notes: Despite being a common European species, this mushroom has not traditionally been eaten anywhere, presumably because it doesn't taste very nice.

Mild Milkcap

Lactarius subdulcis

Mild Milkcap, *Lactarius subdulcis*.

Edible. Advanced.

Cap 3-7cm, convex, becoming flat with a central depression, eventually funnel-shaped, often wavy at the margin and sometimes with a small umbo, colour variably red/orange/brown, dry/matt. **Stem** 3-7cm, cylindrical, paler than cap, with white woolly hairs at the base. **Flesh** white, thin. **Gills** white, becoming cream-pink then pale red-brown, crowded, adnate to slightly decurrent. **Milk** white, **not turning yellow on fabric**. **Spore print** cream with a pink tinge. **Smell** faint, slightly oily/unpleasant. **Taste** slightly bitter, of ivy. **Habitat** deciduous woodland, usually with beech. **Season** summer to autumn. **Distribution** widespread and common in temperate areas of Europe. Very common in the British Isles.

Similar species: Easily identified as a milkcap, but frequently as the wrong one.

Notes: Given how regularly it is misidentified, its lack of culinary interest and the likely availability of better options when it is fruiting, this species, though edible, is of minimal foraging value. Slightly poisonous raw.

Beech or Slimy Milkcap

Lactarius blennius

Beech or Slimy Milkcap, *Lactarius blennius.*

Edible (caution), medicinal. Intermediate.

Cap 4-10cm, initially convex with a flat centre, later flat with a central depression, drab grey-green and olive, sometimes with rings of dark spots or pits, slimy when wet, sticky when dry. **Stem** 4-7cm, tapering downwards, sometimes bent or warped, pale grey, smooth, slimy. **Flesh** white. **Gills** white becoming cream, bruising grey-brown, crowded, slightly decurrent. **Milk** abundant, very hot, white, drying grey. **Spore print** cream with a pink tinge. **Smell** faint. **Taste** hot. **Habitat** deciduous woodland, usually with beech. **Season** late summer to autumn. **Distribution** frequent to common in temperate areas of Europe where beech is native, rare elsewhere, and absent in the far north and Mediterranean south. Common in the British Isles and southern coastal areas of Scandinavia.

Similar species: Easily confused with many other milkcaps. The closely related *L. fluens* is very similar, but less slimy and with slightly darker gills. Other potential lookalikes are the extremely hot Fiery Milkcap (see page 142), which is found with hornbeam/hazel, and also *L. circellatus* (edibility unknown, but likely to be similar to the Fiery Milkcap), which is also found with hornbeam. *Lactarius circellatus* has much more distinct and complete bands of colour on the cap.

Notes: This species has been variously described as edible when cooked, inedible and mildly toxic. I've eaten it (cooked) several times and suffered no ill effects, but it's not especially tasty. It warrants inclusion in this book because it is very common in England and is also of medical interest, containing an anti-inflammatory compound that can be used in the treatment of asthma.[8]

Ugly Milkcap

Lactarius turpis (syn. *L. plumbeus, L. necator*) **Poisonous (carcinogenic).**

Ugly Milkcap, *Lactarius turpis* (syn. *L. plumbeus*, *L. necator*).

Cap 5-20cm, convex, becoming flattened and depressed, covered in tiny black scales and having an appearance of being covered in black-green slime. **Stem** 4-8cm, stout, cylindrical, tapering downwards, dirty green, sometimes with pits, becoming hollow. **Flesh** white, discolouring brown. **Gills** white, then darker, staining brown, crowded, adnate to slightly decurrent. **Milk** white drying darker, abundant, acrid. **Spore print** cream. **Smell** slightly spicy. **Taste** hot and acrid. **Habitat** woodland, usually with birch in damp places. **Season** summer to autumn. **Distribution** common in temperate areas of Europe, including the extreme north, but rare or absent in the south. Very common in the British Isles. Also present in Russia, and introduced in Australia and New Zealand.

Similar species: None. This is one of the easiest milkcaps to identify to species. The name surprises nobody who sets eyes on it – it looks rotten even when it is young and fresh.

Notes: Ugly Milkcaps contain a potent carcinogen, of which only half can be removed by boiling.[9] Regardless of this, they are still commercially collected in Russia and popular as an edible species in some eastern European countries. If you're going to tackle the spicy milkcaps that need special preparation, there are plenty of others to experiment with; do not eat this one.

Blushing Milkcap

Lactarius controversus

Blushing Milkcap, *Lactarius controversus.*

Edible (culinary value disputed). Intermediate.

Cap 6-30cm, convex, becoming flatter with a depressed centre, undulating, margin persistently inrolled, white with extensive random/concentric **pink-purple markings**, downy becoming smooth, viscid when wet. **Stem** 2-7cm, extremely stout, tapering downwards, white, sometimes with pink-purple markings. **Flesh** white, thick, rather crumbly. **Gills** very pale pink, crowded, slightly decurrent. **Milk** white, hot, sparse. **Spore print** cream-pink. **Smell** pleasant, fruity. **Taste** mild at first, becoming hot and acrid. **Habitat** in damp places with willow or poplar. **Season** late summer and autumn. **Distribution** frequent in most of Europe, but absent in the far north. Frequent in the south of the British Isles, particularly south-east England, rarer further north. Also present in Turkey and North America.

Similar species: Quite similar to several other large white milkcaps, but the purple markings make this species easy to identify.

Notes: This species is widely dismissed as inedible because of its acrid taste, but is nevertheless commercially collected in Turkey, where it has been described[10] as “delicious”. Personally, I wouldn’t go so far as to describe it as “delicious”, but it is perfectly edible. It’s quite hot, with another element to the flavour that the description “acrid” doesn’t quite capture.

Fiery Milkcap

Lactarius pyrogalus

Fiery Milkcap, *Lactarius pyrogalus.*

Edible (caution). Intermediate.

Cap 5-10cm, convex, then flat, becoming funnel-shaped, dingy grey/fawn, paler at the margin, usually faintly concentrically zoned, slightly viscid when wet. **Stem** 4-6cm, cylindrical, tapering upwards or swollen in the middle, paler than cap. **Flesh** pale cream. **Gills** cream becoming darker, slightly decurrent. **Milk** abundant, white turning grey-green, very hot. **Spore print** pale ochre. **Smell** faintly fruity. **Taste** very hot. **Habitat** with hazel. **Season** late summer and autumn. **Distribution** widespread and frequent in Europe. Infrequent in Scotland, more common in the rest of the British Isles. Also present in Turkey and North America.

Similar species: The Coconut Milkcap (see page 136) is visually very similar, but tastes radically different. *Lactarius circellatus* is also similar, but has a more distinctly circular-zoned cap. Many other milkcaps could also be mistaken for this one, but none of them are any more poisonous than this one (although some taste more acrid).

Notes: Widely dismissed as inedible, but collected for food in Poland and commercially collected and described[10] as “delicious” in Turkey. It is very hot, but not quite the hottest.

Fenugreek Milkcap

Lactarius helvus

Fenugreek Milkcap, *Lactarius helvus.*

Poisonous->edible (caution). Intermediate.

Cap 5-15cm, convex to flat, finely felty, margin initially slightly inrolled, sometimes with a small umbo, sometimes ending up funnel-shaped, pale grey/pink/cinnamon, covered with small scales. **Stem** 3-12cm, cylindrical, spindle or club-shaped, finely felty/powdery, becoming smooth and hollow. **Flesh** white, firm becoming fragile. **Gills** pale cream, becoming darker, crowded, adnate to slightly decurrent. **Milk** watery, sparse. **Spore print** white with a pink or ochre tinge. **Smell** of fenugreek (has been described as newly mown grass, celery, and maple syrup), mild when fresh, very strong when dried. **Taste** slightly bitter. **Habitat** wet, acidic woods, heaths and moors, usually with pine or birch, frequently in moss. **Season** summer to autumn. **Distribution** frequent in temperate areas of Europe, particularly the north-east, but absent in the Mediterranean south. Frequent but unevenly distributed in the British Isles. Rare in many areas of central England. Also present in the temperate zones of Asia and North America.

Similar species: The smell is distinctive, but it is otherwise very similar to many other milkcaps.

Notes: This mushroom is mildly poisonous raw, with symptoms including gastric disturbances, chills and vertigo. The toxins can be destroyed by boiling. It also contains sotolon, which is the chemical that gives lovage seeds and fenugreek their characteristic odour, and can be dried, powdered and used *in small quantities* as a spice.

Curry Milkcap (American: Candy Cap)

Lactarius camphoratus

Curry Milkcap, *Lactarius camphoratus*.

Edible (caution). Intermediate.

Cap 2.5-6cm, initially convex, then flattened and depressed with a small umbo, margin inrolled, red-brown, darker at the centre, smooth, matt. **Stem** 3-8cm, cylindrical or tapering downwards, same colour as cap or darker towards the base, becoming hollow. **Flesh** pale brown. **Gills** ochre, becoming red-brown, crowded, slightly decurrent. **Milk** white/watery. **Spore print** cream. **Smell and taste when fresh**, mildly unpleasant, bitter. **Habitat** woodland, usually coniferous and most frequently with pine on acid soil. **Season** summer to late autumn. **Distribution** widespread and frequent. Also present in the temperate and subtropical zones of eastern North America, north Africa and Asia.

Similar species: The biggest danger would be mistaking a non-milkcap for this species, which could include a wide variety of little brown mushrooms (LBMs), maybe even the deadly Funeral Bell (see page 300) (although that species grows on dead wood). When fresh, the Curry Milkcap could also be confused with quite a few small brown milkcaps, most of which are bitter/acrid, although not dangerously toxic. Any doubt about the identification will be dispelled upon drying, however, because this species develops a smell so strong that it will stink your house out unless kept in a tightly sealed container (like the Fenugreek Milkcap on the previous page, but more intense). A rare, related European milkcap, *L. rostratus*, is quite similar, but has an unpleasant smell (like ivy) and is of disputed edibility (but not dangerous).

Notes: Mildly toxic and should not be consumed in large quantities. It is dried, powdered and used as a spice, especially for flavouring sauces, but also can be used in bakery in place of maple syrup (providing flavour and odour, but not sweetness).

Rufous or Red Hot Milkcap

Lactarius rufus

Rufous or Red Hot Milkcap, *Lactarius rufus.*

Poisonous->edible (caution). Intermediate.

Cap 3-12cm, convex, becoming flatter but retaining an inrolled margin and usually a small umbo, colours variable shades of red-brown, dry, velvety. **Stem** 3-8cm, cylindrical, smooth, dry, velvety, red-brown but lighter than cap, white at the base and apex. **Flesh** white, thick, rather fragile. **Gills** initially pale cream, eventually reddish, crowded, adnate to slightly decurrent. **Milk** white, initially mild, becoming very hot. **Spore print** white tinged with cap colour. **Smell** faint, spicy. **Taste** mild, becoming burning hot after about a minute (careful!). **Habitat** woodland, usually coniferous and especially with pine. **Season** summer and autumn. **Distribution** common in the temperate areas of Europe, particularly in the colder northern areas, including the British Isles and the extreme north. Rare or absent in the far south. Also present in the temperate zone of North America.

Similar species: Could be confused with other milkcaps, especially the Voluminous Milkcap (next page), which is larger and nothing like as hot-tasting.

Notes: "Red Hot" has a double meaning. The specific epithet *rufus* refers to the reddish colour, but this mushroom also tastes *very* hot – eventually. When you first put it in your mouth, raw, there's not much effect, but the heat soon starts building and keeps getting stronger until your mouth is burning. Many authorities dismiss Rufous Milkcaps as inedible, but they are eaten in Scandinavian and eastern European countries. They should be parboiled twice, discarding the water, and then salted down. In this preserved state they go well with onions and mayonnaise/cream. Note: In addition to being inedibly hot when raw, it is possible they may also be slightly carcinogenic.[9]

Voluminous or Fishy Milkcap

Lactarius volemus (syn. *Lactifluus volemus*)

Voluminous or Fishy Milkcap, *Lactarius volemus* (syn. *Lactifluus volemus*).

Edible (good). Intermediate.

Cap 5-16cm, initially convex, then flattened and depressed, colour variable but usually bright red-orange and sometimes darker in the centre, finely velvety becoming smooth, not sticky, sometimes cracking at the centre. **Stem** 4-12cm, cylindrical, club-shaped or spindle-shaped, colour and texture as cap but paler. **Flesh** white, firm. **Gills** pale cream, bruising brown, slightly decurrent. **Milk** white, abundant. **Spore print** white. **Smell** fishy, especially when older. **Taste** mild, pleasant. **Habitat** deciduous or coniferous woodland. **Season** late summer to autumn. **Distribution** widespread and occasional to frequent in most parts of Europe, but absent in the far north. Occasional in the British Isles. Also present in Asia and North America. Suspected to be a species complex.

Similar species: One of the easier milkcaps to identify, even though it is rather variable. The abundant milk (from which it gets its name), combined with the large size, fishy smell, colour scheme and cap texture make it quite distinct. The easiest thing to mistake for this species is a Rufous Milkcap (previous page), which could lead to an unexpectedly spicy experience.

Notes: The smell disappears during cooking, which is best done slowly in casseroles. This is one of the few mushrooms that is not so good fried (it exudes lots of milk and can go a bit hard). It has a wide range, and is commercially collected in many countries.

Peppery Milkcap

Lactarius piperatus (syn. *Lactifluus piperatus*)

Peppery Milkcap, *Lactarius piperatus* (syn. *Lactifluus piperatus*).

Edible (caution). Basic.

Cap 6-18cm, convex then flattened with a central depression, sometimes funnel-shaped, white or cream, matt, smooth, sometimes wrinkled. **Stem** 3-8cm, very stout, cylindrical or tapering downwards, becoming hollow, colour as cap. **Flesh** white, thick, brittle. **Gills** white becoming cream, very crowded, thin, forked, decurrent. **Milk** white, hot, acrid. **Spore print** pale cream. **Smell** slightly fruity. **Taste** very hot. **Habitat** deciduous woodland. **Season** summer to late autumn. **Distribution** widespread in Europe but only occasional. Also present in Asia, Africa and eastern North America, and introduced in Australia. Possibly a species complex.

Similar species: Provided you note the milk exuded from the gills, only another of the large white milkcaps could be mistaken for this species. The most similar is the Fleecy Milkcap (*L. vellereus*), which has a larger, velvety cap, shorter stem and more distant gills (see photo on page 127), and is of similar edibility. The Blushing Milkcap (see page 141) is also similar, but has pink/purple blotches. If you don't notice the milk, some of the larger members of the Tricholomataceae (Knight family) might be mistaken for this species.

Notes: This is another milkcap that is usually only eaten after special preparation, although it probably isn't actually poisonous in the unprocessed state, just uncomfortably hot. It can cause irritation to the lips and tongue.

Auriscalpiaceae (Ear-pick Fungus family)

In addition to the Aniseed Cockleshell, this family contains a funny little mushroom with spines and a branching stem that grows on pine cones and goes by the name of Ear-pick Fungus (*Auriscalpium vulgare*). There are also several other British/European *Lentinellus* species, but they're all rare and of unknown edibility.

Aniseed Cockleshell

Lentinellus cochleatus

Aniseed Cockleshell, *Lentinellus cochleatus.*

Edible (good). Beginner.

Cap 2-6cm across, irregular, roughly shell- or ear-shaped, pink-brown, smooth, shiny. **Stem** 2-7cm, slightly darker than cap, especially near the base, tapering downwards. **Flesh** tough, pale grey-brown. **Gills** very pale peach, rather distant, deeply decurrent, with "notched" edges. **Spore print** white. **Smell** strongly of aniseed. **Taste** mild. **Habitat** on dead deciduous wood. **Season** midsummer to autumn. **Distribution** occasional in temperate areas of Europe, rarer or absent in the far south. Also present in the temperate and subtropical zones of Asia, North America and Australia.

Similar species: No other species both looks and smells like this one. No poisonous lookalikes.

Notes: This is an interesting fungus that looks like an elongated and rather random Oyster Mushroom (see page 406), but with an unmistakable aniseed smell. Well worth trying, and if you're lucky enough to find some, then you may find quite a lot.

Albatrellaceae

The Albatrellaceae are a family of toothed mushrooms and a few truffle-like species. Along with the well-known edible species included here, the Crowbar (*Scutiger pes-caprae*) is another member of this family that is reported to be an excellent edible species, but it is rare all over Europe (absent in the British Isles) and should not be picked.

Sheep Polypore

Albatrellus ovinus

Sheep Polypore, *Albatrellus ovinus.*

Edible (good). Basic.

Cap 5-15cm, convex then depressed, sometimes with irregular lobes finely velvety, often very irregularly lobed and fused, colour variable (white to tan), dry, sometimes cracked. **Stem** 2-6cm, smooth, stout, colours as cap, usually darker at the base. **Flesh** pale cream. **Pores** initially white, turning yellow then light brown, very small. **Spore print** white. **Smell** pleasant. **Taste** mild. **Habitat** coniferous woodland. **Season** all year. **Distribution** frequent in central and southern Scandinavia but apparently extinct in Denmark and absent from the far north. Also present in mountainous regions of central Europe, but much rarer in warmer/lowland areas and absent in the south. Extremely rare in the British Isles. Also present in western North America and the temperate zone of Asia.

Similar species: Easily confused with its mildly poisonous relative *A. subrubescens* (which bruises yellow-orange and is more common). Might also be mistaken for a young Hedgehog Fungus (see page 158), which is edible.

Notes: This species is commercially collected in Finland. It is slightly poisonous raw so should be well cooked, and is reported to have laxative effects if consumed in large quantities.

Hericiaceae (Tooth family)

There are three excellent edible species in the genus *Hericium* – Tiered (*H. cirrhatum*), Coral (*H. coralloides*) and Bearded Tooth (*H. erinaceus*). All three are also very beautiful, rather rare, and **prime examples of fungi that should not be collected by foragers.** These fungi have recently been found to be easily cultivated, and in Europe it is the cultivated forms that should be eaten in future, not wild ones.

Bearded Tooth

Hericium erinaceus

Bearded Tooth, *Hericium erinaceus.*

Edible and medicinal but please do not pick.

Fruit body usually a rounded cushion of white flesh, with spines up to 6cm long. **Flesh** cream becoming yellow. **Spore print** white. **Habitat** on deciduous wood, usually dead beech. **Season** summer to autumn. **Distribution** the rarest European *Hericium*. Very rare in Britain, absent in Ireland, more common in France and some other parts of central Europe. Also present in the temperate and subtropical zones of Asia and North America.

Similar species: Unlikely to be confused with anything other than another member of this genus.

Notes: This fungi's taste and texture are a bit like seafood, and it is used in Chinese cuisine to provide a vegetarian alternative to lamb or pork. Apparently it has multiple medicinal uses, popular in Traditional Chinese Medicine and currently under scientific investigation. **Protected in the UK under Schedule 8 of the Wildlife and Countryside Act 1981 and must not be disturbed without a permit. On the Red List in many other European countries.**

Tiered Tooth

Hericium cirrhatum

Tiered Tooth, *Hericium cirrhatum.*

Edible but please do not pick.

Fruit body tiered brackets of white flesh with short, conical spines. **Flesh** cream. **Spore print** white. **Habitat** on deciduous wood, usually dead beech. **Season** summer to autumn. **Distribution** uncommon or rare throughout Europe.

Similar species: Unlikely to be confused with anything other than another member of this genus.

Notes: Edibility as for Bearded Tooth (previous entry).

Coral Tooth

Hericium coralloides

Coral Tooth, *Hericium coralloides.*

Edible but please do not pick.

Fruit body forked, branched, overlapping groups of short spines. **Flesh** white. **Spore print** white. **Habitat** on deciduous wood. **Season** late summer to autumn. **Distribution** widespread in Europe but rather rare. Very rare in Britain, absent in Ireland, mainly a southern species. Also present in the temperate and subtropical zones of Asia and North America.

Similar species: Unlikely to be confused with anything other than another member of this genus.

Notes: Edibility as for Bearded Tooth (see page 150). This species is on Defra's UK Biodiversity Action Plan (BAP) protected list.

Thelophorales

Bankeraceae

The Bankeraceae are a small family of toothed mushrooms, with no British members worth eating, although there are two much-confused and rather rare species that have traditionally been used to make dyes. Your chances of finding Scaly Tooth and Bitter Tooth (*Sarcodon squamosus* and *S. scabrosus*) outside the Scottish Highlands are fairly remote, although both do occur in some parts of southern England.

Shingled Hedgehog

Sarcodon imbricatus

Shingled Hedgehog, *Sarcodon imbricatus*.

Edible (good). Basic.

Cap 5-30cm, shallowly funnel-shaped, brown or grey, dry, covered in coarse, dark scales. **Stem** 4-10cm, stout, often irregular, pale grey/brown. **Flesh** white or pale brown, soft. **Spines** 0.5-1cm, pale grey-brown. **Spore print** brown. **Smell and taste** mild. **Habitat** with spruce and fir, especially in mountainous areas. **Season** autumn. **Distribution** primarily a species of northern and mountainous areas in Europe. Not found in the British Isles; previous British records are now thought to be of other *Sarcodon* species. Present in the temperate and subtropical zones of Asia and North America.

Similar species: Unlikely to be confused with anything poisonous, although other members of its genus could easily be mistaken for it.

Notes: Described by many authorities as an excellent edible, while others claim it is bitter. It is likely that the reports of bitterness are the result of misidentification of other *Sarcodon* species.

Cantharellales

Hydnaceae (Hedgehog family)

The Hydnaceae are a small family of mycorrhizal fungi, distantly related to the chanterelles, which have spines instead of gills.

Terracotta Hedgehog

Hydnum rufescens

Terracotta Hedgehog, *Hydnum rufescens*.

Edible (good). Beginner.

Cap 2-5cm, convex, then flattened and slightly depressed, often very irregularly lobed and fused, terracotta (orange-brown), paler at the margin, finely velvety. **Stem** 1-3cm, often off-centre, paler than cap, bruising darker. **Flesh** white. **Spines** up to 0.4cm long, white or slightly pink/yellow, easily detached, adnate or just free. **Spore print** white. **Smell** faint, pleasant. **Taste** slightly bitter when raw. **Habitat** woodland, usually coniferous, often in rings and sometimes side by side with its larger relative Hedgehog Fungus (next entry). **Season** late summer to late autumn. **Distribution** widespread and frequent in Europe. Common in south-east England and the English/Welsh borders, uncommon in central England and East Anglia, frequent elsewhere in the British Isles. Also present in Turkey, and introduced in Australia.

Similar species: None, apart from Hedgehog Fungus.

Notes: Inferior to Hedgehog Fungus, mainly because it is smaller and rather crumbly.

Hedgehog Fungus, Hedgehog Mushroom or Wood Hedgehog (French: Pied de Mouton)

Hydnum repandum

Hedgehog Fungus, Hedgehog Mushroom or Wood Hedgehog, *Hydnum repandum.*

Edible (delicacy). Beginner.

Cap 3-17cm, convex, then flattened and slightly depressed, often very irregularly lobed and fused, cream, finely velvety. **Stem** 2-7cm, often off-centre, paler than cap. **Flesh** white, bruising yellow in stem base. **Spines** up to 0.6cm long, white or slightly pink/yellow, easily detached, decurrent. **Spore print** white. **Smell** faint, pleasant. **Taste** slightly bitter when raw. **Habitat** woodland, often in rings, sometimes very large. **Season** late summer to late autumn, and can be found throughout the winter in southern areas. **Distribution** widespread and common in most parts of Europe, but red listed in Germany, Belgium and The Netherlands. Common in south-east England and the English/Welsh borders, uncommon in central England and East Anglia, frequent elsewhere in the British Isles. Present worldwide.

Similar species: A very distinctive fungus with no poisonous European lookalikes, although there are quite a few spined mushrooms belonging to the genera *Bankera*, *Hydnellum* and *Phellodon*, all in the family Bankeraceae, all of which only vaguely resemble this species.

Notes: An important commercially collected species. The fruit bodies are long-lasting, rarely infested with grubs, and can often be found when there's not a lot of other things around. They're slightly bitter raw, but this turns to sweetness during cooking, so they benefit from being cooked for quite a while (but make sure they don't dry out too much – they don't contain as much water as most fungi). Blanching before frying also helps to reduce this bitterness. The spines are the bitterest part of the mushroom, and have a tendency to detach and end up looking like flies' eggs (or, as Amy Farges tells us in *The Mushroom Lover's Mushroom Cookbook*, "sparkling like flecks of gold"). They can easily be removed with a blunt knife or the back of a teaspoon, either before cooking or before they go into your basket – you don't really want Hedgehog spines tumbling about in the same basket as anything they will stick to. Hedgehogs have a similar texture to Chanterelles, and can be substituted for them in any recipe. They don't dry well, but can be pickled or frozen cooked and they can also be eaten raw.

These are among the most reliable of fungi. Other species have bad years and good years; Hedgehogs turn up like clockwork, year in, year out. Many other mushrooms come and go in a few days, and are eaten from the inside by insect grubs and the outside by slugs; Hedgehogs are almost wildlife-proof, start growing in late summer, and you can often still find them in December in the British Isles and all through the winter in southern Europe.

Clavulinaceae

The Clavulinaceae have been moved to the Cantharellales order after recent DNA analysis, although the fruit bodies bear a closer resemblance to the club and coral fungi than the chanterelles. As might be expected of relatives of the chanterelles, they are worthy of collecting for the pot, unlike some of their unrelated lookalikes.

Crested Coral / Grey Coral

Clavulina coralloides (syn. *C. cristata*) / *C. cinerea*

A particularly finely frilly ("cristate") Crested Coral, *Clavulina cristata*.

A more typical Crested Coral (*Clavulina cristata*), still pure white but with thicker branches.

Either Grey Coral or Crested Coral infected with *Helminthosphaeria clavariorum*. Infected Grey Coral is usually even darker (almost purple).

Edible (good). Intermediate.

Fruit body 2-10cm, very variable, multi-branched, slightly flattened branches, white or grey. **Spore print** white. **Smell and taste** mild, pleasant. **Habitat w**oodland. **Season** summer and autumn. **Distribution** widespread and common in Europe (both species). Present worldwide.

Similar species: This is a very difficult area. Some mycologists don't believe these are actually two different species, but assuming they *are*, both are also very variable. Crested Coral is usually described as white, with forked/crested/branching tips, Grey Coral as grey, with blunter tips that nevertheless do fork/branch sometimes. However, both species are very often infected with another fungus (*Helminthosphaeria clavariorum*), which turns Crested Coral grey and Grey Coral purple. As a result, while you will sometimes come across a *Clavulina* that appears to be obviously *coralloides* or obviously *cinerea*, working out which of them you've found is frequently impossible. Fortunately they are of equal edibility (and there are no reports of poisoning as a result of consuming infected *Clavulina* fruit bodies). There are no dangerously toxic lookalikes, but countless club and coral fungi that might be mistaken for them, some of which taste bad and/or have a laxative effect (especially *Ramaria* species). Beige Coral (*Clavulinopsis umbrinella*) is also rather similar (but with blunter tips, less extensively branching and usually growing in grass), and generally described as "not edible" rather than poisonous. The inedible Stinking Earthfan (*Thelephora palmata*) can also be visually similar, but is easily recognized by its strong and unpleasant smell.

Notes: Best sautéd briefly in butter. These fungi are widely dismissed as not worth collecting, but this dismissal is far from universal. People who actually try them tend to rather like them.

Wrinkled Club

Clavulina rugosa

Wrinkled Club, *Clavulina rugosa*.

Young Chanterelles (*Cantharellus cibarius*): this species can take several weeks to reach full size.

Edible (good). Basic.

Fruit body 4-10cm high, either unforked or only forked a few times, forks club-shaped, blunt at tips, usually twisted and grooved, dirty white. **Spore print** white. **Smell and taste** mild, pleasant. **Habitat** on soil in woodland. **Season** late summer to autumn. **Distribution** common in the north of Europe, rarer further south. Also present in the temperate and subtropical zones of North America, Australia, New Zealand and Japan.

Similar species: The easiest of the *Clavulina* species to identify correctly, because it has fewer branches, blunter tips and a consistent colour.

Notes: Fry in butter, or use as a pizza topping.

Cantharellaceae (Chanterelle family)

Along with truffles and Penny Buns, the Chanterelle and its relatives are the most sought-after edible wild fungi in Europe. Three of them are important commercially collected species. All the British species (at least 11) are edible, although many of them are quite rare. They only occur in the vicinity of trees/shrubs and are therefore presumed to be mycorrhizal.

Chanterelles tick all the boxes: common, easy to spot, easy to identify, long-lasting and delicious. No surprise, then, that they can be hard to find because somebody else found them easy to find. Winter Chanterelles are somewhat easier prey because they often occur in vast quantities where and when conditions are to their liking, but they are rather well camouflaged and therefore easy to miss, even when you're surrounded by them. They are also less well known than their brightly coloured relative, and don't usually appear in great numbers until the later autumn temperatures have emptied the woods of some of the more fair-weather foragers. But even Winter Chanterelles are easy to spot compared with the most prized member of this family: black, hidden in leaf litter in dimly lit places, Horn of Plenty eluded me for 20 years. When I finally saw it in the wild for the first time, I had just walked straight past loads of them, as had most of the group of fungi hunters I was with. Only the person at the back noticed them and asked if they were edible. The impromptu jig that followed answered his question.

The chanterelles also provide a clear example of why, if you are supposedly communicating in English, you should really use English common names rather than foreign ones. If you say "Cep" then I know you are using the French name for a Penny Bun, but having started down the path of using French names, if you subsequently say "Chanterelle" then I will have no way of knowing whether you mean *Cantharellus cibarius* or *Craterellus tubaeformis*, and we will have to use Latin to clear up the confusion. The French name for *C. cibarius* is "Girolle", and the name for *C. tubaeformis* is "Chanterelle". This is not pointless nitpicking: it leads to widespread confusion and mistakes in understanding recipes written in English by people who are gratuitously using French names for fungi; and these two mushrooms are significantly different from a culinary point of view – you can't just substitute one for the other and expect the recipe to come out right.

The thin-fleshed members of this family (including Horn of Plenty and Winter Chanterelles) are among the easiest of fungi to dry, which is fortunate, given their abundance at times. All you need to do is put them in an airing cupboard on a tray, and within 48 hours they will be ready to store in an airtight container. Preserving them in this way intensifies their flavour, and they keep well for over a year.

There are quite a few rarer members of this family, including the Pale Chanterelle (*Cantharellus ferruginascens*), which is similar to a Chanterelle but paler and bruising light brown (see photo in Chapter 2, page 23), and the recently described *C. subpruinosus*, also very similar to a Chanterelle but with white frosting on the cap and a particularly chunky stem. The Blackening Chanterelle (*C. melanoxeros*) looks like a Chanterelle but bruises dark brown/black and the Orange Chanterelle (*C. friesii*) is a miniature version of a Chanterelle. These last two are internationally rare, on Defra's UK Biodiversity Action Plan (BAP) protected list, and should not be picked anywhere.

Chanterelle (French: Girolle)

Cantharellus cibarius

Chanterelle (French: Girolle), *Cantharellus cibarius.*

Edible. Basic.

Cap 3-10cm, with a wavy, irregular margin, egg-yolk yellow, smooth. **Stem** 3-8cm, tapering downwards, same colour as cap. **Flesh** pale yellow or white. **Spore-bearing surface** gill-like wrinkles, colour as cap, rather distant, deeply decurrent, multiply forked. **Spore print** pale yellow. **Smell** fruity/apricots. **Taste** (raw) slightly peppery. **Habitat** coniferous and deciduous woodland, usually in groups, often on slopes. **Season** summer to autumn. **Distribution** common in Europe, particularly the north. Also present in Asia, Africa and North America.

Similar species: Several other members of this family could be mistaken for a Chanterelle, but these are all edible. The very abundant False Chanterelle (see page 176) is frequently misidentified as a Chanterelle by hopeful novice foragers – it is floppier and less brittle than the real thing, and lacks the fruity smell. There is some disagreement about its edibility/toxicity, but it certainly isn't dangerous. The potentially deadly Brown Rollrim (see page 178) has been mistaken for a Chanterelle – although this is an error that anybody familiar with the real thing would be unlikely to make. Rollrims are brown rather than yellow and the (false) gills are different – if you run your finger up the stem, then the (false) gills will separate in one lump from the cap, like the tubes of the boletes, to which it is related. The (false) gills of a Chanterelle do not do this. There are also a related pair of poisonous species, both known as Jack O'Lantern (see page 341), that look superficially similar, but have true, non-forking gills rather than the forking wrinkles of a Chanterelle, and darker yellow flesh (they are very rare in the British Isles).

Notes: There are probably more recipes in existence for this species than any other wild mushroom. They're often paired with eggs, partly because of their colour, and partly because the tastes and textures go well together. They are great fried and served on toast. They can be made into a sauce, or served with chorizo or fish. They can also be added to stews, flans/tarts, risottos, pasta or rice. They are often dry-fried to drive off moisture before further cooking or use in recipes. Chanterelles do not dry as well as the thinner-fleshed members of this family.

You can also make Chanterelle vodka. Put 100g of fresh Chanterelles for every 400ml of vodka in a preserving jar. The mushrooms will initially float. When they sink to the bottom, the mix is ready. Serve chilled.

Amethyst Chanterelle

Cantharellus amethysteus

Amethyst Chanterelle, *Cantharellus amethysteus.*

Edible (delicacy). Basic.

Cap 3-7cm, with a wavy, irregular margin, with purple-brown scales that sometimes cover the whole cap and other parts of the mushroom, sometimes only a small area in the centre of the cap and occasionally are completely absent. **Stem** 2-5cm, tapering downwards, bruising purple-brown. **Flesh** pale yellow, discolouring darker. **Spore-bearing surface** gill-like wrinkles, distant, decurrent, multiply forked. **Spore print** white. **Smell** fruity/apricots. **Taste** slightly fruity. **Habitat** woodland usually in groups, often on slopes. **Season** summer to autumn. **Distribution** frequent in southern coastal areas of Scandinavia, and some other parts of central northern Europe, but rare elsewhere and absent in the south. Uncommon in the British Isles, most frequent in the south and west.

Similar species: Very similar to a Chanterelle, apart from the variable amethyst scales.

Notes: Edibility as for Chanterelle.

Ashen Chanterelle

Cantharellus cinereus

Ashen Chanterelle, *Cantharellus cinereus*.

Edible, but too rare to take for the pot unless locally very abundant. Basic.

Cap 2-6cm, with a wavy, irregular margin, dark grey-brown or black. **Stem** 2-7cm. **Flesh** grey. **Spore-bearing surface** gill-like wrinkles, grey, very distant, decurrent, forked. **Spore print** white. **Smell** strong, fruity. **Taste** mild. **Habitat** woodland, especially beech. **Season** summer to autumn. **Distribution** widespread in Europe but rare in many areas. Probably most common in southern Scandinavia. Rare in the British Isles.

Similar species: It would be hard to mistake anything but another edible member of the Cantharellaceae for this species, although beginners sometimes confuse Blackening Brittlegills (see page 125) for black members of this family.

Notes: Edibility as for Winter Chanterelle (see page 172).

Horn of Plenty or Black Trumpet (French: Trompette de la Mort)

Craterellus cornucopioides

Horn of Plenty or Black Trumpet, *Craterellus cornucopioides.*

Edible (delicacy). Beginner.

Fruit body 2-15cm, tubular and very irregular. **Spore-bearing surface** smooth, becoming wavy, grey-black. **Spore print** white to very pale brown. **Smell** fruity, pleasant, less pleasant when older. **Taste** mild. **Habitat** deciduous woodland, usually in large groups. Particularly likes slopes under old beech trees on acid soil. **Season** mid- to late autumn. **Distribution** widespread and frequent in Europe, but considerably more common in areas where beech is native (the southern half of the British Isles, all of central Europe but not the far north or far south-west). Also present in Asia and north and west Africa. Tends to fruit biennially.

Similar species: You are unlikely to get this one wrong – the problem is finding it, not identifying it. A very inexperienced collector could conceivably mistake a blackened, decomposing Blackening Brittlegill (see page 125) for a Horn of Plenty.

Notes: This is my favourite edible British wild fungus. The fruit bodies must be carefully split open and cleaned before use (use your fingers rather than a knife, unless you want two halves of a centipede running round your kitchen in different directions). Sometimes you have to resort to washing them. They can be a bit fibrous, and because they have such a strong flavour it is a good idea to chop them up finely before use. They are great sautéd, either on their own or as part of a wild mushroom mix. They go well with game and seafood, and like all the members of this family they work well in an omelette (tromplette!). Long cooking in stews or with lamb shanks also brings out the best in them, but my preferred use is to make a cream sauce with them and just a little bit of Parmesan, to be served with crispy pan-fried fish such as sole or plaice.

Trumpet or Winter Chanterelle

(French: Chanterelle, American: Yellowleg)

Craterellus tubaeformis

Trumpet or Winter Chanterelle, *Craterellus tubaeformis.*

Edible (delicacy). Beginner.

Cap 1.5-6cm, mixture of brown, yellow and grey. **Stem** 2-8cm, tubular, often flattened or grooved, yellow becoming grey-yellow. **Flesh** thin. **Spore-bearing surface** yellow then grey-yellow, vein-like wrinkles, very distant, decurrent, forked. **Spore print** pale yellow. **Smell** faint, pleasant, distinctive, spicy/fruity. **Taste** mild to slightly bitter (raw). **Habitat** woodland, usually in large groups, particularly preferring conifer woodland with bracken and/or large amounts of coarse woody debris. **Season** mid-autumn to early winter. **Distribution** widespread and common in Europe, especially the north, and can be locally extremely abundant. Frequent to common in the British Isles, particularly in the Scottish Highlands and south-east England. Also present in the temperate to tropical zones of Asia and eastern North America.

Similar species: There's not much you can mix this one up with, apart from some of its equally edible relatives, although it sometimes shares a damp habitat with an unusual fungus of a similar size and colour called Jelly Babies (*Leotia lubrica*). That species has no gill-like wrinkles and isn't poisonous, although it would be generous to describe it as edible.

Notes: This is one of my favourite wild mushrooms, not least because it often fruits in abundance when little else can be found. Winter Chanterelles make a bolognese sauce into something a bit special, and go well in all other pasta dishes. They're great for adding flavour to soups and stews. They can also be "pickled": fry them in olive oil until all the water has been driven off. Allow to cool, then season and add plenty of finely chopped chives and a generous glug of balsamic vinegar. Serve cold.

Golden Chanterelle

Craterellus lutescens (syn. *Cantharellus aurora*, *C. lutescens*, *Craterellus tubaeformis* var. *lutescens*)

Golden Chanterelle, *Craterellus lutescens* (syn. *Cantharellus aurora*, *C. lutescens*, *Craterellus tubaeformis* var. *lutescens*).

Edible (delicacy). Basic.

Cap 1-6cm, with a wavy, irregular margin, becoming funnel-shaped, golden yellow with patches of grey or brown. **Stem** 2-7cm, golden yellow. **Flesh** pale. **Spore-bearing surface** yellow-brown, smooth. **Spore print** pale yellow. **Smell** strong, fruity. **Taste** mild. **Habitat** coniferous woodland, especially in mountainous and coastal regions. **Season** summer to autumn. **Distribution** widely but unevenly distributed in Europe, rare or absent in many areas. Frequent in the Scottish Highlands but rather rare in the rest of the British Isles. Also present in North America.

Similar species: Looks like a Winter Chanterelle (they are close relatives – see photo on previous page), but with less-developed false gills. Some people unhelpfully call normal Chanterelles "Golden Chanterelles", presumably because somebody once wrongly assumed the name must apply to that species because of its colour, and others copied their mistake.

Notes: This is a commercially collected species.

Wavy-capped or Sinuous Chanterelle

Pseudocraterellus undulatus (syn. *Craterellus sinuosus*)

Wavy-capped or Sinuous Chanterelle, *Pseudocraterellus undulatus* (syn. *Craterellus sinuosus*).

Edible (delicacy). Beginner.

Cap 1-5cm, irregularly wavy and lobed, pale grey-brown. **Stem** 5-10cm, tapering towards base, pale cream. **Spore-bearing surface** pale grey, wrinkled or folded, decurrent. **Spore print** white to pale yellow. **Smell** faint, fruity. **Taste** mild. **Habitat** deciduous woodland, especially with beech, often in large groups. Often fruits side by side with Horn of Plenty. **Season** autumn. **Distribution** widespread but uncommon in Europe, and absent from the far north. Occasional in the British Isles, but can be locally abundant.

Similar species: No toxic lookalikes, and it is unlikely you will confuse this with any other European species.

Notes: Similar to Horn of Plenty (see page 170), although not as supremely tasty. Of the lesser-known chanterelles, this is the one I find most frequently in south-east England, although it is considered vulnerable in Britain.

Boletales

Hygrophoropsidaceae (False Chanterelle family)

This small family of mushrooms is closely related to the boletes, regardless of the fact they appear to have gills rather than tubes (the gills are false). Only one European species is of any interest, being widespread, extremely abundant and regularly mistaken by inexperienced foragers for a Chanterelle.

False Chanterelle

Hygrophoropsis aurantiaca

Poisonous.

False Chanterelle, *Hygrophoropsis aurantiaca.*

Cap 2-10cm, initially convex, then flat and eventually funnel-shaped, colour very variable, from deep orange to nearly white, very finely downy, and floppy, like chamois leather. **Stem** 2-5cm, variable in shape, colour as cap, or slightly darker. **Flesh** yellow-orange, tough. **Gills** orange/yellow, crowded, deeply decurrent, forked. **Spore print** white. **Smell and taste** earthy, mushroomy, slightly unpleasant. **Habitat** heaths and coniferous woodland, especially on needle litter. **Season** late summer to autumn. **Distribution** widespread and very common in Europe, and can locally dominate. Present worldwide. This is a species complex.

Similar species: Superficially similar to a Chanterelle, but lacking the fruity smell, much floppier and with more crowded false gills.

Notes: Has been variously described as edible, edible but poor, inedible, mildly poisonous and even causing hallucinogenic symptoms in some people (which is rather doubtful). Now known to contain a significant concentration of the sugar alcohol arabitol, which causes unpleasant gastrointestinal symptoms for some people, so the correct category is “mildly poisonous”.

Paxillaceae (Rollrim family)

The genus *Paxillus* is noteworthy for a couple of reasons. Firstly, they’re rather variable and you are going to find quite a lot of them, so it makes life easier if you can recognize them. Recent genetic research has shown that the extreme variability of the Brown Rollrim, as historically known, is partly explained by it actually being several species rather than just one. *Paxillus validus* and *P. obscurosporus* are larger, shorter-stemmed and a slightly different shape than the “true” Brown Rollrim, and the Alder Rollrim (*P. rubicundulus*) is very similar to *P. involutus*, but found specifically with alder in boggy places. Secondly, they are deadly poisonous, but only after long-term consumption with no symptoms. The gills are false, consistent with these species’ taxonomic position in the Boletales. In addition to the poisonous gilled *Paxillus* species, there’s a rare edible bolete in this family: the Alder Bolete (*Gyrodon lividus*).

Brown Rollrim

Paxillus involutus

Deadly poisonous.

Brown Rollrim, *Paxillus involutus*.

Cap 4-14cm, convex then flattened and depressed, brown bruising darker, finely downy, then smooth, sticky when wet, especially in the centre, margin grooved and persistently inrolled. **Stem** 3-7cm, stout, thicker at the base, colour as cap. **Flesh** pale yellow, darkening on cutting. **Gills** cream bruising brown, crowded, decurrent, forked, easily detached from the cap if you run your finger up the stem. **Spore print** sienna. **Smell and taste** sour, fruity, mushroomy. **Habitat** deciduous woodland, heaths, parks, gardens and roadsides, especially with birch, but also with many other tree species. Prefers acidic soil. Usually fruits from the ground, but often appears on stumps, and I've seen it in my own back garden fruiting from mortar in a sandstone wall, 30cm above ground level (associated with next door's birch tree but the mycelium clearly gets around). **Season** late summer to late autumn. **Distribution** widespread and common in Europe, particularly the north. Very common in the British Isles. Also present in Asia, North and South America, and Australasia.

Similar species: Has been mistaken for a Chanterelle (see page 166), but is a significantly different colour. Could be mistaken for a Copper Spike (see page 183), but the gills of that species are much more distant and much less decurrent.

Notes: These mushrooms were once widely eaten in eastern Europe, although known to be poisonous raw. Suspicions about a more severe toxicity were finally taken seriously when German mycologist Dr Julius Schaeffer died suddenly of kidney failure in 1944, two weeks after consuming them. The odd thing was that he'd been eating them for years, with no apparent ill effects. Only after several decades of research do we now have a better idea of what is going on with these poisonings. After repeated ingestion, a tipping point is reached, an antigen in the mushrooms causes a major immune response in the human body, and antibodies circulate in the bloodstream. These antibodies, instead of protecting against pathogens as antibodies are supposed to, respond first to the antigen in the mushroom and then red blood cells. The victim's immune system is now primed to attack their own red blood cells, with the response triggered by the antigen in the mushroom. The next time they are consumed, antibody-antigen complexes form and the red blood cells start to break down in large numbers. The kidneys struggle to cope with the resulting storm of cell debris and free haemoglobin, leading in serious cases to death. This mechanism is similar to what happens to a person given a blood transfusion from a blood group incompatible with their own. Somewhat surprisingly, Brown Rollrims are *still* eaten in some places.

Gomphidiaceae (Spike family)

The spikes are another group of mushrooms with false gills, and closely related to the boletes. None are first-class edibles, and they shouldn't be picked unless you find quite a lot of them. The Copper Spike is probably the most common, and the Slimy Spike the best for eating.

Cooking (all spikes): Sauté in butter.

Slimy Spike (American: Hideous Gomphidius)

Gomphidius glutinosus

Slimy Spike, *Gomphidius glutinosus*.

Edible (good). Intermediate.

Cap 3-13cm, convex becoming flatter, sometimes depressed, grey, slimy. **Stem** 4-10cm, usually very stout, cylindrical or tapering upwards to the point where the gills attach, white near the top, more grey and discolouring chrome yellow near the base, slimy, with a glutinous veil connecting the stem and cap margin, leaving a sticky ring zone. **Flesh** thick, white. **Gills** pale grey discolouring much darker, distant, decurrent, forked. **Spore print** dark red. **Smell** mild, pleasant. **Taste** of lemon. **Habitat** with conifers. **Season** autumn. **Distribution** widespread and frequent in many parts of Europe, common in Scandinavia, rarer to the south and east. Common in Scotland, less frequent elsewhere in the British Isles. Also present in North America.

Similar species: Slimy Spikes are grey and about the same size as Deathcaps (see page 412), and this alone makes them unsuitable for beginners. However, the yellowing in the stem base, the distinctive gills and general sliminess make them reasonably straightforward to recognize.

Notes: The slimy cap covering should be removed before cooking.

Rosy Spike

Gomphidius roseus

Rosy Spike, *Gomphidius roseus*.

Edible. Intermediate.

Cap 3-6cm, convex becoming flat, dull red, sticky. **Stem** 2-5cm, usually cylindrical or tapering downwards, white with pink tinges, bruising grey, with a glutinous white veil connecting stem and cap margin. **Flesh** off-white, yellow in stem base, bruising dark grey. **Gills** pale grey bruising black, very distant, deeply decurrent, forked. **Spore print** black. **Smell and taste** mild. **Habitat** with **pine**, always with Jersey Cow Bolete (see page 226), although not always fruiting at the same time. **Season** autumn. **Distribution** widespread in Europe, frequent in the north, rarer further south. Also present in the temperate zone of Asia.

Similar species: A beginner could mistake the Rosy Spike for The Sickener (see page 100), although it is pretty obvious this isn't a brittlegill to anyone familiar with brittlegills.

Notes: Because this mushroom is always found in the same place as Jersey Cow Bolete, there must be some sort of relationship between them. One theory is that the Rosy Spike mycelium taps directly into the mycorrhizal connection between the bolete and the tree, helping itself to nutrients and thus parasitizing both of them at the same time.

Larch Spike

Gomphidius maculatus

Larch Spike, *Gomphidius maculatus.*

Edible. Basic.

Cap 3-10cm, convex becoming depressed with an umbo, grey bruising black, slimy. **Stem** 3-9cm, cylindrical, white bruising red-brown or black, sometimes oozing amber droplets. **Flesh** white, yellow in stem base. **Gills** grey bruising black, distant, decurrent, forked. **Spore print** black. **Smell and taste** mild. **Habitat** always with larch and apparently associated with Larch Boletes (see page 228). **Season** late summer to autumn. **Distribution** occasional in temperate areas of Europe, rare or absent further south. Also present in North America.

Similar species: There are no poisonous lookalikes. Larch Spike is probably most easily confused with a Slimy Spike (see page 180), although that species doesn't turn so black.

Notes: Tastes better than it looks, although that's not saying very much.

Copper Spike

Chroogomphus rutilus (syn. *Gomphidius viscidus*)

Copper Spike, *Chroogomphus rutilus* (syn. *Gomphidius viscidus*).

Edible. Intermediate.

Cap 3-15cm, convex with an umbo, copper-coloured, sticky when wet, shiny when dry. **Stem** 6-12cm, shape very variable, colour as cap, sticky, no ring but has a veil that leaves faint ring zone. **Flesh** pale brown, yellow in stem base. **Gills** olive becoming very dark brown, decurrent, thin, very distant, forked. **Spore print** black. **Smell and taste** slightly sour. **Habitat** with pine. **Season** late summer and autumn. **Distribution** widespread and frequent in Europe, particularly in the north. Also present in Asia.

Similar species: An inexperienced collector might mistake a poisonous Brown Rollrim (see page 178) or any number of poisonous webcaps (see page 310) for this species.

Notes: Can be used to make a brown dye.

Boletaceae (Bolete family)

The Boletaceae are a large and complex family of fungi, most of which are edible, including some of the most sought-after species in the world. Most famous of all is the Penny Bun (often referred to in English by its French or Italian names: Cèpe and Porcino). Nearly all of them are mycorrhizal.

There is some confusing terminology here. The Boletaceae characteristically have tubes rather than gills, and mushrooms of this sort are referred to, in non-scientific English, as "boletes" (you will also sometimes hear English people say "bolet" instead of "bolete" – this is French, not English). Recent DNA testing is rewriting this area of fungal taxonomy. Not all the boletes still belong to the Boletaceae, and a few of the Boletaceae have what look exactly like gills, and some of those have common names that incorporate the word "bolete". The scientific term "*Boletus*" is also often incorrectly used to mean "bolete". "*Boletus*" properly refers only to the genus to which most of the species in this family belonged until quite recently, but which is currently in the process of splintering into many new groups. Unfortunately, the disruption in the Boletaceae is not likely to end anytime soon.

There are no deadly boletes. The worst poisonous species – the Devil's Bolete (see page 199) – is condemned as potentially deadly in some older guides. However, there is no evidence of any fatalities, and its notoriety, distinctive colour scheme and unpleasant odour all help to minimize poisonings. Several of its European relatives will also make you quite ill (see page 196). None are common in northern Europe; the whole group is more at home in warmer climates further south. Apart from these and a few very rare species of unknown edibility, all the other members of the family are either known to be edible (although some must be cooked) or inedible only because they don't taste very nice.

The Penny Bun (*Boletus edulis*): the most famous of the edible boletes.

The general edibility of this family and minimal risk of poisoning makes it an important one for foragers, and especially attractive to beginners. The rare species of unknown edibility are highly unlikely to be toxic for precisely this reason: it is inevitable that they are consumed on a regular basis, even though they are rare, so if they were poisonous then it seems highly unlikely we wouldn't know about it.

Sometimes boletes are rendered unrecognizable (and inedible) due to attack by a parasitic ascomycete fungus called "The Bolete Eater" (see page 482).

Nearly all mushrooms in the Boletaceae (Bolete family) are symbiotic with trees, but many species, especially the large ones, seem to prefer very open woodland or grassy areas near isolated trees to denser woodland. Parks and cemeteries are excellent hunting grounds.

The following genera/species are all rare or uncommon in Europe (and the British Isles), and none should be picked by foragers:

- *Auroboletus* is a group of beautiful boletes with golden yellow pores, the sole European species being the Gilded Bolete (*A. gentilis*).
- *Buchwaldoboletus* are the only wood-decomposing saprophytes in the family, both European species being of unknown edibility.
- *Rubinoboletus* is a small group of red-pored boletes, the only European species being the Crimson Bolete (*R. rubinus*).
- The Dusky Bolete (*Porphyrellus porphyrizon*) and Old Man of the Woods (*Strobilomyces strobilaceus*) are the sole European members of their genera, neither of which are worth eating, even if they were common enough to justify picking.
- *Phylloporus* is a quite large, but mostly tropical genus of boletes, all of which have gills rather than tubes, the most famous European member being the Golden Gilled Bolete (*P. pelletieri*).

In addition to those covered here, there are up to another 20 European species remaining in *Boletus* for now. They are predominantly of a southern European distribution, and many are rare or very rare. Some are introduced species. Quite a few are likely to be moved out of *Boletus* in the near future.

Cooking advice (for all edible boletes): Firstly, there is no need to discard the stem or tubes, unless they are getting old and the tubes have turned into a green mush. In reasonably fresh specimens the tubes are every bit as edible as the rest of the mushroom, if a bit squidgy. There's no justification at all for discarding the stems. Perfect young specimens can be thinly sliced and eaten raw. A lot of them end up dried and used as flavouring for soups, stews and other dishes.

The Deceiving Bolete, *Suillelus queletii* (syn. *Boletus queletii*).

Boletes: Delicacies

These large, highly prized boletes are typically dried and used to flavour dishes, but they can also be preserved in oil and are superb sliced thickly and fried. In addition to the species featured here, the Fragrant Bolete **(***Boletus fragrans* syn. *Lanmaoa fragrans*) is also a delicacy, but it is very rare in the British Isles and not that common elsewhere in Europe either, so should not be picked.

Penny Bun or Cep (French: Cèpe, Italian: Porcino)

Boletus edulis

Penny Bun or Cep, *Boletus edulis*.

Edible (delicacy). Basic.

Cap 8-30cm, hemispherical becoming convex, sometimes ending up flat or even with flared, raised edges, brown, sometimes initially white at the margin, can be smooth and dry, or a bit greasy, sometimes wrinkled. **Stem** 3-25cm, variably shaped, usually stout, sometimes very bulbous, upper half covered in a network of raised white lines ("reticulations") on a light brown surface, usually much less pronounced on the lower half. **Flesh** white, unchanging. **Tubes** white, turning dirty yellow-green. **Pores** small, round, colour as tubes. **Smell and taste** very pleasant. **Habitat** deciduous and coniferous woodland, especially with beech or oak. **Season** summer to autumn. **Distribution** widespread and common in temperate areas of Europe, particularly the north and mountainous areas further south. Also present in North and South America, Asia and north Africa. Introduced in Australia, New Zealand, and southern Africa.

Similar species: There are no poisonous lookalikes, unless you are colour-blind. All the poisonous boletes have red or pink colours somewhere, and most of them discolour blue. If a bolete is entirely white/brown/yellow/olive, with no red or pink and no blue discoloration, then it is not poisonous. However, Penny Buns are easily confused with several edible relatives, including all those listed here as delicacies. The Bitter Bolete (see page 198), which isn't poisonous but *is* extremely bitter, is also easily mistaken for a Penny Bun, the main difference being that the Bitter Bolete has brown reticulations on a white background, instead of the other way round, and pinkish pores and spores. The edible *B. depilatus* is also rather similar – this species was only relatively recently scientifically described, and its distribution and frequency is not yet well understood.

Notes: Penny Buns are delicious served on their own, roasted whole, or sliced thickly and grilled or fried in butter, perhaps with a bit of garlic. In Italy they are traditionally used in risottos. In Poland they are used as the central ingredient of *uszka*, which are miniature dumplings filled with wild mushrooms, traditionally served with *borscht* (beetroot soup) on Christmas Eve. This just scratches the surface; you will find hundreds of recipes for this mushroom and its close relatives.

Pine Bolete

Boletus pinophilus

Pine Bolete, *Boletus pinophilus*.

Edible (delicacy). Basic.

Cap 8-30cm, hemispherical becoming convex, reddish-brown, sometimes paler at the margin, greasy at first, becoming rough and wrinkled. **Stem** 8-13cm, very stout or barrel-shaped, usually darker towards the base, covered in a network of fine, white reticulations, bruising red. **Flesh** white, staining wine-red below the cap on cutting. **Tubes** small, round, white, then green-yellow. **Pores** colour as tubes. **Smell and taste** strong, pleasant, earthy. **Habitat** woodland, usually coniferous, especially with Scots pine. **Season** late spring to late autumn. **Distribution** widespread in Europe, but unevenly distributed and uncommon in many areas. More common in the north, and typically found in mountainous areas in the south. Common in native Scottish pine forests, but uncommon to rare elsewhere in the British Isles. Also present in North America.

Similar species: See Penny Bun (previous entry).

Notes: Pine Boletes are very similar to Penny Buns in most respects. This species can accumulate mercury so should not be picked from polluted areas.

Dark Penny Bun, Dark Cep or Bronze Bolete

Boletus aereus

Dark Penny Bun, Dark Cep or Bronze Bolete, *Boletus aereus*.

Edible (delicacy). Basic.

Cap 5-30cm, dark brown, slightly downy at first, then smooth but feeling rough due to tiny cracks. **Stem** 6-13cm, stout, sometimes so swollen it is almost spherical, covered with dark reticulations or blotches of various brown-themed colours. **Flesh** firm, white, unchanging or darkening slightly on cutting. **Tubes** white, becoming yellow. **Pores** small, white, colour as tubes, becoming red-brown with age or if bruised. **Smell** mild, hazelnuts. **Taste** delicious. **Habitat** deciduous woodland, usually with beech or oak (especially cork oak in southern Europe). **Season** summer to autumn. **Distribution** frequent in the southern half of Europe, becoming rarer or absent further north. Very rare in the British Isles. Also present in north Africa and the United States. Introduced in South Africa.

Similar species: See Penny Bun (see page 188). There is also a closely related southern European / north African species called *B. mamorensis*.

Notes: The Dark Penny Bun is the best edible bolete. Even tastier than a Penny Bun.

Summer Bolete or Summer Cep

Boletus reticulatus (syn. *B. aestivalis*)

Summer Bolete or Summer Cep, *Boletus reticulatus* (syn. *B. aestivalis*).

Edible (delicacy). Basic.

Cap 5-20cm, hemispherical becoming convex, sometimes ending up flat, light brown to chestnut, **dry and rough**, usually cracking, especially at the centre. **Stem** 6-16cm, swollen, bulbous, covered in a dense network of fine white or brown reticulations. **Flesh** white or pale cream, unchanging, a little softer than its closest relatives. **Tubes** white to green-yellow. **Pores** small, round, white then greyish-yellow. **Smell and taste** strong, pleasant. **Habitat** deciduous woodland, often with beech, oak or sweet chestnut. **Season** summer to mid-autumn. **Distribution** widespread and occasional to frequent in Europe. Present but uncommon in many parts of the British Isles, most frequent and locally common in south-east England. Also present in eastern North America and introduced in South Africa.

Similar species: See Penny Bun (page 188), although this species is more closely related to the Dark Penny Bun (previous page).

Notes: As Penny Bun, although the Summer Bolete has a slightly different, sweeter taste.

Bay Bolete

Imleria badia (syn. *Boletus badius*)

Bay Bolete, *Imleria badia* (syn. *Boletus badius*).

Edible (delicacy). Beginner.

Cap 3-14cm, hemispherical then convex, often ending up flat, chestnut to dark brown, initially downy then smooth, sticky when wet. **Stem** 4-13cm, paler than cap, with brown streaks but no network. **Flesh** white, becoming faintly blue above the tubes on cutting. **Tubes** yellow, temporarily bruising green-blue. **Pores** medium-sized, initially round, becoming angular, cream becoming olive, bruising dark blue. **Smell** strong, distinctive but hard to describe. **Taste** strong, pleasant. **Habitat** woodland, usually with conifers or beech, preferring acid or neutral soil. **Season** late summer to autumn. **Distribution** widespread and common in Europe, particularly the north, though rarer in the far north. Common in the British Isles, locally very common. Also present in the temperate and subtropical zones of Asia and eastern North America.

Similar species: While it is possible to mistake many other boletes for a Bay Bolete, this species is not a close relative of the four previous species (it has been repeatedly moved about, taxonomically). The colour scheme (including bruising blue) and size make it one of the easiest boletes to identify, although beginners do tend to mistake it for a Penny Bun.

Notes: Considered by some as inferior to a Penny Bun, and perhaps something of an acquired taste, but a first-class edible mushroom and less popular with the insect grubs than many of its relatives. Its strong taste makes it a good match for game.

Oak Bolete

Butyriboletus appendiculatus (syn. *Boletus appendiculatus*)

Oak Bolete, *Butyriboletus appendiculatus* (syn. *Boletus appendiculatus*).

Edible (delicacy, caution). Basic.

Cap 8-16cm, hemispherical becoming convex, light yellow-brown, finely velvety, developing small cracks near the centre. **Stem** 6-15cm, pointed at the base, yellow at the top, reddish-brown at the base, covered in a fine network the same colour as the cap. **Flesh** pale yellow, turning slightly blue on cutting near top of stem. **Tubes** yellow, turning slightly blue when cut. **Pores** very small, lemon yellow, then reddish. **Smell and taste** mild, pleasant. **Habitat** deciduous woodland, usually with oak. **Season** midsummer to mid-autumn. **Distribution** present from the far south of Spain to southern Scandinavia, but only occasional. Uncommon in southern England and rare in the rest of the British Isles. Also present in North America.

Similar species: The rare (and edible) *B. subappendiculatus* is very similar apart from habitat (it grows with conifers). Also see notes for Pale Bolete (next page).

Notes: It has been reported that some people are allergic to this species. Traditionally used in soups and stews.

Pale Bolete

Butyriboletus fechtneri (syn. *Boletus fechtneri*)

Pale Bolete, *Butyriboletus fechtneri* (syn. *Boletus fechtneri*).

Edible (good). Intermediate.

Cap 5-20cm, hemispherical becoming flat, colour variable but usually light grey-brown, finely downly becoming smooth, sometimes cracking. **Stem** 5-15cm, cylindrical or slightly club-shaped, yellow, flushed pink, finely reticulated. **Flesh** very pale yellow, discolouring blue in the cap and brownish in the stem, especially near the base. **Tubes and pores** yellow, discolouring blue on contact or exposure to air. **Smell and taste** mild, sweet. **Habitat** usually deciduous woodland, but occasionally with conifers (illustrated here in a spruce plantation). **Season** autumn. **Distribution** widespread but uncommon in Europe. Absent in the far north, probably more common in the south. Rare in the British Isles.

Similar species: Also recently shifted to this new genus are two other rare (everywhere in Europe) and edible boletes: the Royal Bolete (*B. regius*) and The Pretender (*B. pseudoregius*). The Royal Bolete is protected in the UK under Schedule 8 of the Wildlife and Countryside Act, although there is now some doubt as to whether it has ever actually been present in Britain. The Pretender is on Defra's UK Biodiversity Action Plan (BAP) list. Yet another rare bolete – the Iodine Bolete (*Boletus impolitus* syn. *Hemileccinum impolitum*) – is also superficially similar, but the pores don't bruise blue.

Notes: The Pale Bolete is red listed in the UK.

Poisonous and bitter boletes

These are the boletes you need to avoid. They are either bitter or poisonous – or both.

Rooting Bolete

Caloboletus radicans (syn. *Boletus radicans*)

Poisonous.

Rooting Bolete, *Caloboletus radicans* (syn. *Boletus radicans*).

Cap 8-20cm, hemispherical becoming convex then flat, white, becoming grey/brown/yellow, usually with large cracks, margin sometimes overhanging like a curtain. **Stem** 5-13cm, stout, especially in the lower half but tapering sharply towards a rooting base, pale yellow, sometimes covered with reticulations (white becoming darker) and/or scattered red spots. **Flesh** pale yellow, turning blue in many areas on cutting, but red-brown in the stem base. **Tubes** lemon yellow, bruising blue. **Pores** small, round, colour as tubes. **Smell** spicy. **Taste** very bitter. **Habitat** with oak or beech, usually in open areas and particularly on chalk. **Season** summer to autumn. **Distribution** rare in the north and absent in the far north of Europe, becoming more frequent further south. Frequent in southern England, rarer in the rest of the British Isles. Also present in the temperate and subtropical zones of Asia.

Similar species: The closest edible lookalike is the rare (and edible) Iodine Bolete (*B. impolitus*).

Notes: Not quite so overpoweringly bitter as the Bitter Bolete (see page 198). At least one study[11] has suggested the Rooting Bolete can cause serious gastrointestinal problems.

Bitter Beech Bolete

Caloboletus calopus (syn. *Boletus calopus*)

Bitter Beech Bolete, *Caloboletus calopus* (syn. *Boletus calopus*).

Inedible.

Cap 5-15cm, hemispherical becoming flatter, pale grey-brown, surface dull and usually cracking near the centre, margin slightly overhanging. **Stem** 5-12cm, stout, usually swollen, especially at the base, yellow at the apex, red at the base, reticulated throughout, bruising blue. **Flesh** white on cutting, discolouring pale blue with hints of red/brown in the stem. **Tubes** yellow, turning blue. **Pores** medium, round, colour as tubes. **Smell** strong and unpleasant. **Taste** very bitter. **Habitat** deciduous woodland, usually with beech. **Season** late summer to autumn. **Distribution** widespread in temperate areas of Europe as far north as coastal areas of southern Scandinavia, but uncommon. Occasional in the British Isles. Also present in the temperate zone of Asia.

Similar species: Most likely to be mistaken for one of the poisonous boletes in the genus *Rubroboletus*.

Notes: Edibility as for Bitter Bolete (next page).

Bitter Bolete

Tylopilus felleus

Bitter Bolete, *Tylopilus felleus*.

Inedible.

Cap 5-12cm, hemispherical becoming convex then flat, pale brown, downy, then smooth. **Stem** 5-15cm, club-shaped, covered in network of widely spaced, dark brown reticulations. **Flesh and tubes** white/cream becoming pink. **Pores** medium to large, angular, white becoming pink. **Spore print** brownish-pink. **Smell** faint, mushroomy. **Taste** extremely bitter. **Habitat** woodland, usually deciduous. **Season** late summer to autumn. **Distribution** widespread and frequent in temperate areas, rare or absent further south. Frequent in England, particularly the south, occasional in the rest of the British Isles. Also present in Asia, eastern North America, Mexico and Central America.

Similar species: This is a distinctive bolete, and once you're aware of it you will probably recognize it. Nevertheless, it is frequently mistaken for a Penny Bun (see page 188) or one of its close relatives. This is a mistake you are unlikely to make twice.

Notes: If a Bitter Bolete finds its way, sliced, into a dish involving a mix of boletes, then it will ruin the whole dish. Cooking increases the bitterness.

Devil's Bolete

Rubroboletus satanus (syn. *Boletus satanus*)

Poisonous.

Devil's Bolete, *Rubroboletus satanus* (syn. *Boletus satanus*).

Cap 8-25cm, hemispherical then convex, white or pale brown, bruising slightly darker, slightly downy then smooth, cracking minutely at the centre. **Stem** 6-13cm, very swollen, yellow at the apex, covered in a red network. **Flesh** various shades of yellow, slowly turning sky blue on cutting, black-red in stem base. **Tubes** yellow-green, turning darker with age, and blue on cutting, then fading. **Pores** very small, red, bruising green. **Smell** initially faint, eventually strong and unpleasant, of rotting garlic. ***Do not taste.*** **Habitat** deciduous woodland, usually with beech or oak, always on alkaline soil. **Season** summer and early autumn. **Distribution** widespread in Europe but very rare in the north. More frequent further south, but unevenly distributed. Occasional in southern England, rare elsewhere in the British Isles. Also present in south-west Asia and North America.

Similar species: Hopefully the smell would be enough to prevent confusion of a mature specimen of this species with any edible bolete, and the combination of large size, pale cap colour and bright red and yellow stem colours is also distinctive.

Notes: The toxin has not been isolated, but symptoms are mainly gastrointestinal, including violent vomiting for up to six hours. Many older guides list the Devil's Bolete as deadly, but there are no confirmed fatalities.

Bilious Bolete

Rubroboletus legaliae (syn. *Boletus legaliae*)

Poisonous.

Bilious Bolete, *Rubroboletus legaliae* (syn. *Boletus legaliae*).

Cap 5-20cm, hemispherical becoming convex, cream, darkening to a grey-green with pink/purple tints, turning blue only after rough treatment. **Stem** 8-16cm, stout, covered in an orange network that is clearer at the apex, redder near the base, with a dark red zone in the centre, bruising blue. **Flesh** white with pale lemon areas, turning light blue on cutting and red in the stem base. **Tubes** yellow, turning blue. **Pores** small, round, yellow-orange turning blue. **Smell** of **chicory.** ***Do not taste.*** **Habitat** with deciduous trees, usually oak. **Season** summer and autumn. **Distribution** rare in Europe, slightly more frequent in the south. Very rare in the British Isles.

Similar species: Similar to Devil's Bolete (previous page), but with a more purple cap. The Ruddy Bolete (next page) is very similar, but the stem flesh does not turn blue on cutting. The smell is also an important distinguishing feature.

Notes: Toxicity as for Devil's Bolete.

Ruddy Bolete

Rubroboletus rhodoxanthus (syn. *Boletus rhodoxanthus*) **Poisonous.**

Ruddy Bolete, *Rubroboletus rhodoxanthus* (syn. *Boletus rhodoxanthus*).

Cap 6-20cm, hemispherical becoming convex, white or pale grey, flushed pink, especially towards the margin, finely velvety, becoming smooth. **Stem** 5-14cm, shape, fine red network on a yellow background, bruising blue. **Flesh** pale yellow, turning blue in the cap but **not in the stem**. **Tubes** yellow, bruising blue. **Pores** small, round, red-orange, bruising blue. **Smell** strong, mushroomy. ***Do not taste.*** **Habitat** deciduous woodland. **Season** summer and autumn. **Distribution** present from the far south of Europe to the southern tip of Scandinavia, but very rare at the northern end of its range and only occasional further south. Very rare or absent in the British Isles.

Similar species: Ruddy Bolete can be distinguished from the other species in this section by the fact that the stem does not discolour blue when cut open.

Notes: Toxicity as for Devil's Bolete (see page 199).

Oldrose Bolete

Imperator rhodopurpureus (syn. *Boletus rhodopurpureus*) **Poisonous.**

Oldrose Bolete, *Imperator rhodopurpureus* (syn. *Boletus rhodopurpureus*).

Cap 5-20cm, hemispherical becoming convex then flat, white/pink, bruising blue, matt becoming smooth. **Stem** 6-15cm, stout, yellow-orange, covered in a red network, bruising dark violet. **Flesh** pale yellow, turning dark blue on cutting and eventually almost black. **Tubes** yellow, turning blue. **Pores** small, round, yellow soon becoming orange-red, bruising dark blue. **Smell** faint, sweet. ***Do not taste.*** **Habitat** with deciduous and coniferous trees. **Season** summer and early autumn. **Distribution** present from the Pyrenees to southern Scandinavia, but rare. Very rare in the British Isles.

Similar species: Easily confused with the other poisonous boletes, especially the Bilious Bolete (see page 200), but its pale pink cap colour distinguishes it from the edible species. *Imperator luteocupreus* is another poisonous European bolete, which is very similar to this species but only found in warm, southern areas.

Notes: Toxicity as for Devil's Bolete (see page 199).

Brawny Bolete

Imperator torosus (syn. *Boletus torosus*) **Poisonous.**

Brawny Bolete, *Imperator torosus* (syn. *Boletus torosus*).

Cap 5-20cm, convex becoming flat with a slight central depression, initially yellow, bruising bright red, becoming dark brown, bruising dark purple, velvety becoming smooth. **Stem** 5-15cm, bulbous, colours as cap, but with reticulations, and red at the stem base, sometimes spotted red/brown. **Flesh** thick, hard, heavy, yellow, red in the stem base. **Tubes** yellow, discolouring blue-green. **Pores** colour as tubes, small, round. **Smell** unpleasant. **Taste** indistinct. **Habitat** dry, deciduous woodland on calcareous soil. **Season** summer and early autumn. **Distribution** present from Spain to southern Sweden, rare in most areas but apparently quite common in Hungary. Very rare in the British Isles. Also present in south-west Asia.

Similar species: The yellow pores help to distinguish this species from its relatives, both poisonous and edible.

Notes: Toxicity as for Devil's Bolete (see page 199), possibly also toxic in conjunction with alcohol.

Edible technicolour boletes

The most important thing about this group is making sure you do not mistake any of the poisonous boletes in the previous section for one of these four edible species. Apart from the Brawny Bolete, the poisonous species have lighter caps. Pay close attention to patterns on the stems, and the colours of the stems, pores and the flesh when cut open, (especially in the stems). Note that there is another important edible technicolour bolete – the Cornflower Bolete (see page 233) of the family Gyroporaceae.

Inkstain Bolete

Cyanoboletus pulverulentus (syn. *Boletus pulverulentus*)

Inkstain Bolete, *Cyanoboletus pulverulentus* (syn. *Boletus pulverulentus*).

Edible (good). Intermediate.

Cap 4-10cm, hemispherical becoming convex then flatter, drab brown, finely felty then smooth, readily bruising blue then black. **Stem** 5-7cm, shape variable, yellow at apex, more purple-brown towards the base, with red streaks, bruising as cap. **Flesh and tubes** pale yellow, turning dark blue almost instantly on cutting. **Pores** small, round, pale yellow, bruising dark blue. **Smell and taste** pleasant. **Habitat** open deciduous woodland and parks, usually with oak. **Season** autumn. **Distribution** present from the far south of Europe to the southern tip of Scandinavia, but uncommon. Uncommon to rare in the British Isles. Also present in north Africa, Asia, and North and South America.

Similar species: Could be confused with the other three boletes in this section, but has yellow (rather than orange-red) pores, no reticulations on the stem and no red flesh.

Notes: Slightly poisonous raw. Must be cooked.

Scarletina Bolete

Neoboletus luridiformis (syn. *Boletus erythropus*)

Scarletina Bolete, *Neoboletus luridiformis* (syn. *Boletus erythropus*).

Edible (good, caution). Advanced.

Cap 5-20cm, hemispherical becoming flat, brown, lighter around the edges, bruising blue-black, downy, then smooth, sticky when wet. **Stem** 5-15cm, usually stout, densely covered in tiny red dots, bruising dark blue. **Flesh** immediately dark blue on cutting. **Tubes** yellow, then green, turning dark blue on cutting. **Pores** small, round, orange-red, bruising dark blue. **Smell and taste** faint. **Habitat** deciduous or coniferous woodland, especially with oak. **Season** summer to autumn. **Distribution** frequent in the north of Europe, but absent in the far north and rare or absent in the Mediterranean south. Also present in northern North America.

Similar species: Easily confused with the other three species in this section. Inkstain Boletes have yellow pores (rather than orange-red), Lurid Boletes have a network on their stem (rather than spots) and Deceiving Boletes have flesh that discolours red in the stem base. More importantly, you must avoid mistaking any of the poisonous boletes in the previous section for this species.

Notes: Slightly poisonous raw, so must be properly cooked, and suspected to cause gastric upsets in some people even then.

Lurid Bolete

Suillelus luridus (syn. *Boletus luridus*)

Lurid Bolete, *Suillelus luridus* (syn. *Boletus luridus*).

Edible. Advanced.

Cap 3-18cm, hemispherical becoming flat, various shades of orange-brown, bruising darker, initially downy, then smooth. **Stem** 8-15cm, usually stout and sometimes swollen, tapering upwards, yellow at the top, redder in the centre, purple at the base, covered with an orange-red network and readily bruising dark blue. **Flesh** immediately blue on cutting, with a very thin, persistent red line above the tubes, and black-red blotches at the stem base. **Tubes** yellow, turning blue on cutting. **Pores** small, round, initially yellow then turning bright orange-red, bruising dark blue. **Smell and taste** faint. **Habitat** with oak and beech, especially on calcareous soil. **Season** summer to autumn. **Distribution** widespread and frequent in Europe. Also present in Asia and North America.

Similar species: This mushroom gets easier to recognize as you become familiar with it, but its bright colours make it confusable with rarer poisonous boletes, especially the Bilious Bolete (see page 200) and the Devil's Bolete (see page 199), both of which have an unpleasant smell and bruise blue less readily. The red line above the tubes is an important distinguishing feature, but it can be hard to see. The red-orange network on the stem is important for distinguishing this species from the others in this section. *Boletus poikilochromus* is an inedible/suspect Mediterranean species with yellower pores.

Notes: Must be properly cooked, and suspected to cause gastric upsets in some people even then. Some sources have also claimed this fungus is mildly toxic when consumed with alcohol, like the Common Inkcap (see page 322). At least one scientific study[12] has cast doubt on this, implicating misidentified specimens of the rare Brawny Bolete (see page 203) instead. I have consumed Lurid Bolete with alcohol on numerous occasions, suffered no ill effects and suspect that this claim of alcohol-dependent toxicity is incorrect. This is a popular edible species in France.

Deceiving Bolete

Suillelus queletii (syn. *Boletus queletii*)

Deceiving Bolete, *Suillelus queletii* (syn. *Boletus queletii*).

Edible. Advanced.

Cap 5-18cm, usually stout, colours variable, bruising dark blue, finely frosted towards the margin, becoming shiny. **Stem** 7-12cm, stout, yellow-orange at the top, with red dots which become much more apparent near the base. **Flesh** white, turning slightly blue on cutting, darker blue in the centre of the stem, and deep red in the stem base. **Tubes** pale yellow, discolouring blue-green. **Pores** small, round, peach becoming orange, bruising blue-black. **Smell and taste** faint. **Habitat** with deciduous trees in open woodland, parks, cemeteries, roadsides. **Season** summer to early autumn. **Distribution** widespread in Europe, probably most common in central northern areas, becoming rarer in Scandinavia. Locally common in parts of southern England, rarer elsewhere in the British Isles.

Similar species: See notes for the Lurid Bolete (previous page) and Scarletina Bolete (see page 205). This is probably the trickiest of the three, due to its variability (which is the explanation for its common name). Scarletina Boletes are the most similar, and can be distinguished by the lack of red colouring in the flesh of the stem base.

Notes: This species is suspected to be slightly toxic raw so cooking is advised.

Smaller edible boletes

Chalciporus are thought to be the most ancient of the boletes, something like the original version, from which all the others are descended. The Peppery Bolete (see page 214) is the only British representative (there are two other uncommon European species, both edible). Apart from the unique Parasitic Bolete (see page 215), most of the other small boletes are widely collected for consumption but are a bit bland and tend to be used for bulking out mixes (especially dried). They are very easily confused with each other but have no poisonous lookalikes. Those featured here are just a selection of the more common and well-known species; there are plenty more. Detailed information about distribution (both British and European) is unclear for many of these species, again due to the recent taxonomic disruption.

Ruby Bolete

Hortiboletus rubellus (syn. *Boletus rubellus*)

Ruby Bolete, *Hortiboletus rubellus* (syn. *Boletus rubellus*).

Edible. Beginner.

Cap 2-8cm, hemispherical becoming convex then flat, finely felty then smooth, red with a pale yellow band at the extreme margin. **Stem** 3-7cm, long and rather thin, yellow near apex, red in the centre, pale at the base. **Flesh and tubes** soft, yellow, bruising blue. **Pores** large, angular, yellow-green. **Smell and taste** faint. **Habitat** with deciduous trees, usually oak in open areas. **Season** autumn. **Distribution** widespread and occasional to frequent in Europe, but absent in the far north. Occasional in the southern half of England, rare in the rest of the British Isles. Also present in eastern North America, and temperate and subtropical zones of Asia and Australia.

Similar species: The colour of the cap is very distinctive, making this one of the easiest of the small boletes to identify correctly.

Orangefoot Bolete

Hortiboletus engelii (syn. *Xerocomus engelii*)

Orangefoot Bolete, *Hortiboletus engelii* (syn. *Xerocomus engelii*).

Edible. Beginner.

Cap 3-10cm, hemispherical becoming convex then flat, finely felty, sometimes cracking. **Stem** 3-7cm, usually stout and cylindrical or slightly club-shaped, finely lined, tiny red dots, blueing slightly when bruised. **Flesh** pale yellow with a **patch of red-orange dots in the stem base**. **Tubes** soft, yellow, bruising blue. **Pores** large, angular, yellow, bruising blue. **Smell and taste** faint. **Habitat** with deciduous trees, usually oak or lime. **Season** late summer and autumn. **Distribution** true distribution unclear due to taxonomic disruption, but probably widespread and frequent in Europe.

Similar species: Easily confused with countless other small, edible boletes.

Matt Bolete

Xerocomellus pruinatus (syn. *Boletus pruinatus*)

Matt Bolete, *Xerocomellus pruinatus* (syn. *Boletus pruinatus*).

Edible (good). Beginner.

Cap 4-12cm, hemispherical becoming convex then flatter, variable shades of brown with a white bloom that disappears on handling. **Stem** 4-10cm, slender, usually cylindrical, yellow with areas of red in the centre composed of very fine dots. **Flesh** firmer than most *Xerocomus* species, pale yellow, darker in the stem base. **Tubes** pale yellow, only very slightly blueing when bruised or old. **Pores** small, angular. **Spore print** brown. **Smell and taste** mild, pleasant. **Habitat** with deciduous trees in open woodland, parks, cemeteries, etc. **Season** autumn. **Distribution** widespread and frequent in temperate areas of Europe.

Similar species: Could be confused with countless small, edible boletes.

Red Cracking Bolete

Xerocomellus chrysenteron (syn. *Boletus chrysenteron*)

Red Cracking Bolete, *Xerocomellus chrysenteron* (syn. *Boletus chrysenteron*).

Edible. Beginner.

Cap 4-11cm, hemispherical becoming convex then flatter, finely felty, becoming smooth and then cracking to expose pale yellow (not red, despite the name) flesh, with slug damage turning pink. **Stem** 4-9cm, cylindrical or tapering slightly upwards, yellow at the apex, red-streaked below. **Flesh** yellow, red in stem base. **Tubes** yellow, slightly and slowly bruising dirty green. **Pores** large, angular, colour as tubes. **Smell and taste** faint. **Habitat** with many different type of tree, usually in open areas. **Season** late summer to late autumn. **Distribution** probably widespread and common in Europe, but its true distribution is unclear due to taxonomic disruption. Also present in the temperate and subtropical zones of Asia and North America, and introduced in New Zealand.

Similar species: Could be confused with countless small, edible boletes, and also the edible Bay Bolete (see page 193) when very young. This is a particularly difficult and disrupted area taxonomically.

Suede Bolete

Boletus subtomentosus (syn. *Xerocomus subtomentosus*)

Suede Bolete, *Boletus subtomentosus* (syn. *Xerocomus subtomentosus*).

Edible. Beginner.

Cap 4-15cm, hemispherical then convex with a flat top, brown, suede-like, cracking when older. **Stem** 3-9cm, usually cylindrical, pale yellow-brown, sometimes with lengthwise red-brown streaks/ribs. **Flesh** pale yellow, darker in the stem. **Tubes** bright yellow, turning greener. **Pores** large, angular, bright yellow fading to dirty yellow, very little colour change on bruising. **Spore print** olive-brown. **Smell and taste** mild, pleasant. **Habitat** woodland, usually open, usually deciduous. **Season** late summer to late autumn. **Distribution** widespread and frequent in Europe. Also present in Asia, North America and Australia.

Similar species: Very easily confused with numerous small, edible boletes, some of which have only recently been scientifically described.

Sepia Bolete

Boletus porosporus (syn. *Xerocomus porosporus*)

Sepia Bolete, *Boletus porosporus* (syn. *Xerocomus porosporus*).

Edible. Beginner.

Cap 2-8cm, hemispherical becoming convex/flat, pale brown-olive, velvety becoming smooth, brown, cracking to reveal cream flesh. **Stem** 3-7cm, usually tapering upwards, lemon yellow at apex, becoming browner below, bruising red-brown. **Flesh** pale yellow, darker in stem base. **Tubes** yellow, bruising blue. **Pores** large, angular, colour as tubes. **Spore print** olive-brown. **Smell and taste** indistinct. **Habitat** with trees. **Season** autumn. **Distribution** widespread and frequent to common in Europe, particularly the north, including the extreme north. Also present in the temperate zones of Asia and North America.

Similar species: Could be confused with other small boletes, but the colour scheme is distinctive.

Peppery Bolete

Chalciporus piperatus

Peppery Bolete, *Chalciporus piperatus.*

Edible (good). Beginner.

Cap 2-8cm, convex becoming flat, fawn or cinnamon-brown, dull when dry, sticky/slimy when wet. **Stem** 2-8cm, slender, tapering downwards, often crooked, yellow at the base. **Flesh** yellow in stem, redder in the cap, unchanging. **Tubes** cinnamon, unchanging. **Pores** large, angular, brown. **Spore print** brown. **Smell** none. **Taste** hot, peppery. **Habitat** woodland, especially birch scrub, and possibly parasitic on Penny Bun (see page 188) mycelium. **Season** late summer to mid-autumn. **Distribution** widespread and common in Europe. Present worldwide.

Similar species: The small size of this species, its yellow stem base, dark brown pores and distinctive taste make it one of the easier of the small boletes to identify and it has no poisonous lookalikes, although it could be confused with the rare (and similarly edible) *C. hypochryseus* and *C. amarellus*. It could also be mixed up with one of the small *Xerocomus* species, but these are all edible too.

Notes: The peppery heat takes a while to creep up on you. Serve sparingly as an unusual side dish, or use like medium-strength chillies. Probably best dried and used as a spicy flavouring. Some sources have cast doubt (without providing any details) on the edibility of this species, but I have consumed it on numerous occasions and experienced no problems.

Parasitic Bolete

Pseudoboletus parasiticus

Parasitic Bolete, *Pseudoboletus parasiticus*.

Edible *but should not be picked*.

Cap 2-4cm, sub-spherical becoming convex, pale grey/brown, finely velvety. **Stem** 2-7cm, usually curved, pale yellow-brown. **Flesh and tubes** pale yellow. **Pores** yellow. **Spore print** olive-brown. **Smell and taste** mild. **Habitat** **on the decaying fruit bodies of Common Earthballs** (see page 234). **Season** autumn. **Distribution** present from the Pyrenees to the south coast of Sweden, but uncommon in many parts of Europe. Most common in central northern Europe. Occasional in southern England, becoming rarer further north in Britain and absent from most of Scotland. Rare in Ireland. Also present in eastern North America.

Similar species: Completely unmistakable due to its unique habitat.

Notes: While edible, this mushroom is not very common and doesn't taste of much. An interesting one to watch out for, but better left unpicked.

Leccinum and *Leccinellum*

Leccinum is a genus of northern temperate species, split from the original *Boletus* genus in 1821. *Leccinum* species are, on the whole, easily recognized as such by their relatively long and slender stems, which are covered in black, brown or red scales known as "scabers", although identification to species is often more difficult. In many cases their flesh discolours brown or black when exposed to air, and when cooked. They're all edible when cooked, but some are of suspect edibility raw. *Leccinellum* is a much more recently circumscribed group, split from *Leccinum* in 2003.

In addition to those featured here, there is a highly regarded Mediterranean species – the Neat Bolete (*Leccinellum lepidum*), which only occurs south of the Pyrenees and Alps, and is reported as far east as Israel. This species looks more like a slightly yellower version of a Penny Bun or an Oak Bolete than a *Leccinum*.

A flush of young orange *Leccinum*, probably Orange Oak Boletes.

The *Leccinum* genus is one of the most difficult groups of fungi, taxonomically, covered in this book. It includes several species that are very similar, and some of them can only be reliably distinguished by microscopy as well as macroscopic features. The relationships between them are currently being regularly refined and redefined by molecular phylogenetics, although from a purely foraging point of view this is largely irrelevant, because of their uniform edibility.

The reddish scabers and tiny triangular flaps of overhanging cap cuticle indicate this is an Orange Oak Bolete, although here it is growing with poplar.

Orange Birch Bolete / Orange Oak Bolete

Leccinum versipelle / L. aurantiacum

The dark brown scabers and cap cuticle overhanging like a skirt indicate this is an Orange Birch Bolete.

Poisonous->edible. Beginner.

Cap 8-20cm, initially hemispherical or slightly conical, becoming flat, cuticle slightly overhanging at the margin. **Stem** 10-15cm, swollen at the base, covered in dark brown scales. **Flesh** firm, white, darkening on cutting, finally becoming almost black. **Tubes** white, darkening to reddish-black on cutting. **Pores** small, angular, grey-white. **Spore print** yellow-brown. **Smell and taste** mild, pleasant. **Habitat** with deciduous trees. **Season** late summer to autumn. **Distribution** This group of species collectively are widespread and frequent in temperate areas of Europe, particularly in the north. Frequent in the British Isles. Also present in Asia and North America.

Similar species: Being certain of the species isn't easy but there is nothing dangerous you are likely to mistake for them. As I currently understand it, the true Orange Birch Bolete (*Leccinum versipelle*) only grows with birch, and what were previously considered two close relatives that only grow with oak and poplar are now lumped in with the very similar *L. aurantiacum*. The latter grows with a wide variety of deciduous trees but is usually referred to as an Orange Oak Bolete. *Leccinum versipelle* is a bit bigger than *L. aurantiacum*, with slightly darker scales, but apart from that they are so similar, especially from a foraging/culinary point of view, that trying to figure out which particular large orange *Leccinum* you've found is pointless. There are also two other orangish species – *L. albostipitatum*, which is even larger, very rare, and only grows with poplar, and the Foxy Bolete (*L. vulpinum*), which is smaller, very rare in Britain outside Scotland and not common there either, but frequent in other parts of Europe, especially Scandinavia. Note: The above information should be treated as provisional.

Notes: Mildly toxic raw (causes gastric upsets). The toxins are destroyed by heating, but not immediately so these mushrooms have to be cooked for at least 15 minutes.

Brown Birch Bolete

Leccinum scabrum

Brown Birch Bolete, *Leccinum scabrum.*

Edible. Beginner.

Cap 5-15cm, hemispherical becoming convex then flatter, brown, rather soft, sticky when wet. **Stem** 5-15cm, usually quite thin, cream, covered in brown scales that tend to be arranged in branching lines. **Flesh** white, barely changing on cutting. **Tubes** white or pale grey, becoming darker and bruising slightly brown. **Pores** small, angular, colour as tubes. **Spore print** brown. **Smell and taste** mild, pleasant. **Habitat** with birch. **Season** summer to autumn. **Distribution** very common in temperate areas of Europe, particularly the north and including the extreme north. Rare or absent in the Mediterranean south. Also present in northern North America and north-western Asia, and introduced in Australia and New Zealand.

Similar species: No toxic lookalikes. Several very similar species have been recently subsumed into this one, but as currently understood, the true Brown Birch Bolete (*L. scabrum*) only grows with birch. But so do the very similar Greyshank Bolete (*L. cyaneobasileucum*) and Mottled Bolete (*L. variicolor*). Regardless of their different choice of tree hosts, the Hazel Bolete (next page), which grows with hazel or hornbeam, and the poplar-associated Slate Bolete (see page 222) are routinely misidentified by foragers as Brown Birch Boletes. Another similar species, the Ghost Bolete (*L. holopus*), usually has a much paler cap, usually grows with birch in sphagnum moss or other damp places, and should not be picked because it is both rare and of little culinary value. *Leccinum oxydabile* is another rare lookalike that grows with spruce and birch. Note: This is not a complete list of brown European leccinums, but those not covered here can be assumed to be macroscopically very similar, and of equal edibility.

Notes: Edibility underwhelming. Best when young and firm. A good one for beginners to look out for though.

Hazel Bolete

Leccinum pseudoscabrum (syn. *L. carpini*, *L. griseum*)

Hazel Bolete, *Leccinum pseudoscabrum* (syn. *L. carpini*, *L. griseum*).

Edible. Beginner.

Cap 3-9cm, hemispherical becoming convex then flatter, brown with a paler margin, **wrinkled**, then **cracking**. **Stem** 6-13cm, cylindrical, spindle-shaped or tapering upwards, often bent, covered in grey-brown scales, especially on the lower half. **Flesh** white, slowly becoming darker on cutting, eventually turning almost black. **Tubes** white-cream, bruising very dark brown. **Pores** small, angular, colour as tubes. **Spore print** yellow-brown. **Smell and taste** mild, pleasant. **Habitat** with hornbeam and hazel. **Season** summer to autumn. **Distribution** widespread but uncommon to occasional in northern Europe, rarer or absent further south. Occasional in the British Isles, most common in south-east England. Also present in the temperate zone of Asia.

Similar species: As for Brown Birch Bolete (previous page). *Leccinum griseum* is very similar.

Notes: Better for eating than a Brown Birch Bolete. Firmer.

Slate Bolete

Leccinum duriusculum

Slate Bolete, *Leccinum duriusculum.*

Edible (good). Beginner.

Cap 4-16cm, hemispherical becoming convex, colour rather variable, surface dull and dry, cuticle slightly overhanging the margin. **Stem** 8-17cm, stout, usually cylindrical with a slightly bulbous base, covered in brown scales with a lighter area near the apex, bruising blue-green near the base. **Flesh** firm, white, slowly turning black in patches, and blue-green in the stem base. **Tubes** white. **Pores** small, white, bruising brown. **Spore print** brown. **Smell and taste** mild, pleasant. **Habitat** with aspen and poplar. **Season** summer to autumn. **Distribution** widespread in Europe, but uncommon. Frequent in southern parts of the British Isles, becoming rarer further north. Also present in North America.

Similar species: Very likely to be confused with other brown leccinums, but they are all edible.

Notes: Probably the best edible species of the brown leccinums found in Britain.

Saffron Bolete

Leccinellum crocipodium (syn. *Leccinum crocipodium*)

Saffron Bolete, *Leccinellum crocipodium* (syn. *Leccinum crocipodium*).

Edible (good). Basic.

Cap 3-11cm, hemispherical becoming flat, yellow/brown, initially finely velvety, then smooth, then cracking extensively. **Stem** 6-15cm, variable in shape but usually stout, covered in yellow scales, often in lines. **Flesh** white, soon darkening and eventually turning black. **Tubes** lemon yellow, soon darkening and eventually turning black. **Pores** small, round, pale yellow, bruising black. **Spore print** pale yellow-brown. **Smell and taste** mild, pleasant. **Habitat** with deciduous trees, almost always with oak, and usually in woodland clearings. **Season** summer to autumn. **Distribution** widespread but uncommon in Europe, apparently more common in the south. Absent in the far north. Occasional in south-east England, becoming rare or absent further north and west. Also present in North America.

Similar species: The very bitter Rooting Bolete (see page 196), possibly poisonous, might be mistaken for it.

Notes: One of the better leccinums for eating.

Suillaceae (Slippery Jack family)

Suillus are a genus of edible boletes with soft, slimy/sticky and generally dull-coloured caps that grow with pines, larches and firs. Outside their northern temperate native ranges, they have been widely introduced along with their arboreal hosts (which are popular forestry species). This is another area where the genus is more easily recognized than the species. But this doesn't matter much from a foraging point of view, as they're all edible.

In addition to those featured here, there are a few more European *Suillus* species – mostly rare and confined to the south. The most highly regarded of these is the Champagne Bolete (*S. bellinii*) – a whitish mushroom that weeps pink "tears" and can be found in Mediterranean coastal pine forests, and as far north as Bulgaria.

Where not mentioned, the following species do not have rings.

Cooking advice (for all edible *Suillus* species): Received wisdom is to peel the caps before eating. This rather fiddly operation is to get rid of the slime, which is aesthetically unappealing and reported to cause minor gastric problems in sensitive individuals. These mushrooms are popular in some Slavic countries – the smaller, firmer ones being the best for eating. They can be fried, pickled or dried and used in soups and stews, but are not generally eaten raw.

Slippery Jack

Suillus luteus

Slippery Jack, *Suillus luteus.*

Edible. Beginner.

Cap 5-12cm, hemispherical/conical becoming convex, smooth, very slimy when wet, shiny/wrinkled when dry. **Stem** 5-10cm, cylindrical or club-shaped, pale yellow about the large purple-tinged ring, with pale red-brown streaks/blotches below. **Flesh and tubes** pale yellow. **Pores** medium, round, yellow becoming darker. **Spore print** pale brown-yellow. **Smell and taste** faint. **Habitat** **with pine**, usually on acid soils. **Season** autumn. **Distribution** widespread and frequent to common in temperate areas of Europe, right up to the extreme north. Frequent to common in the British Isles. Present worldwide, apart from deserts and the tropical zone of Asia. Introduced in the southern hemisphere.

Similar species: Can be confused with other *Suillus* species, but they're all edible.

Notes: Part of the reason for the cosmopolitan distribution of this species is its ecological role as a "pioneer species". It is often the first bolete to move into new pine plantations and it's not fussy about which variety of pine. Can be used to make a dye.

Jersey Cow or Bovine Bolete

Suillus bovinus

Jersey Cow or Bovine Bolete, *Suillus bovinus.*

Edible. Beginner.

Cap 3-12cm, convex becoming flatter, colour of a jersey cow, paler at the extreme edge, slimy when wet, sticky/shiny when dry. **Stem** 4-6cm, cylindrical, sometimes tapering or slightly bulbous at the base, usually bent, dirty yellow. **Flesh** white/yellow, brown-blue in the stem base on cutting. **Tubes** dirty yellow. **Pores** large, angular, pale olive. **Spore print** olive-brown. **Smell and taste** mild, pleasant. **Habitat** coniferous woodland, usually with pine. **Season** mid-to late autumn. **Distribution** widespread and common in Europe, especially the north. Also present in the temperate zone of Asia. Introduced in the temperate zones of North America, Australia and South Africa.

Similar species: No poisonous lookalikes and also one of the easier *Suillus* to identify to species.

Notes: Jersey Cow is a useful component of a mix of fried mushrooms; it goes an attractive pink colour when cooked. The younger, firmer specimens are the best for eating. Also useful for bulking out dried mixes.

Velvet Bolete

Suillus variegatus

Velvet Bolete, *Suillus variegatus.*

Edible (good). Beginner.

Cap 6-13cm, hemispherical becoming convex, often ending up flat, usually orange-brown, **velvety**, sometimes scaly, slightly sticky when wet. **Stem** 5-10cm, cylindrical, club-shaped or bulbous, yellow at top, browner at base. **Flesh** pale yellow, sometimes **discolouring faintly blue on cutting** (the only European *Suillus* that discolours blue), brown in stem base, firm. **Tubes** light brown. **Pores** medium, angular, unequal, dark yellow, then cinnamon-brown. **Spore print** brown. **Smell and taste** strong, pleasant. **Habitat** coniferous woodland and heathland, usually with pine. **Season** late summer to mid-autumn. **Distribution** widespread in Europe, occasional in the south, becoming more common further north and very common in Scandinavia. Frequent in southern England and northern Scotland, occasional elsewhere in the British Isles. Also present in North America, Europe and western parts of Asia.

Similar species: No poisonous lookalikes and probably the easiest member of its genus to identify to species, due to the distinctive colour of the pores, although you may not realize it is a *Suillus* at all, because the flesh is firmer and the cap less slimy than the others.

Notes: The best edible northern European *Suillus*, in my opinion, and popular in Finland. Has a distinctive “metallic” element to the taste.

Larch Bolete

Suillus grevillei (syn. *S. elegans*)

Larch Bolete, *Suillus grevillei* (syn. *S. elegans*).

Edible. Beginner.

Cap 3-11cm, hemispherical becoming convex then flat, colour variable yellows and browns, very slimy when wet, sticky when dry. **Stem** 5-11cm, cylindrical, usually slender, sometimes swollen at the base, with ring, yellowish with darker zone at the base. **Flesh** pale yellow in cap, darker in stem, initially firm becoming much softer. **Tubes** pale yellow. **Pores** small, angular, pale yellow bruising brown. **Smell and taste** faint, pleasant. **Habitat** with larch. **Season** late summer to mid-autumn. **Distribution** common everywhere in Europe where larch is native or introduced (the temperate areas, especially northern and mountainous). Rare or absent in the Mediterranean south. Very common in the British Isles. Also present in the temperate and subtropical zones of Asia and North America. Introduced in Australia.

Similar species: No poisonous lookalikes, and while it is rather similar to most of the other *Suillus*, the habitat makes it easy to identify to species. The very rare Bearded Bolete (*S. bresadolae* var. *flavogriseus*) is very similar.

Notes: Slightly toxic raw and causes gastric upsets in some people even when cooked, but widely eaten.

Orange Larch Bolete

Suillus tridentinus

Orange Larch Bolete, *Suillus tridentinus.*

Edible (poor) ***but should not be picked.***

Cap 5-12cm, hemispherical becoming convex, apricot-orange with darker scales, slightly sticky-slimy when young. **Stem** 4-7cm, usually cylindrical and bent, pale yellow at apex, darker below, with an ephemeral ring. **Flesh** yellow becoming orange. **Tubes** yellow-orange becoming orange-brown. **Pores** large, angular, same colours as tubes. **Spore print** dark yellow-orange. **Smell** mild, pleasant. **Taste** slightly bitter. **Habitat** **with larch**, often with Larch Boletes (previous page), usually on chalk/limestone, and especially in mountainous regions. **Season** autumn. **Distribution** occasional in central northern areas, but rare elsewhere in temperate Europe, including the British Isles.

Similar species: None. This is a very distinctive mushroom.

Notes: I've included this species for the sole purpose of asking people *not* to pick it. Its bitterness means it is of no culinary value, even by the unimpressive standard of this family, and it is distinctive enough that it should not just end up being collected along with a load of its more common relatives.

Weeping Bolete

Suillus granulatus

Weeping Bolete, *Suillus granulatus.*

Edible. Beginner.

Cap 2-10cm, hemispherical/conical becoming convex then flatter, orange-brown, sticky-shiny, becoming wrinkled or covered with small, fibrous scales when old or dry. **Stem** 3-8cm, usually cylindrical, often bent, very pale yellow, covered with small brown "granules", exuding a watery, milky liquid near the apex. **Flesh** very pale yellow. **Tubes** pale yellow. **Pores** small, round, very pale yellow, exuding same liquid as the stem apex. **Spore print** yellow with red-brown tinge. **Smell and taste** faint, pleasant. **Habitat** acidic heathland and woodland, with pines. **Season** autumn. **Distribution** widespread in Europe but only occasional. Also present in Asia, North America and Africa. Introduced in Australia and New Zealand.

Similar species: No poisonous lookalikes, and the milky droplets aid identification. The rare *S. collinitus* is very similar, as is *S. mediterraneensis*, which is restricted to southern Europe.

Notes: Causes minor gastric upsets in some people; may also cause contact dermatitis. Can be used to make dye.

Sticky Bolete

Suillus viscidus

Sticky Bolete, *Suillus viscidus.*

Edible. Beginner.

Cap 2-10cm, convex-conical becoming flatter with a broad umbo, dirty white, turning grey-brown, slimy/sticky when wet, drying shiny, usually wrinkled. **Stem** 5-9cm, usually cylindrical, paler above the superior ring, whole thing very slimy/sticky when wet. **Flesh** white-cream, slightly olive in the base when cut. **Tubes** colour as cap. **Pores** large, angular, dirty white bruising light brown. **Spore print** brown-purple. **Smell and taste** mild and pleasant. **Habitat** with larch. **Season** late summer to autumn. **Distribution** strictly associated with larch, occasional in many areas of Europe where larch is native or introduced, but rare or absent in central and northern Scandinavia. Rare in Scotland and south-east England, more frequent elsewhere in the British Isles. Also present in the temperate zone of Asia.

Similar species: No poisonous lookalikes.

Notes: As with the other soft, slimy *Suillus* species, edibility is mediocre.

Gyroporaceae

The Gyroporaceae are a small family of boletes, now known to be more closely related to the earthballs (see page 234) than other boletes, regardless of appearance. Both northern European species are first-rate edibles, although one of them – the Cornflower Bolete (*Gyroporus cyanescens*) – is very rare and should not be picked. It is quite similar to the more common Chestnut Bolete until cut open, at which point the flesh turns a brilliant azure blue.

Chestnut Bolete

Gyroporus castaneus

Chestnut Bolete, *Gyroporus castaneus.*

Edible (delicacy). Beginner in most of Europe, *but expert in western Portugal, Spain and France.*

Cap 3-10cm, hemispherical then convex, sometimes ending up flat or with a flared margin, pale brown becoming darker, suede-like then smooth, cracking. **Stem** 3-10cm, typically swollen in the centre, brittle, cracking, becoming hollow, white with brown spots/patches. **Flesh** white and unchanging. **Tubes** white, **free**. **Pores** round and very small, white then dirty yellow, bruising darker. **Spore print** yellow. **Smell** mild. **Taste** nutty. **Habitat** deciduous woodland, usually with oak. **Season** summer and autumn. **Distribution** widespread in Europe but only occasional, and absent from the far north. Also present in the temperate and subtropical zones of north Africa, Asia, and North and South America. Introduced in New Zealand.

Similar species: No poisonous lookalikes in the colder temperate areas of Europe, but a significantly toxic relative occurs in western coastal areas of Portugal, Spain and southern France. It is called *G. ammophilus* and distinguishing these two species without scientific aid is almost impossible. Consumption of *G. ammophilus* can cause severe gastroenteritus for over a week.[13]

Notes: Tastes like a Penny Bun (see page 188).

Cornflower Bolete

Gyroporus cyanescens

Cornflower Bolete, *Gyroporus cyanescens.*

Edible (delicacy). Beginner.

Cap 4-15cm, convex then flat, sometimes wrinkled, downy to shaggy, especially at the edges, variable shades of brown but usually pale. **Stem** 6-10cm, tapering upwards or slightly barrel-shaped, hollow, streaky, cracking, colour as cap, bruising blue. **Flesh** white turning a vivid blue-green when cut. **Tubes** pale yellow, easily bruising cornflower blue. **Pores** small, round, white or pale yellow, easily bruising cornflower blue. **Spore print** pale yellow-brown. **Smell and taste** indistinct. **Habitat** with trees on heathland, often birch or poplar. **Season** summer and autumn. **Distribution** widespread in Europe but rare to uncommon. Rare in the British Isles. Also present in the temperate and subtropical zones of Asia, north Africa and Australia, and parts of North America.

Notes: The most visually stunning of all the technicoloured boletes, and highly regarded as a delicacy. Unfortunately it is too rare to justify picking in much of Europe.

Sclerodermataceae (Earthball family)

The Sclerodermataceae are closely related to the boletes, although their appearance could hardly be more different. The main genus of interest from a foraging point of view, because they're poisonous and people sometimes assume they are edible puffballs, is *Scleroderma*, of which there are at least five in the British Isles, and more in Continental Europe. The family also contains an unusual fungus with a deeply buried stem, the surface parts of which can be mistaken for horse manure. *Pisolithus arhizus* can be used to make black or brown dyes, and consequently goes by the common name "Dyeball". This species, also known as "Dead Man's Foot" and "Bohemian Truffle", is edible when very young, and is also used as a soil inoculant (see page 90).

Common Earthball (American: Poison Pigskin Puffball)

Scleroderma citrinum

Poisonous. ⚠

Common Earthball, *Scleroderma citrinum.*

Fruit body 2-15cm, roughly spherical, with a tough, scaly skin. **Gleba** initially lilac but soon turning dark purple and then black. The skin eventually ruptures to release clouds of dark brown spores. **Smell** strong, unpleasant, "chemicals" (see notes before smelling). **Habitat** in woodland, often in large groups. **Season** late summer to late autumn. **Distribution** widespread and common in Europe. Also present in the temperate and subtropical zones of Africa, Asia and North America.

Similar species: Easy to confuse with other earthballs, and sometimes mistaken for a puffball by inexperienced collectors. Earthballs are black inside when they are still very young; puffballs remain white for longer. Earthballs also have tougher skins.

Notes: Can cause mild gastrointestinal problems if ingested, and the spores cause inflammation in the nose and eyes. Don't smell it if you are prone to allergies and beware that if you squeeze it hard or rip at the surface, it can explode. This fungus is the host species for the rare Parasitic Bolete (see page 215).

Rhizopogonaceae

The Rhizopogonaceae are a family of truffle-like fungi. Not included here, the Yellow False Truffle (*Rhizopogon luteolus*) is also edible.

Blushing False Truffle

Rhizopogon roseolus

Blushing False Truffle, *Rhizopogon roseolus*.

Edible (good). Advanced.

Fruit body 1-3cm, smooth irregular blob with random nobbles, initially cream, then pink, then red-brown. **Gleba** yellow, darkening in the middle, with cavities. **Smell and taste** has been described as "mildly unpleasant" (although the Japanese disagree). **Habitat** with pine, subterranean or just breaking the surface. **Season** late summer to autumn. **Distribution** widespread and frequent in Europe. Frequent in the New Forest and the Scottish Highlands but rarely recorded elsewhere in the British Isles. Also present in Asia and north-eastern North America.

Similar species: Blushing False Truffle looks like a Common Earthball (see photo on previous page) or a Stinkhorn egg (see page 450), but there are countless other truffle-like subterranean or partially subterranean fungi, many of which are of unknown edibility.

Notes: A cultivated delicacy in Japan, where it is called "Shoro", this species is also used as a soil inoculant (see page 90).

Agaricales

Agaricaceae (Mushroom family)

Puffballs, Parasols and Shaggy Inkcaps have recently joined the relatives of familiar cultivated mushrooms in a much-expanded Agaricaceae. Along with these excellent edibles, the family also contains its share of poisonous species, including a few that are deadly.

Puffballs

The Giant Puffball is more likely to be confused with an abandoned football than another fungus (I speak from experience on this). It is much harder to be sure of the identification of the smaller puffballs, of which there are many. These have also been mistaken for very young amanitas (see below), still enclosed in their universal veil. This potentially lethal mistake is easily avoided by cutting them open to see whether there is an embryonic mushroom inside.

Puffballs can also be mistaken for earthballs (see photo on page 235), although those have skins like leather, are black inside from a very young age, and exude a strong and unpleasant "chemical" smell when cut open. Puffballs should only be eaten when the inside (the "gleba") is still firm and completely white. Once the spores have started to mature (turning yellow, then dark brown), they can cause stomach upsets, as well as becoming unpleasantly soggy or chewy. Some people recommend peeling (for aesthetic rather than safety reasons). It is also sometimes said that all puffballs are edible when young, although quite a few of them are rare, accurate edibility information is hard to come by, and at least one of them (the Dusky Puffball – see page 242) should definitely be avoided.

Note: I have not provided smell and taste information for puffballs. Smell and taste are not important for distinguishing between different types of puffball.

A very young amanita. The universal veil has just been split in two by the lengthening stem. Deathcaps and Destroying Angels at this stage have been mistaken for small puffballs.

Cooking advice (for all edible puffballs): Smaller puffballs do not dry well, but they can be cooked and frozen. They are best cooked fresh, and their distinctive, rather unusual taste means they are more popular with some diners than others. They are interesting fried as a side dish, they go well in an omelette and can be deep-fried in batter. Giant Puffballs can be eaten raw (and can also be frozen raw) but smaller puffballs are usually cooked.

In addition to the species covered here, there are several other British/European puffballs known to be edible, including the Spiny (*Lycoperdon echinatum*), Flaky (*L. mammiformе*) and Soft puffballs (*L. molle*).

Mosaic Puffball

Lycoperdon utriforme (syn. *L. caelatum, Handkea utriformis, Calvatia utriformis*)

Mosaic Puffball, *Lycoperdon utriforme* (syn. *L. caelatum, Handkea utriformis, Calvatia utriformis*)

Edible (good). Beginner.

Fruit body 6-20cm, white then grey, eventually turning brown, with a distinct "mosaic" pattern when young. **Habitat** unimproved acidic grassland and heaths, especially in coastal areas. **Season** summer to autumn. **Distribution** widespread and frequent in Europe. Present in all northern temperate and subtropical zones, South Africa, Chile and New Zealand.

Similar species: No poisonous lookalikes.

Notes: Can reach the same sort of size as a small Giant Puffball at the time Giant Puffballs are best for picking, but is inferior in both taste and texture. Accumulates metals, especially copper and zinc.

Giant Puffball

Calvatia gigantea

Giant Puffball, *Calvatia gigantea.*

Edible (delicacy). Beginner.

Fruit body typically up to 70cm in diameter but 150cm specimens have been recorded, white when young, eventually turning dark brown, loosely connected to the ground by a mycelial strand. **Habitat** usually pasture, especially that of cattle, but can appear in other types of grassland, gardens and occasionally woodland or roadsides. Prefers nutrient-rich locations. **Season** midsummer to early autumn. **Distribution** widespread and occasional to frequent in temperate areas of Europe. Rather unevenly distributed – can be locally abundant. Present in temperate zones worldwide.

Similar species: No other puffball is even half its size at maturity, and the largest of those others are all edible anyway.

Notes: The flesh of Giant Puffballs has been compared to cheese or tofu. They are perfect for hollowing out and stuffing (with mince or chopped bacon, and a variety of vegetables) then roasting. They are rich enough just to be sliced thickly and fried like a slab of steak, either with herbs (oregano, thyme, rosemary) or coated in egg and breadcrumbs. You can use the slab as a "pizza base" (from Amy Farges' *The Mushroom Lover's Mushroom Cookbook* – see Resources). Another option is to stew them. They can also be sliced (as thinly as possible) and dried.

Pestle Puffball

Lycoperdon excipuliforme (syn. *Calvatia excipuliformis*, *Handkea excipuliformis*)

Pestle Puffball, *Lycoperdon excipuliforme* (syn. *Calvatia excipuliformis*, *Handkea excipuliformis*).

Edible (good). Beginner.

Fruit body 5-20cm tall, shape is very variable, but usually with a tall stem, which persists long after the top has gone. Surface initially covered in pyramidal warts, which are easily detached. **Habitat** usually woodland but sometimes grassland, heathland or waste ground and particularly likes roadsides. **Season** summer to autumn. **Distribution** widespread and frequent in Europe. Present worldwide apart from Saharan and sub-Saharan Africa.

Similar species: Could be mixed up with a Common Earthball, but only by somebody unfamiliar with both puffballs and earthballs, and I can't imagine anybody actually trying to eat the latter (which has a tough skin, a black interior and a strong and unpleasant smell).

Notes: Edibility as for Giant Puffball (see page 238), though a bit softer.

Common Puffball

Lycoperdon perlatum

Common Puffball, *Lycoperdon perlatum.*

Edible (good). Basic.

Fruit body up to 9cm tall, roughly pear-shaped, but with a distinguishable stem, covered in “warts” or “pearls” which readily detach to leave a reticulate pattern. Initially white, turning brown. **Habitat** woodland. **Season** summer to late autumn. **Distribution** widespread and very common, sometimes fruiting in very large troops or rings. Present worldwide.

Similar species: Could be confused with other puffballs, or small earthballs. Note the “stem” is different from that of the Dusky Puffball (next page), which is best avoided.

Notes: Known to accumulate heavy metals, so do not pick from polluted areas.

Dusky Puffball

Lycoperdon nigrescens (syn. *L. foetidum*)

Dusky Puffball, *Lycoperdon nigrescens* (syn. *L. foetidum*).

Consumption inadvisable.

Fruit body 1-4cm tall, darker and smaller than a Common Puffball (previous page), with conical spines that fall off to reveal a network of lines, and a noticeable **stem-like base**. **Habitat** varied, but usually on acidic soil. **Season** summer to autumn. **Distribution** widespread and frequent in Europe. Also present in North America.

Similar species: Could be confused with numerous other small puffballs and earthballs.

Notes: *Lycoperdon foetidum* translates as something like "foetid wolf-fart", and my suspicion is that this refers not to the smell of the puffball itself but its effects on humans who consume it. Many years ago, when the only information I had on this species was "edibility unknown" in the first edition of *Mushrooms* by Roger Phillips (see Resources), I tried eating (quite a lot of) them. Supposedly no puffballs are poisonous… What happened next is that they passed through my digestive system at breakneck speed and came shooting out of the other end undigested, like pellets from a shotgun.

Meadow Puffball

Lycoperdon pratense (syn. *Vascellum pratense*)

Meadow Puffball, *Lycoperdon pratense* (syn. *Vascellum pratense*).

Edible. Beginner.

Fruit body 2-5cm, roughly spherical but flattened on the top, scurfy at first, with a short, fat base. **Habitat** various types of short-sward grassland, including dunes. **Season** summer to autumn. **Distribution** widespread and common in Europe. Also present in North America and Asia. Introduced in Australia.

Similar species: No poisonous lookalikes.

Notes: Not the best puffball for eating. Rather soft and tasteless.

Stump Puffball

Lycoperdon pyriforme

Stump Puffball, *Lycoperdon pyriforme.*

Edible (good). Beginner.

Fruit body up to 5cm tall, pear-shaped. **Habitat** **always on rotting wood**, usually deciduous, even if they appear to be coming from the ground (from buried wood), often in dense and extensive troops. **Season** summer to autumn. **Distribution** widespread and common in Europe. Very common in the British Isles. Present worldwide.

Similar species: None. This is the only puffball that grows on wood.

Notes: Unlike most puffballs, this species becomes inedibly tough even before the spores start to ripen. Only edible when very small.

Brown Puffball / Grey Puffball

Bovista nigrescens / B. plumbea

Brown Puffball, *Bovista nigrescens.*

Edible. Basic.

Fruit body 3-6cm, originally white and smooth but the harder outer layer soon breaks off, in large flakes, to reveal a softer inner skin. Attached to substrate by a single cord, which easily breaks, leaving the puffball to blow around in the wind. **Habitat** grassland of all sorts, but usually on acid soil. **Season** summer to autumn. **Distribution** widespread in temperate areas of Europe, but uncommon. Most frequent in the north and west. Frequent in the British Isles, slightly more common in the north. Also present in south-west Asia.

Similar species: The species described here is the Brown Puffball. The Grey Puffball (*B. plumbea*) is almost indistinguishable apart from being smaller. It is a cosmopolitan species, present everywhere apart from Australia and parts of Africa.

Notes: Edible when very young, but inferior to the larger puffballs.

Mushrooms

The word "mushroom" can mean a number of things:

- Any fruit body with a stem and a cap.
- Any fruit body with a stem and a cap that is edible (as opposed to poisonous "toadstools").
- Fruit bodies of fungi in the genus *Agaricus* – the Field and Cultivated mushrooms, and their closest relatives.

In some older guides the ambiguity in using "mushrooms" to refer to *Agaricus* species is avoided by using their French name of "pratelles", but "mushroom" is the British Mycological Society's recommended English common name for fungi in this genus.

One might assume that *Agaricus* is an easy genus, because we are so familiar with the cultivated varieties and, to a lesser extent, the Field Mushroom. The reality is that the majority of wild fungi poisonings in the UK are the result of somebody believing a toxic species is an edible *Agaricus.* Fortunately, the offending mushroom is usually a Yellow Stainer (see page 266) and the consequences not serious, but organ failures and fatalities caused by somebody mistaking a Deathcap (see page 412) for an *Agaricus* do happen. And even if you manage to avoid poisoning yourself, don't expect that identifying them to species will be easy. On the other hand, they can be very abundant, some are first-class edibles and *if you are sure of the genus* then you can relax the *be absolutely certain of exactly what it is before you eat it* rule.

In addition to the species covered in detail in this guide, the following all occur in temperate areas of Europe and are known to be edible, although many of them are quite rare: Coastal (*A. litoralis*), Lilac (*A. porphyrizon*), Pine Mulch (*A. benesii*), Rosy Wood (*A. dulcidulus*), Sandy (*A. devoniensis*) and Tiger Paw (*A. comtulus*) mushrooms; also *A. altipes*, *A. bresadolanus*, *A. depauperatus*, *A. fuscofibrillosus*, *A. gennadii*, *A. impudicus*, *A. lutosus*, *A. macrocarpus*, *A. porphyrocephalus* and *A. subfloccosus*.

There is conflicting information about the rare *A. semotus*. Some mycologists synonymize it with *A. dulcidulus*, while others claim this is a mistake. It is also variously described as edible and poisonous.

Cooking advice (for all edible *Agaricus* species): *Agaricus* are the closest relatives of Cultivated Mushrooms, and most can be used in exactly the same ways, including eating them raw if they are in first-class condition from a clean habitat. Some of them are a bit indigestible and a few have distinctive tastes that influence their best culinary use. They dry well, and can also be pickled, preserved in oil or frozen cooked.

The Prince, *Agaricus augustus.*

Field Mushroom

Agaricus campestris

Field Mushroom, *Agaricus campestris.*

Edible (delicacy). Basic.

Cap 3-10cm, hemispherical at first and taking a long time to flatten out, white, smooth then slightly scaly. **Stem** 3-10cm, tapering downwards, white, with an insubstantial, ephemeral ring. **Flesh** white, almost unchanging, sometimes with a hint of pink. **Gills** initially darker pink than most *Agaricus*, and eventually very dark brown, crowded, free. **Spore print** brown. **Smell and taste** mushroomy.

Habitat grassland, usually pasture. **Season** late spring to late autumn. **Distribution** widespread and frequent in Europe. Present worldwide.

Similar species: This species borders on intermediate because of the number of people who are poisoned after consuming something else they believe to be a Field Mushroom. Mercifully, the something else is usually a Yellow Stainer (see page 266), resulting in an unpleasant lesson rather than anything more serious. It's also very easy indeed to mistake other edible *Agaricus* species, of which there are many, for a Field Mushroom. More rarely, but nevertheless regularly, the mistake involves a Deathcap (see page 412). Deathcaps grow in woodland rather than grass, but there are grassy areas in woods, and there are woods next to fields. Always check the base of the stem to make sure there is no volva and always check the gills aren't white. People do also sometimes mistake the grassland pinkgills (see page 396) for Field Mushrooms, even though they have pink spores and only vaguely resemble *Agaricus*.

Notes: This species was given its Latin name in 1753 by Carolus Linnaeus, the founder of modern taxonomy and binomial nomenclature. He classified it as the type species of the genus *Agaricus* when it was a gigantic genus, containing most of the gilled mushrooms that had been scientifically described. The status afforded to it was a reflection of its importance as an edible species. Note: "Field Mushroom" is not the correct name of any variety of *A. bisporus* (the familiar cultivated mushroom).

Copper Mushroom

Agaricus cupreobrunneus (syn. *A. campestris* var. *squamulosus*)

Copper Mushroom, *Agaricus cupreobrunneus* (syn. *A. campestris* var. *squamulosus*).

Edible (good). Basic.

Cap 4-10cm, hemispherical becoming flat, densely covered with small, dark brown scales. **Stem** 3-10cm, tapering downwards, less scaly than cap, with an insubstantial, ephemeral ring. **Flesh** white, with a faint hint of pink in the stem apex. **Gills** initially pink becoming dark brown, crowded, free. **Spore print** brown. **Smell and taste** mushroomy. **Habitat** various types of grassland, usually on poor soils, often in disturbed places. **Season** summer to late autumn. **Distribution** widespread but uncommon in Europe. Present worldwide.

Similar species: As for Field Mushroom (previous entry).

Notes: Slightly inferior in texture to a normal Field Mushroom.

Cultivated Mushroom

Agaricus bisporus

Cultivated Mushroom, *Agaricus bisporus* (growing wild).

Edible (good). Basic.

Cap 3-15cm, hemispherical becoming flat, light grey-brown with radiating fibres, smooth. **Stem** 3-8cm, cylindrical or tapering downwards, white, bruising pink, with a thick, membranous single ring. **Flesh** white, bruising pink. **Gills** white, then pink, eventually dark brown, crowded, free. **Spore print** brown. **Smell and taste** familiar to all. **Habitat** various. **Season** late spring to late autumn. **Distribution** widespread in Europe, and though uncommon as a genuinely wild species, it frequently turns up where mushroom compost (the spent material used in mushroom cultivation) has been deposited. Present worldwide.

Similar species: As for Field Mushroom (see page 248).

Notes: This is the wild ancestor of the familiar cultivated mushroom, with its myriad modern variations. *Agaricus bisporus* was first cultivated in France in the late 17th century. This was initially achieved by waiting for flushes to appear and then digging up and transplanting the mycelium into a fresh substrate, hopefully to the mycelium's liking. It was a hit-and-miss affair, due to inadequate knowledge of the best substrate, damage to the mycelium during transportation, and competition in the new substrate from other species. By the start of the 20th century the process had been refined to a much finer art, not least due to methods of eliminating the competition to produce pure, uncontaminated "spawn". All the popular modern cultivated types of *Agaricus* are descendants of wild *A. bisporus*; it remains the number-one cultivated species globally.

Horse Mushroom

Agaricus arvensis

Horse Mushroom, *Agaricus arvensis.*

Edible (delicacy). Intermediate.

Cap 7-20cm, egg-shaped, then convex, eventually almost flat, bruising slightly yellow, especially around the edges, but not as brightly as the toxic members of this genus, slightly scurfy. **Stem** 8-13cm, often slightly bent, scaly and slightly wider near the base, white, with a large, persistent superior ring, initially forming a partial veil in a star-shaped/cogwheel pattern. **Flesh** white, unchanging. **Gills** white, then pink, then brown, crowded, free. **Spore print** dark brown. **Smell and taste** distinctly of aniseed/almonds, eventually becoming faintly ammoniacal. **Habitat** very varied – grassland, woodland, parks and gardens, roadsides and sometimes even compost heaps. **Season** summer to late autumn. **Distribution** widespread and common in Europe. Also present in Asia, North America and Australasia.

Similar species: Quite a few. This species borders on advanced, because it often grows in woodland, and so the possibility of picking a deadly amanita (see page 412) by mistake is greater than with Field Mushrooms (see page 248). They all have rings, and all start out with white gills, so a young Horse Mushroom can look remarkably like a young amanita, except that amanitas emerge from a sac/volva which remains at the base of the stem. It is also very easy indeed to mistake a Yellow Stainer (see page 266) for a Horse Mushroom. Yellow Stainers sometimes have obvious grey streaks on their caps, bruise vividly yellow and smell strongly of phenol (TCP) or "inky". But sometimes their caps are as white as those of a Horse Mushroom, they hardly bruise yellow at all and smell only faintly, at least until you start cooking them.

Notes: Has been commercially cultivated. Known to accumulate cadmium and contains phenyl-hydrazine derivates, so there is also a possible health risk to eating large quantities of this species. Works particularly well in pasta dishes. It is sometimes claimed that this mushroom often grows in horse pasture – hence the name. My own personal experience does not support this claim, and I suspect it was called "Horse Mushroom" for no other reason than it is considerably larger than a Field Mushroom.

Wood Mushroom

Agaricus silvicola

Wood Mushroom, *Agaricus silvicola*.

Edible (good). Intermediate.

Cap 5-14cm, hemispherical then flat, white-cream, with a darker centre, bruising yellow. **Stem** 5-10cm, usually cylindrical with a bulbous base, white, with a large, pendulous ring. **Flesh** white or pale pink, rather thin. **Gills** white, then pink, then dark brown, crowded, free. **Spore print** dark brown. **Smell** aniseed. **Taste** mild, mushroomy. **Habitat** woodland. **Season** autumn. **Distribution** widespread and frequent in Europe. Also present in Asia, North America, Africa and Australia.

Similar species: As for Horse Mushroom (previous entry).

Notes: Edibility as for Horse Mushroom.

Macro Mushroom

Agaricus urinascens var. *urinascens* (syn. *A. macrosporus*)

Macro Mushroom, *Agaricus urinascens* var. *urinascens* (syn. *A. macrosporus*).

Edible (good). Basic.

Cap 10-30cm, convex becoming flat, bruising slightly yellow, covered with tiny scales. **Stem** 10-15cm, stout, usually spindle-shaped, white, with a thick, superior ring. **Flesh** white, slowly discolouring pink/yellow. **Gills** white, then pink, then brown, crowded, free. **Spore print** dark brown. **Smell and taste** distinctly of aniseed/almonds, becoming more ammoniacal as it matures. **Habitat** grass, woodland clearings. **Season** summer to autumn. **Distribution** widespread in Europe but uncommon in many areas. Occasional in the British Isles.

Similar species: *Agaricus urinascens* var. *excellens* is very similar, but with a longer and slightly vertically striped stem.

Notes: Edibility as for Horse Mushroom (see page 252).

Blushing/Scaly Wood Mushrooms

Agaricus silvaticus / A. langei

Blushing/Scaly Wood Mushroom, *Agaricus silvaticus* / *A. langei.*

Edible (good). Basic.

Cap 5-10cm, convex becoming flatter, sometimes broadly umbonate, appearance very variable, ranging from smooth and almost white to brown and scaly. **Stem** 5-12cm, cylindrical or tapering upwards, white, finely scaly and bruising red below the large, thick ring. **Flesh** white, quickly reddening on cutting, especially in stem apex and above the gills. **Gills** pink, then red, then brown, crowded, free. **Spore print** brown. **Smell and taste** mild. **Habitat** woodland. **Season** summer to autumn. **Distribution** widespread and frequent in Europe. Also present in north Africa, Asia, and North and South America.

Similar species: The species described and pictured is the Blushing Wood Mushroom. The Scaly Wood Mushroom (*A. langei*) is almost indistinguishable without microscopy and *A. haemorrhoidarius* is also very similar, apart from having flesh that discolours red even more quickly. These species are all more easily distinguished from the deadly amanitas (see page 412) than other members of this genus, because of their reddening flesh. They are more likely to be confused with the poisonous *Agaricus* species, especially the Inky Mushroom (see page 268) and *A. phaeolepidotus*, which smell of phenol and discolour yellow, especially in the stem base.

Notes: Edibility as for Field Mushroom (see page 248).

Clustered Mushroom

Agaricus cappellianus
(syn. *A. subperonatus*, *A. vaporarius*, *A. pseudovillaticus*)

Clustered Mushroom, *Agaricus cappellianus* (syn. *A. subperonatus*, *A. vaporarius*, *A. pseudovillaticus*).

Edible (good, caution). Basic.

Cap 5-12cm, initially egg-shaped then convex with a flatter centre, and sometimes a central depression, covered in dark brown scales on a white-cream background. **Stem** 6-12cm, stout, white, sometimes buried, with a persistent ring, sheathed to the top of the stem. **Flesh** white, darkening on cutting. **Gills** pink becoming brown, crowded, free. **Spore print** brown. **Smell and taste** pleasant, mushroomy. **Habitat** varied. **Season** late summer and autumn. **Distribution** widespread in Europe but only occasional. Also present in North America, and introduced in New Zealand.

Similar species: No poisonous lookalikes, apart from the usual *Agaricus* suspects. This is a highly variable species consisting of several previously separate species now lumped together. It starts developing below the surface of the ground and then erupts in dense clusters.

Notes: Reported to cause stomach upsets in some people.

Almond Mushroom

Agaricus subrufescens (syn. *A. blazei*)

Almond Mushroom, *Agaricus subrufescens* (syn. *A. blazei*).

Edible (delicacy), medicinal. Basic.

Cap 4-18cm, hemispherical becoming convex then flatter, often rather distorted, colour variable, but usually whitish with radiating dirty lilac fibres. **Stem** 5-15cm, usually cylindrical with a bulbous base, white, with a double ring. **Flesh** white, hardly changing when cut. **Gills** pale grey becoming pink then brown, crowded, free. **Spore print** brown. **Smell and taste** strongly of almonds. **Habitat** deep leaf litter or shredded woody debris. **Season** late summer to mid-autumn. **Distribution** very rare (introduced) in Europe. Native to North America. Also introduced in South America and Asia.

Similar species: Could be mistaken for many small *Agaricus* species, particularly the Lilac Mushroom (*A. porphyrizon*). The smell is important – this species really does smell of almonds.

Notes: Delicious. Scientific investigation into its claimed medical uses are ongoing, especially in Japan and China, but it does appear that this species has immune-boosting and anti-tumour properties.[14]

A mushroom mystery solved

Almond Mushrooms almost featured in this book as "The mushrooms from Alexandra Park". I first noticed them at dusk on an August evening as I made my way home across Alexandra Park, a very large, poorly lit park in my home town of Hastings on the English south coast. It was obvious, even in the gloom, that they were some sort of *Agaricus.* A whiff of almonds hinted at young Horse Mushrooms, and I grabbed a handful. When I got home and took a proper look at them, it became clear that whatever sort of *Agaricus* they were, Horse Mushrooms they were not. They were much too small, the cap was the wrong colour and the smell too strong.

The next morning I consulted my books and the internet, but struggled for an ID. There are 33 *Agaricus* species in the most recent and comprehensive British field guide, with plenty of rare lookalikes among them. I ate some for lunch anyway. They had passed the basic *Agaricus* test: there was no hint of a phenol smell and the base of the stem did not discolour yellow, so the worst that was likely to happen was a minor gastric upset – or a disappointing meal. They turned out to be delicious, tasting as strongly of almonds as they smell.

I returned to the park in search of more clues. Their habitat was an enormous pile of shredded Christmas trees at the foot of a very large ornamental conifer. This didn't help much, but I took the opportunity to fill a basket with as many as I could carry, as we were hosting a barbecue the next day.

First I tried them out on my wife, in an omelette supper. She wasn't impressed. And she's right – almond-flavoured omelettes don't quite work. But neither of us had experienced any digestive problems, so the next day they featured at the barbecue, where they went down an absolute storm. But what were they? The truth is I didn't know, but it didn't matter; sometimes you can eat *Agaricus* without knowing which one they are.

Then, when this book was almost finished, I came across a copy of *The Book of Fungi* by Peter Roberts and Shelley Evans (see Resources). It features 600 species from all over the world and there, on page 38, was my mystery species… Native to North America, its common name was inevitably "Almond Mushroom". These mushrooms were once cultivated for food in the United States, before rising to

prominence in the 1970s under the name *A. blazei* as an allegedly near-miraculous health food. They are now cultivated in several parts of the world and marketed in dried form for their many medical properties.

Medusa Mushroom

Agaricus bohusii

Medusa Mushroom, *Agaricus bohusii.*

Edible (delicacy) but too rare in the British Isles to justify picking and not particularly common anywhere in Europe.

Cap 6-20cm, hemispherical becoming flatter, surface breaking up into fibrous triangular scales. **Stem** 8-20cm, stout, cylindrical to spindle-shaped, tapering downwards, with a large double ring, white becoming red-brown. **Flesh** white, becoming red-brown. **Gills** pink becoming dark brown, crowded, free. **Spore print** brown. **Smell and taste** mild, pleasant, mushroomy. **Habitat** open woodland (usually deciduous), parks, roadsides. **Season** summer to autumn. **Distribution** widespread in Europe, but rare. Very rare in the British Isles. Also present in north Africa, Asia and North America.

Similar species: The most obvious related lookalike is the smaller and much more common Clustered Mushroom (see page 257), but it also resembles the Medusa Brittlestem (*Psathyrella caput-medusae*).

Notes: This beautiful species is a prized edible mushroom in parts of southern Europe, especially Serbia. Unfortunately it isn't common there either.

The Prince

Agaricus augustus

The Prince, *Agaricus augustus.*

Edible (delicacy). Intermediate.

Cap 10-25cm, initially hemispherical or, more often, with a flattened top right from the start, covered in irregular rings of fibrous brown scales, becoming flatter and more scaly, always darker in the centre. **Stem** 10-20cm, darker and thicker at the base, white and smooth above the large, persistent ring. **Flesh** white, unchanging on cutting, slightly red with age. **Gills** turning from white to brown via grey and reddish-pink, crowded, free. **Spore print** brown. **Smell** of bitter almonds. **Taste** strong, pleasant, mushroomy with a hint of almonds. **Habitat** woodland, roadsides, sometimes in grass in parks and gardens. **Season** summer to autumn. **Distribution** widespread and frequent in Europe. Also present in Asia, north Africa and North America.

Similar species: The species you might confuse The Prince with are the same as for Blushing Wood Mushroom / Scaly Wood Mushroom (see page 256), but in this case the distinctive difference is the smell rather than colour changes in the flesh. Some of the large dapperlings (see page 279) look superficially similar from above, but those species have white gills and smell unpleasant.

Notes: The best of the reasonably common *Agaricus* species for eating.

The Princess

Agaricus lanipes

The Princess, *Agaricus lanipes.*

Edible (delicacy). Intermediate.

Cap 5-10cm, hemispherical becoming convex, then flatter and sometimes depressed, covered in fine brown fibres, darker in the centre. **Stem** 4-7cm, stout, tapering upwards, bulbous at the base, white above the ring, light brown below, sometimes with a rooting mycelial strand. **Flesh** white, turning pale pink at the stem apex and yellow at the base. **Gills** white, then pink, then brown, crowded, free. **Spore print** brown. **Smell and taste** pleasant, mushroomy, almonds. **Habitat** usually deciduous woodland, especially with beech, but also grassland and roadsides. **Season** late summer to autumn. **Distribution** present from the far south of Spain to the south coast of Sweden, but uncommon. Occasional in the southern half of the British Isles, rare or absent further north. Also present in North America.

Similar species: Numerous members of this genus could be mistaken for The Princess. Not easy to identify to species, but the standard *Agaricus* rule applies – *don't eat it if it stains yellow and smells of phenol* (TCP/ink).

Notes: The only *Agaricus* described as "delicious" in Roger Phillips' book *Mushrooms* (see Resources).

Salt-loving Mushroom

Agaricus bernardii

Salt-loving Mushroom, *Agaricus bernardii.*

Edible (culinary value disputed). Basic.

Cap 4-15cm, convex becoming flatter, thick, robust, white, covered in coarse scales. **Stem** 5-7cm, stout, sometimes spindle-shaped, with a bulbous and slightly pointed base, white, with a sheathing ring. **Flesh** white, discolouring red. **Gills** pink, becoming brown, crowded, free. **Spore print** brown. **Smell and taste** slightly unpleasant – faint mixture of fish and chlorine. **Habitat** halophilic and originally primarily coastal, but often grows next to roads that have been salted. **Season** autumn. **Distribution** frequent all over Europe apart from the coldest northern areas, and most common in the south. Frequent in southern England, becoming rarer further north in the British Isles. Also present in Asia (including the Arabian desert), North America and New Zealand (probably introduced).

Similar species: One of the easier *Agaricus* species to identify. The Pavement Mushroom (next page) is rather similar, but lacks the unpleasant smell, has less pronounced (or no) scales on the cap, and doesn't discolour as much.

Notes: Opinions are divided on the culinary value of this mushroom. The strong smell and taste are not to everybody's liking, and it's also a bit indigestible, but some people rate it as choice. It can work well in the right recipe (eg in a chowder or with feta cheese).

Pavement Mushroom

Agaricus bitorquis

Pavement Mushroom, *Agaricus bitorquis.*

Edible (good). Intermediate.

Cap 4-10cm, convex becoming flatter, thick, robust, usually with flakes/scales. **Stem** 3-7cm, stout, usually cylindrical, white, with two persistent rings (the lower ring is much smaller and should be just visible on the stem of the sectioned mushroom, bottom right (see close-up photo in Chapter 2, page 34). **Flesh** hard, white, slightly discolouring red/pink on cutting. **Gills** pink, becoming dark brown, very crowded, free. **Spore print** brown. **Smell and taste** pleasant. **Habitat** near roads and paths, sometimes smashing their way through solid asphalt/tarmac. Halophilic. **Season** spring to autumn. **Distribution** widespread in Europe, common in the south and frequent in the north, but rare in the far north. Frequent in England, uncommon in the rest of the British Isles. Also present in North America, and introduced in Australia.

Similar species: The usual *Agaricus* rule applies – *don't eat it if it stains yellow and smells of phenol* (TCP/ink).

Notes: This mushroom has been cultivated but, like the Salt-loving Mushroom, in the wild it tends to turn up in places less than ideal for collecting food. The specific epithet *bitorquis* means "two rings".

The Yellow Stainer

Agaricus xanthodermus

Poisonous.

The Yellow Stainer, *Agaricus xanthodermus.*

Cap 5-17cm, initially smooth and white and almost spherical, but soon developing a distinctive pattern of fine, grey scales (continuous in the centre and broken at the edges) and becoming nearly flat, bruising bright chrome yellow at the edges. **Stem** 5-17cm, narrower than most *Agaricus* species, bulbous at the base, white, with a large white ring. **Flesh** white, staining bright chrome yellow in the stem base. **Gills** white, then pink, finally brown, crowded, free. **Spore print** purple-brown. **Smell and taste** unpleasant, distinctively of phenol (like TCP) or "inky", and strongly of burning plastic if you try to cook it. **Habitat** variable – including woodland, grassland, roadsides and gardens. **Season** summer to autumn. **Distribution** very common in the south of Europe and frequent as far north as England and Denmark, where its range ends rather abruptly. Common in England, occasional in Wales and Ireland, rare in Scotland. Also present in the temperate and subtropical zones of North America, Asia, north Africa, South Africa and Australia.

Similar species: Similar but smaller, the equally poisonous *A. pilatianus* is widespread but rare in Continental Europe and not yet recorded in the British Isles.

Notes: This species is responsible for more poisonings in the British Isles than any other wild mushroom, but it is not dangerous. Symptoms appear soon after eating and include gastric disturbances, headaches, profuse sweating and hot flushes.

Inky Mushroom

Agaricus moelleri (syn. *A. placomyces*) **Poisonous.**

Inky Mushroom, *Agaricus moelleri* (syn. *A. placomyces*).

Cap 5-10cm. **Stem** 5-9cm, with a large ring. **Flesh** white, staining bright chrome yellow in the stem base. **Gills** white, then pink, finally brown, crowded, free. **Spore print** brown. **Smell and taste** unpleasant, distinctively of phenol (like TCP) or "inky", and strongly of burning plastic if you try to cook it. **Habitat** usually woodland, sometimes in dark places under hedges or bare ground by the side of roads where there are overhanging trees. **Season** summer to mid-autumn. **Distribution** occasional in the north of Europe, becoming much more common in the south. Frequent in the southern half of the British Isles, much rarer in the north. Present worldwide apart from Saharan and sub-Saharan Africa.

Similar species: Similar to the previous species, but smaller, darker-coloured and pickier about its habitat. Could be mistaken for any of the brown-scaled *Agaricus* species, apart from the smell and the pronounced yellow staining at the stem base. Easily confused with The Yellow Stainer (previous entry).

Notes: Toxicity as for The Yellow Stainer.

Parasols

Until very recently, people learning to forage for European fungi learned about two types of parasol: a larger one simply called a "Parasol Mushroom" (*Lepiota* then *Macrolepiota procera*), with a snakeskin pattern on its stem and renowned as one of the very best edible species; and a smaller one called a "Shaggy Parasol" (previously *Lepiota* then *Macrolepiota rhacodes*), lacking the snakeskin pattern, inhabiting gloomier places, staining red when cut open and with a reputation for causing allergic/gastric upsets in sensitive individuals. There were also thought to be three more fairly common *Macrolepiota* species: *M. konradii*, *M. excoriata* and the Slender Parasol (*M. mastoidea*). Genetic research has now shown *M. konradii* and *M. mastoidea* to be a single species, and several other *Macrolepiota* species are recognized (*M. permixta*, *M. fuliginosa* and *M. olivascens*) that, from a foraging point of view, can be considered variants of *M. procera*, sharing its snakeskin stem and unqualified edibility. Meanwhile, the Shaggy Parasol has been moved from *Macrolepiota* and split into three: *Chlorophyllum rhacodes* (syn. *C. rhacodes* var. *bohemica*), *C. brunneum* (syn. *C. rhacodes* var. *hortensis*) and *C. olivieri* (syn. *C. rhacodes* var. *rhacodes*).

I considered including all three native European *Chlorophyllum* species as a single entry in this book, rather than distinguishing between them. However, because the old Shaggy Parasol was so well known for causing allergic/gastric upsets, it is worthwhile attempting to separate the three new ones using macroscopic characteristics only. This is because it might eventually become clear that these three species are not equally problematic and it is only by increasing awareness of the differences between them that we are likely to find out. The new English common names for the two species that didn't get to inherit "Shaggy Parasol" are Conifer Parasol (*C. olivieri*) and Brown Parasol (*C. brunneum*).

The most important thing to be aware of when foraging for parasols is that there's a poisonous species that is relatively unknown to Europeans. In much of the rest of the world, especially North America, the Green-spored Parasol (*C. molybdites*) is responsible for a lot of poisonings, particularly involving European tourists. It is not deadly, but by all accounts it can make people very sick.

The first thing you need to do when attempting to identify parasols is figure out which genus they belong to – *Macrolepiota* or *Chlorophyllum*? To do this you must check whether or not the flesh slowly discolours red (*Chlorophyllum*) when exposed to oxygen and look for a snakeskin pattern on the stem (*Macrolepiota*).

Note: *Chlorophyllum* species are more likely to cause problems if consumed raw, so should always be cooked.

Parasol Mushroom, *Macrolepiota procera*.

Parasol Mushroom

Macrolepiota procera

Parasol Mushroom, *Macrolepiota procera*.

Edible (delicacy). Basic.

Cap 10-25cm, initially spherical, becoming flat and umbonate, white, covered in brown, shaggy scales. **Stem** 15-30cm, cylindrical, slender, **covered in a brown snakeskin pattern**, with a double, movable, superior ring. **Flesh** initially white, eventually dirty brown, and slightly discolouring brown on contact, but **not discolouring red when cut open**. **Gills** white, crowded, free. **Spore print** white. **Smell and taste** mild, indistinct. **Habitat** woodland, grassland and roadsides. Sometimes in large rings. **Season** summer and autumn. **Distribution** widespread and common in most of Europe, but absent in the far north. Common in the southern half of the British Isles, rare in the north. Present in temperate and subtropical zones worldwide.

Similar species: This would be a beginner level mushroom, but you do have to be aware of the Green-spored Parasol (see page 274), which is rather similar except for its green-tinged gills when mature, and the smell.

Notes: The stems should be discarded (too fibrous). In the "drumstick" stage (young parasols look like timpani mallets), they lend themselves to being stuffed, traditionally with sage and onion. They can also be battered and deep-fried to make "parasol fritters". Can be dried and powdered.

Slender Parasol

Macrolepiota mastoidea (syn. *M. gracilenta*, *M. konradii*)

Slender Parasol, *Macrolepiota mastoidea* (syn. *M. gracilenta*, *M. konradii*).

Edible (good). Intermediate.

Cap 5-12cm, spherical becoming convex, cream with a darker umbo, sometimes with a star-shaped pattern on the cap and covered in tiny yellow-brown scales. **Stem** 8-10cm with a movable ring. **Flesh** white/cream. **Gills** white/cream, crowded, free. **Spore print** white. **Smell and taste** mild. **Habitat** usually unimproved grassland, particularly on chalk hills and coastal areas, but also sometimes in open woodland, heathland and roadsides. **Season** autumn. **Distribution** widespread in Europe and frequent as far north as England, southern Ireland and Scandinavia south of Oslo. Very rare further north.

Similar species: The edible *M. excoriata* is very similar, but smaller. There's also a chance of confusion with potentially dangerous larger species of *Lepiota*, eg Orange-girdled Parasol (*L. ignivolvata*), although this species, like most members of its genus, smells and tastes unpleasant.

Notes: Edibility as for Parasol Mushroom (previous page).

Green-spored or False Parasol

Chlorophyllum molybdites

Poisonous.

Green-spored or False Parasol, *Chlorophyllum molybdites*.

Cap 5-30cm, spherical becoming convex then flatter, white with brown scales. **Stem** 5-25cm, cylindrical, often randomly bent, white or pale grey-brown, smooth, lacking the snakeskin pattern of a Parasol Mushroom, with a ring. **Flesh** white, slowly discolouring red-brown when cut. **Gills** white becoming dirty green, crowded, free. **Spore print** light green. **Smell** slightly unpleasant. **Taste** mild. **Habitat** in its native subtropical range this fungus grows in grassland, often parks and gardens. **Season** summer and autumn. **Distribution** not native in Europe. In northern Europe it usually grows in greenhouses, but has been found outdoors in Spain. Present in tropical and subtropical zones worldwide.

Similar species: Other types of parasol, though none have the greenish gills.

Notes: Symptoms are severe, but only gastrointestinal, sometimes not appearing until 3-4 hours after consumption. This species is responsible for the majority of wild mushroom poisonings in the United States.

Shaggy Parasol

Chlorophyllum rhacodes (syn. *C. rhacodes* var. *bohemica*)

Shaggy Parasol, *Chlorophyllum rhacodes*.

Edible (delicacy, caution). Intermediate.

Cap 7-20cm, convex becoming flat, initially smooth cinnamon-brown all over, breaking up as it expands to **leave cinnamon-brown scales on a white background**, with a completely brown centre. **Stem** 7-17cm, cream-brown, **lacking the snakeskin pattern** of a Parasol Mushroom, with a relatively simple ring and **a gradually swelling base or bulb with a sloping top**. **Flesh** white, slowly discolouring red-brown when cut. **Gills** white, crowded, free. **Spore print** white. **Smell** strong, pleasant. **Taste** mild, pleasant. **Habitat** on rich soil, usually in dark places in woodland, under hedges, or in parks and gardens, but also compost heaps and other places rich in nutrients, sometimes in rings. **Season** summer and autumn. **Distribution** true European and British distribution unclear, due to taxonomic disruption. Occasional in south-east England. Probably present throughout the temperate and subtropical zones of the northern hemisphere, and introduced in South Africa and Australia.

Similar species: Apart from the Green-spored Parasol (previous page), *Leucoagaricus nympharum* is similar, but much rarer, and of unknown edibility (it smells of radish). The most similar species is the edible Brown Parasol (see page 277), which can be distinguished by its abrupt bulb with a flattened top.

Notes: Must be cooked.
When this species was first described by Italian mycologist Carlo Vittadini in Milan in 1835, he misspelled the Latin translation of the Greek word for "ragged", calling it "rachodes" rather than "rhacodes". Despite many attempts to correct this mistake (which is allowable under the laws of scientific nomenclature), some people still use "rachodes".

Shaggy Parasols used to be considered a very common but rather variable species. In the new taxonomic scheme, both the Brown Parasol and the Conifer Parasol are significantly more abundant (at least in southern Britain) than the true Shaggy Parasol.

On the left, the snakeskin pattern characteristic of the Parasol Mushroom (*Macrolepiota procera*); on the right, the stem of a young *Chlorophyllum* has no snakeskin pattern. Note the gently sloping top of the bulb base on the *Chlorophyllum.* This is an important characteristic of the true Shaggy Parasol (*C. rhacodes*), distinguishing it from the Brown Parasol (*C. brunneum*), which has an abrupt bulb with a flattened top.

Brown Parasol

Chlorophyllum brunneum (syn. *C. rhacodes* var. *hortensis*)

Brown Parasol, *Chlorophyllum brunneum.*

Edible (delicacy, caution). Intermediate.

Cap 7-20cm, convex becoming flat, **initially smooth** cinnamon-brown all over, breaking up as it expands to leave **cinnamon-brown scales on a white background**, with a completely brown centre. **Stem** 7-17cm, slightly club-shaped **with an abrupt bulb with a flattened top**, white, smooth, **lacking the snakeskin pattern** of a Parasol Mushroom, and with a relatively simple **double-lipped ring**. **Flesh** white, slowly discolouring red-brown when cut. **Gills** white, crowded, free. **Spore print** white. **Smell** strong, pleasant. **Taste** mild, pleasant. **Habitat** on rich soil, **usually in dark places in woodland, under hedges or in parks and gardens**. Sometimes in rings.

Season summer and autumn. **Distribution** true European and British distribution unclear due to taxonomic disruption. Common in south-east England. Also present in North America and Australasia.

Similar species: As for Shaggy Parasol (previous entry). The key feature to look for when separating this species from a Shaggy Parasol is the shape of the top of the bulb at the base of the stem.

Notes: Must be cooked.

Conifer Parasol

Chlorophyllum olivieri (syn. *C. rhacodes* var. *rhacodes*)

Conifer Parasol, *Chlorophyllum olivieri.*

Edible (delicacy, caution). Intermediate.

Cap 5-15cm, convex becoming flat, densely covered in coarse, fibrous **grey-brown scales** on a **dirty grey background**, with a completely brown centre. **Stem** 10-20cm, **stalk length approximately one and a half times cap diameter**, cylindrical with an **abrupt, rounded bulb at the base**, smooth, white, lacking the snakeskin pattern of a Parasol Mushroom and with a **double ring**. **Flesh** white, slowly discolouring red-brown when cut. **Gills** white, crowded, free. **Spore print** white. **Smell** strong, pleasant. **Taste** mild, pleasant. **Habitat** **litter beneath trees, especially conifers**. Sometimes in rings. **Season** summer and autumn. **Distribution** true European and British distribution unclear but common in south-east England. Also present in North America.

Similar species: As for Shaggy Parasol (see page 275).

Notes: While this species particularly likes conifer woodland, it can also be found among leaf litter under deciduous trees. Must be cooked.

Other members and groups of the Agaricaceae

There are many other fungi in this family, but most of them are small and of little foraging interest. This section features the most relevant edible and poisonous species.

The dapperlings look like smaller versions of the parasols – some of them much smaller. There are at least 60 European species in the genera *Lepiota*, *Cystolepiota*, *Leucoagaricus*, *Leucocoprinus*, *Melanophyllum* and *Chamaemyces*, and while some are edible, the difficulty of getting the identification right without the use of a microscope, combined with the toxicity of quite a few of them, means it is safer to just avoid the whole lot. The worst offenders are all in the genus *Lepiota*, several of which are deadly.

The powdercaps could easily have been included with the dapperlings. At least three of them are edible, but they aren't exactly delicacies and the possibility of confusing them with poisonous species means they aren't worth the bother. The Powdercap Strangler (*Squamanita paradoxa*) is a bizarre parasite: rather than just growing out of the decaying remains of its host, like most other mushroom-on-mushroom parasites do, it actually replaces the cap of the Earthy Powdercap (*Cystoderma amianthinum*) with its own, resulting in a real-life chimera.

The Shaggy Inkcap was the first edible wild mushroom I ever found and ate – it's both common and very easy to identify. Not so long ago the type species of the type genus of a large family called Coprinaceae (Inkcap family), it is now a king without a crown. Genetic testing demonstrated it to be only distantly related to most of its subjects, so it was moved to the burgeoning Agaricaceae and almost all of what are still commonly known as "inkcaps" were placed in three new genera in the Psathyrellaceae (Brittlestem family). Apart from the Shaggy Inkcap, the only other native European species that is still a *Coprinus* is the rare Midden Inkcap (*C. sterquilinus*), which rather unappetizingly grows on horse manure.

This family is also home to one of the most beautiful of all European fungi. The Golden Bootleg (*Phaeolepiota aurea*) is a large and majestic, completely golden mushroom that was traditionally prized for its culinary value. This species is now known to contain hydrogen

cyanide, so is no longer considered safe to eat.

Shaggy Inkcap or Lawyer's Wig
(American: Shaggy Mane)

Coprinus comatus

Shaggy Inkcap or Lawyer's Wig, *Coprinus comatus*.

Edible (good). Beginner.

Cap, flesh and gills 5-18cm high, initially egg-shaped, white and covered in shaggy scales, then cylindrical, then bell-shaped with an upturned margin that turns black and starts to **deliquesce** (become liquid), until eventually there is nothing left of the cap apart from a small black ring at the top of the stem. **Stem** 10-40cm, although usually more like 20cm, white, with a loose ring that slips down. **Spore print** dark brown. **Smell and taste** faint, pleasant. **Habitat** lawns (sometimes associated with buried wood), roadsides and the edges of paths, gardens and compost heaps, and very often on recently disturbed ground. **Season** autumn. **Distribution** widespread and common in Europe. Also present in the temperate and subtropical zones of north Africa and Asia, and throughout North and South America. Introduced in Australia and New Zealand.

Similar species: None. Even a Common Inkcap (see page 322) is different enough that it is unlikely anyone would confuse them. Apart from that, the only lookalikes are much smaller inkcaps, most of which grow on dung, and a Magpie Inkcap (see page 323), which is the same shape but an obviously different colour.

Notes: Best peeled, then sautéd in butter for 5-10 minutes. Works well in an omelette, casseroled with cream or made into mushroom ketchup. Can be eaten raw. Cultivated in China.

White Dapperling

Leucoagaricus leucothites

White Dapperling, *Leucoagaricus leucothites.*

Edible (good). Advanced.

Cap 4-8cm, convex becoming flatter but never completely flat, white, smooth, silky. **Stem** 5-8cm, slender, cylindrical, white, smooth above the superior ring, darker / slightly fibrous below. **Flesh** white, thick. **Gills** white becoming grey-pink, crowded, free. **Spore print** white. **Smell and taste** mild, pleasant. **Habitat** usually grassland, but also roadsides, gardens and other urban areas. **Season** autumn. **Distribution** widespread and frequent in Europe, but absent from the far north. Frequent in the southern half of the British Isles, very rare in the northern half. Also present in most parts of the world apart from Canada, the boreal zone of Asia and the south of South America.

Similar species: The deadly Destroying Angel (see page 416) is all too similar, although that species has a volva and the White Dapperling does not. Could potentially also be mixed up with several other obscure dapperlings of unknown edibility and very similar to many *Agaricus* species, apart from the colour of the gills.

Notes: Most guides advise against eating due to the risk of confusion with deadly *Amanita* species. However, the White Dapperling is a good edible mushroom that has traditionally been consumed in many places.

Dewdrop Dapperling

Chamaemyces fracidus

Dewdrop Dapperling, *Chamaemyces fracidus.*

Edibility unknown.

Cap 2-7cm, convex then expanding, smooth, cream, with amber-coloured "dewdrops" that dry and leave darker patches. **Stem** 2-4cm, stout, cylindrical or tapering downwards, usually bent, white and smooth above the ring, brown and slightly scaly below. **Flesh** white. **Gills** white, crowded, free. **Spore print** white. **Smell and taste** strong, unpleasant. **Habitat** grassland or woodland. **Season** spring to autumn. **Distribution** widespread in the warmer parts of Europe, but uncommon. Absent in Scandinavia. Occasional in England, western coastal areas of Scotland and the Inner Hebrides. Rare or absent elsewhere in the British Isles.

Similar species: Dewdrop Dapperling is included in this guide because of the possibility of mistaking it for an edible St George's Mushroom (see page 394). It sometimes fruits in the spring, and is superficially similar, although the stem and smell are different, as well as the "dewdrops" in younger specimens.

Notes: Edibility is unknown, but the smell alone suggests it ought not to be eaten.

The lethal dapperlings

Lepiota spp.

Deadly poisonous.

Deadly Dapperling, *Lepiota brunneoincarnata.*

The *Lepiota* species had to be included in this guide, because some of them are deadly. However, most of them are rather rare (including the deadly ones) and very few can be easily identified to species. From a foraging point of view, you just need to know what the group looks like in general, and avoid all of them. With a couple of exceptions they are small mushrooms, they have white gills and spore prints, ephemeral rings on their stems and various types of red-brown, scaly patterns on their caps. They have a general "look" about them, which makes them reasonably easy to identify as *Lepiota* species (or at least as members of the wider group of dapperlings). They tend to grow on chalky soils, in nutrient-rich locations. The deadly species contain the same toxins as the Deathcap.

There are at least five deadly European species, the three most common of which are pictured here. However, identifying dapperlings to species without scientific aids is almost impossible, so you really just need to get a general idea what dapperlings look like, and steer well clear of them all.

Deadly species: Deadly (*L. brunneoincarnata*), Fatal (*L. subincarnata*), Chestnut (*L. castanea*), Star (*L. helveola*) and Dark (*L. fuscovinacea*) dapperlings.

The Deadly and Fatal dapperlings are frequent and widespread, but more common in the warmer parts of Europe, and absent in the far north. The Chestnut Dapperling is the most common and widespread of the whole group, from the far south to the extreme north. All three are present in the British Isles. The other two are rare (or absent) everywhere in Europe.

Fatal Dapperling, *L. subincarnata*.

Chestnut Dapperling, *L. castanea*.

Strophariaceae (Roundhead family)

The Strophariaceae are a family of little-known or overlooked delicacies. There are four good edible common European species (Brick Tuft, Conifer Tuft, Sheathed Woodtuft and Poplar Fieldcap), three of which are widely ignored in Europe, even though all are reasonably common. The most common wood-decomposing mushroom in Britain, the poisonous Sulphur Tuft, also belongs to this family. The King Stropharia (*Stropharia rugosoannulata*) is a common American species which is very rare (and possibly introduced) in Europe, and described as "delicious" by Roger Phillips in his book *Mushrooms* (see Resources).

Only one scalycap species is featured in this guide. Six other members of this genus are of disputed or dubious edibility: Sticky (*Pholiota gummosa*), Golden (*P. aurivella*) and Flaming (*P. flammans*) scalycaps; and *P. alnicola*, *P. highlandensis* and *P. populnea*. Also three have been unambiguously recorded as being used as food: *P. adiposa*, *P. lubrica* and *P. lenta*. None were worth including.

Verdigris Roundhead / Blue Roundhead / Peppery Roundhead

Stropharia aeruginosa / S. caerulea / S. pseudocyanea

Verdigris Roundhead, *Stropharia aeruginosa.*

Peppery Roundhead, *Stropharia pseudocyanea.*

Edibility disputed.

Cap 2-8cm, convex becoming flatter with a broad umbo, blue-green then fading, sticky. **Stem** 3-10cm, usually slender and close to cylindrical, blue-green below ring, white above, rather woolly below ring zone, smoother above. **Flesh** bluish. **Gills** white/grey becoming brown, adnate or slightly decurrent. **Spore print** purple-brown. **Smell** mild. **Taste** bitter. **Habitat** on soil or grass in woods, parks, gardens, or wherever there is decaying organic matter. **Season** summer and autumn. **Distribution** All three species are widespread in Europe, although the Verdigris Roundhead is by far the most common. Also present in the temperate and subtropical zones of north Africa, Asia, and North and South America. Introduced in New Zealand.

Similar species: The species described here is the Verdigris Roundhead. The Blue Roundhead is very similar, but has persistent white scales on the cap. The Peppery Roundhead is smaller and smellier (peppery). These three species are often confused and hard to tell apart. Apart from each other, there's not much you can confuse these mushrooms with, although Aniseed Funnel (see page 365) is a similar colour.

Notes: I've included these species partly because the Verdigris Roundhead is the type species of the type genus of this family, partly

because they are among the very few turquoise mushrooms – and rather beautiful – and partly because information about their edibility/toxicity is very confused. They are variably described as edible, inedible, poisonous and hallucinogenic. If they do contain psychoactive psilocybin/psilocyn, then it is not clear how much; I can find no record of their recreational use. If they are poisonous in any other way, then the identity and effects of the toxins aren't known, and the European sources that describe them as edible tend to also dismiss them as poor, due to their "spicy" taste. I have tried eating them, and have to wonder if something got lost in translation. They aren't spicy; they are bitter. And there were no noticeable psychoactive effects.

Common Rustgill / Scaly Rustgill

Gymnopilus penetrans / G. sapineus

Common Rustgill, *Gymnopilus penetrans.*

Inedible, poisonous or hallucinogenic.

Cap 3-8cm, convex becoming flat and slightly umbonate, sometimes centrally depressed, orange-brown, smooth. **Stem** 2-7cm, slender, colour as cap, downy at the base. **Flesh** yellow-brown. **Gills** yellow, spotted rusty brown with age, crowded, adnate to slightly decurrent. **Spore print** red-brown. **Smell** indistinct. **Taste** bitter. **Habitat** woody debris of various sorts, almost always coniferous. **Season** late summer to early winter. **Distribution** Common Rustgill is widespread and common in Europe, Scaly Rustgill is rarer and restricted to the temperate areas. Both species are also present in North America.

Similar species: The species described here is the Common Rustgill, but the Scaly Rustgill is almost indistinguishable. *Gymnopilus. hybridus* is another very similar species.

Notes: I have included these species because the Common Rustgill is very common, and you're bound to find it if you go foraging in conifer plantations. Its toxicity is unclear, probably because even though it is common, it tastes so bad that not many people have ever eaten enough to find out how poisonous it is. Some sources suggest these mushrooms are hallucinogenic.

Spectacular Rustgill (American: Laughing Jim/Gym)

Gymnopilus junonius (syn. *G. spectabilis*)

Spectacular Rustgill, *Gymnopilus junonius* (syn. *G. spectabilis*).

Inedible, poisonous or hallucinogenic.

Cap 5-15cm, convex becoming flatter, sleek and spectacular, finely fibrous/scaly, golden. **Stem** 5-15cm, often swollen in the middle, very fibrous, colour as cap, with a disappearing ring. **Flesh** pale yellow. **Gills** yellow becoming red-brown, crowded, adnate with a decurrent tooth. **Spore print** red-brown. **Smell** mild. **Taste** very bitter. **Habitat** dead wood, usually deciduous, especially in damp lowland areas. **Season** late summer to early winter. **Distribution** widely distributed in Europe, frequent as far north as the south coast of Scandinavia and particularly common in England. Present worldwide apart from sub-Saharan Africa.

Similar species: None that fruit from the wood – this is a very distinctive mushroom.

Notes: There appears to be two separate populations of this fungus. Those in eastern North America and parts of Asia are hallucinogenic; those elsewhere are not. Both can be used to make a yellow/gold dye. Spectacular Rustgill is well named – it's one of the most impressive European mushrooms.

Spring Fieldcap / Bearded Fieldcap

Agrocybe praecox / A. molesta

Spring Fieldcap, *Agrocybe praecox.*

Edible (good). Advanced.

Cap 3-7cm, convex then flattening, sometimes with a slight umbo, white-cream, tending to crack. **Stem** 4-8cm, slender, cylindrical, sometimes with a bulbous base, white/cream, with a ring. **Flesh** white-cream. **Gills** white becoming brown, crowded, adnate. **Spore print** dark brown. **Smell and taste** slightly bitter and/or mealy. **Habitat** grassland, open woodland, roadsides, parks and gardens. **Season** spring to autumn. **Distribution** Spring Fieldcap is widespread in Europe and common right up to the extreme north. Bearded Fieldcap is considerably rarer and inconsistently distributed. Both are present in the British Isles, Spring Fieldcap much more common. This is a species complex, members of which are also present in north Africa and North America.

Similar species: The species described and pictured here is the Spring Fieldcap. Bearded Fieldcap is paler and has a more pronounced umbo. The complex sometimes referred to as the "*Agrocybe praecox* cluster" contains several more species globally than these two. They can resemble other members of this family, members of the Psathyrellaceae (Brittlestem family), the paler webcaps and possibly even some amanitas.

Notes: A passable edible that requires proper cooking because it is slightly poisonous raw, but reliable identification is a problem.

Poplar Fieldcap (Italian: Pioppino)

Agrocybe cylindracea (syn. *A. aegerita*)

Poplar Fieldcap, *Agrocybe cylindracea* (syn. *A. aegerita*).

Edible (delicacy). Basic.

Cap 4-15cm, convex becoming flat, often distorted and/or cratered and eventually wrinkled and cracked, especially at the centre, pale cream. **Stem** 5-15cm, rather variable, cylindrical or tapering downwards, rarely straight, cream becoming darker, with a persistent ring. **Flesh** firm, white and unchanging, brown at the extreme base of the stem. **Gills** initially cream turning brown, crowded, adnate to slightly decurrent. **Spore print** brown. **Smell** strong and pleasant. **Taste** rich, nutty. **Habitat** in dense clumps on the stumps, buried roots or dead heartwood of old but living deciduous trees, usually poplar or willow. **Season** all year. **Distribution** widespread in Europe as far north as southern Scandinavia, but more common in the south. Frequent in England and Wales, very rare or absent in Scotland and Ireland. Also present in Asia, north Africa and southern North America.

Similar species: The easiest European *Agrocybe* to identify to species, due to its large size and woody habitat. No poisonous lookalikes.

Notes: Poplar Fieldcaps are a prized wild species in Italy and have been cultivated in Asia for a long time. The flesh is firm, almost always free of insect grubs, and has a rich, nutty smell and taste (although the stems should be discarded because they are a bit tough). This is one of my absolute favourites as part of a fried breakfast, but also goes well with game, red meat and red wines.

Wrinkled Fieldcap

Agrocybe rivulosa

Wrinkled Fieldcap, *Agrocybe rivulosa*.

Apparently edible (good). Advanced.

Cap 3-10cm, conical/convex becoming flatter, cream, rather soft and sticky, with wrinkles resembling forked river valleys. **Stem** 5-14cm, tapering upwards, grey-brown, covered in white/cream fibres, and with a large, floppy, superior ring. **Flesh** thin but firm. **Gills** pale grey, becoming browner, crowded, adnate. **Spore print** brown. **Smell and taste** mild, pleasant. **Habitat** on piles or deep mulches of woodchip. **Season** spring to autumn. **Distribution** present in much of northern Europe. Already common in south-east England and spreading fast (see notes).

Similar species: The most dangerous potential lookalike is Fool's Conecap (see page 319), a deadly species that sometimes grows on or near woodchip. It is rather variable but usually has a much darker cap than a Wrinkled Fieldcap, and lacks the wrinkles. Another dangerous lookalike is the seriously hallucinogenic Blueleg Brownie (see page 303), which has a browner, smoother cap, a mealy smell, and a stem that readily bruises blue-green. The most similar species are other edible (or at least presumably non-toxic) fieldcaps that sometimes grow on woodchip, including another new species called *A. putaminum*, which lacks the wrinkles on the cap. Some of the larger brittlestems are also rather similar, many of which are of unknown edibility. These usually grow on soil or rotting wood, but can sometimes turn up on woodchip. There are also many other wood-decomposing members of the Strophariaceae that are vaguely similar, belonging to the genera *Hypholoma*, *Stropharia* and *Pholiota*.

Notes: Wrinkled Fieldcap was first scientifically described in 2004, having turned up out of the blue in Rotterdam, The Netherlands. Since then it has spread rapidly, and by 2014 it could be found all over north-west Europe, growing prolifically on its chosen habitat of large piles of woodchip. At that time there was still no information available about its edibility.

Not all fieldcaps are edible, but none of them are seriously poisonous either, and even the toxic members of their family aren't in the same league as the really dangerous species that can kill you with one serving.

When I found some fieldcaps in the spring of 2014, I decided the time had come to test them. I tried a couple of large caps the afternoon I found them, and having suffered no ill effects, I had the rest for my breakfast the following day. And they are indeed good to eat – not dissimilar in taste to Poplar Fieldcaps.

It would be a bit irresponsible to just tell people they are edible. Have I been eating them for years? No. Have I tested them on a hundred people and made sure nobody had an allergic reaction? No. I have, however, established that they are tasty enough to be worth eating, and that they don't appear to contain any immediately acting toxins. It's always possible they are one of the unusual cases where many years of repeated consumption is required before the toxicity is revealed, but there is no reason to believe this is likely.

Sulphur Tuft

Hypholoma fasciculare

Poisonous, potentially deadly.

Sulphur Tuft, *Hypholoma fasciculare.*

Cap 2-7cm, umbonate with veil remnants clinging to the margin, pale sulphur yellow, darker in the centre. **Stem** 4-10cm, slender, cylindrical, often curved, pale yellow-brown. **Flesh** yellow. **Gills** initially yellow with a **green-blue tinge**, eventually turning brown, crowded, adnate. **Spore print** purple-brown. **Smell** mushroomy. **Taste** very bitter. **Habitat** in dense and often very extensive clusters on all sorts of dead wood. **Season** all year. **Distribution** very common everywhere in Europe except the coldest parts of Scandinavia. Also present in the temperate and subtropical zones of north Africa, Asia, North America, Australia and New Zealand.

Similar species: The edible species you are most likely to mistake this for are the two edible tufts – Conifer Tuft (next page) and Brick Tuft (see page 296) – Sheathed Woodtuft (see page 298) and Honey Fungus (see page 344), all of which lack the green-blue tinge to the gills.

Notes: Symptoms of poisoning are mainly gastrointestinal, and take 5-10 hours to develop. Impaired vision and temporary paralysis have been recorded in severe cases, but there are very few confirmed fatalities.

Conifer Tuft

Hypholoma capnoides

Conifer Tuft, *Hypholoma capnoides.*

Edible (good). Advanced.

Cap 2-6cm, convex with a small, broad umbo, pale yellow-brown, sometimes with veil remnants at the margin. **Stem** 4-10cm, cylindrical, slender, same colour as cap at the top, darker lower down, often bent. **Flesh** pale brown. **Gills** white becoming pale lilac-grey, crowded, adnate. **Spore print** purple-brown. **Smell and taste** mild, pleasant, sweet. **Habitat** dead coniferous trees and stumps. **Season** early summer to late autumn. **Distribution** common in temperate areas of Europe, right up to the extreme north. Frequent in the British Isles. Also present in Asia and North America.

Similar species: Very similar to Sulphur Tuft (previous page), but lacking the green-blue-tinged gills and bitter taste.

Notes: Edibility as for Brick Tuft (next page).

Brick Tuft or Brick Cap

Hypholoma sublateritium (syn. *H. lateritium*)

Brick Tuft or Brick Cap, *Hypholoma sublateritium* (syn. *H. lateritium*).

Edible (good). Advanced.

Cap 3-10cm, convex, flattening but never completely flat, brick red in the centre, paler further out with veil remnants on the edge. **Stem** 5-15cm, cylindrical or tapering slightly downwards, slender, white or very pale yellow at the apex, becoming red/brown near the base. **Flesh** pale yellow in cap, darker in stem base. **Gills** cream becoming olive, crowded, adnate. **Spore print** purple-brown. **Smell** mild, pleasant, sweet. **Taste** slightly bitter when raw. **Habitat** dead trees and stumps, usually deciduous, especially oak. **Season** autumn. **Distribution** widespread and frequent in Europe, but absent in the coldest parts of Scandinavia. Also present in Asia and North America.

Similar species: Eminently confusable with several wood-decomposing members of its own genus, of which Sulphur Tuft (see page 294) is the most important to avoid. Sulphur Tuft has different cap colours (yellower, less patterned) and greener gills, but otherwise looks almost identical. The edible Conifer Tuft (previous page) is visually very similar to Sulphur Tuft, but lacks the nasty bitter taste. A much more dangerous potential mistake involves the deadly Funeral Bell (see page 300), which is darker, more fragile, and trooping (grows in scattered groups) rather than tufted (growing in tightly packed groups). Anyone who is aware of Funeral Bell would be unlikely to make this mistake. You could also mistake Sheathed Woodtuft (see page 298) or the Honey Fungi (see page 342) for this species.

Notes: Contrary to the information provided in many European guides, Brick Tuft is not only non-toxic but good to eat and popular in Japan (which is why Sulphur Tuft poisoning is considerably more common in Japan than in Europe).

Shaggy Scalycap

Pholiota squarrosa

Shaggy Scalycap, *Pholiota squarrosa.*

Edibility suspect.

Cap 3-11cm, bell-shaped becoming flatter, pale orange-cream, covered in concentric rings of coarse, dark brown, shaggy, upturned scales, denser towards the centre. **Stem** 5-15cm, tapering slightly downwards, colour and scales as cap. **Flesh** yellow becoming darker. **Gills** pale yellow becoming brown, crowded, adnate. **Spore print** brown. **Smell and taste** mildly of radish. **Habitat** in dense clusters on stumps and trunks, usually of deciduous trees. **Season** autumn. **Distribution** widespread and frequent in temperate areas of Europe, very rare or absent further south. Also present in the temperate zones of Asia and North America. Introduced in Australia and New Zealand.

Similar species: Could be confused with Honey Fungus (which is edible with caution – see page 344) and easily mixed up with other members of this genus, many of which are of unknown edibility.

Notes: Traditionally eaten in many places, this species is now known to be toxic when consumed with alcohol, and some guides describe it as poisonous to some people even when they haven't consumed alcohol, the symptoms being gastrointestinal.

Sheathed Woodtuft

Kuehneromyces mutabilis

Sheathed Woodtuft, *Kuehneromyces mutabilis*.

Sheathed Woodtuft grows in dense clumps; Funeral Bell doesn't.

Edible (delicacy). Expert.

Cap 2-7cm, convex then flatter and umbonate, with a distinctive two-tone colour scheme when drying (dark parts are much darker, dries from the centre), smooth. **Stem** 3-8cm, slender, cylindrical, with ephemeral ring, lighter near the top, darker and **coarsely scaly below**. **Flesh** very pale brown. **Gills** yellow becoming red-brown, crowded, adnate. **Spore print** red-brown. **Smell** mild, sweet, mushroomy. **Taste** pleasant ***but do not put it in your mouth unless you are absolutely certain it isn't Funeral Bell.*** **Habitat** in very dense and frequently extensive clusters on stumps and wood of deciduous trees, often among moss. **Season** all year. **Distribution** widespread and frequent in Europe. Also present in temperate and subtropical zones worldwide, apart from South America.

Similar species: This is the most dangerous delicacy in this book. Foraging guides usually either leave it out or advise against consumption

because the risk of confusion with the deadly

Funeral Bell (next page) is deemed too great. However, it has been traditionally consumed in some parts of the world, is reasonably common, widespread and can fruit at any time of the year, and that's on top of being rather tasty. So what are the differences? The configuration of the two-tone colour scheme is important: Sheathed Woodtuft is hygrophanous, and usually has two colours on the cap, with a lighter area inside a darker one (edible Velvet Shanks – see page 348 – sometimes exhibit the same pattern). Funeral Bell is either not so distinctly two-toned, or the pattern is reversed. The growth habit is also different – Sheathed Woodtuft typically fruits in very dense and sometimes very extensive clusters, whereas Funeral Bell fruits in small trooping groups.

The stems also differ beneath the ring, Sheathed Woodtuft being very scaly, Funeral Bell more silky-fibrous; and they smell different – Funeral Bell smells mealy and Sheathed Woodtuft doesn't. It is this *combination of identifying features* that you need to look for if you're going to forage for this species.

There are also some less similar and much less dangerous lookalikes, but if you're ready to forage for Sheathed Woodtuft, you already know about those.

Notes: This is a first-class edible species, excellent in soups, stews and sauces, or used to improve the flavour of mixed mushroom dishes. The stems are tough so should be discarded.

Hymenogastraceae

This family warrants a place in this book for all the wrong reasons: it contains no edible species, but plenty that are toxic or hallucinogenic, and at least one that is deadly. In addition to the above-ground nasties, it is also home to a genus of subterranean truffle lookalikes (*Hymenogaster*).

The hallucinogenic *Psilocybe* species include the classic "magic mushroom" or Liberty Cap, which is illegal to pick in the UK since a change in the law in 2005 (prior to that it was merely illegal to prepare them for consumption). It is included here partly because unless a forager knows what they look like, they are at risk of breaking this law by accident. There are several other hallucinogenic members of the genus that are either native or naturalized in Europe. Liberty Caps are by far the most common and well known, but a much more substantial alien invader, the Blueleg Brownie, is spreading in northern Europe and reputedly very potent.

The other important genus is *Galerina* (the bells), which includes a wood-decomposing fungus called Funeral Bell that ranks among the most poisonous species in the world.

Funeral Bell

Galerina marginata (syn. *G. autumnalis*) **Deadly poisonous.**

Funeral Bell, *Galerina marginata* (syn. *G. autumnalis*).

Cap 1.5-5cm, initially convex with gills curved in against the margin of the cap, becoming flatter and sometimes umbonate, various shades of brown, hygrophanous (darker in the centre), shiny, greasy but not sticky. **Stem** 3-6cm, slender, cylindrical, darker below superior ring. **Flesh** white-cream. **Gills** pale brown becoming tawny, crowded, adnate to decurrent. **Spore print** red-brown. **Smell** mealy. ***Do not taste.*** **Habitat** wet, rotting wood, usually of conifers, usually in small clusters, and usually in moss. **Season** autumn to early winter. **Distribution** occasional in temperate areas of Europe, including Britain. Also present in the temperate zones of Asia, North America and Australia.

Similar species: Very similar to Sheathed Woodtuft (previous entry), and could also be mistaken for any of the tuft species (*Hypholoma* – see page 286) or Honey Fungus (see page 344) and maybe some bonnets (see page 353) or Common Stump Brittlestem (see page 320).

Notes: Contains the same type of toxins as the lethal amanitas, and research has indicated that it may even contain a higher concentration of these deadly amatoxins than the Deathcap (see page 412) itself. If so, it is only because Funeral Bell is much harder to confuse with popular edible species that it is not responsible for far more fatalities than it actually is (see notes for Sheathed Woodtuft).

Liberty Cap or Magic Mushroom

Psilocybe semilanceata

Liberty Cap or Magic Mushroom, *Psilocybe semilanceata*.

Hallucinogenic.

Cap 0.5-2cm, bell-shaped, usually with a very distinct nipple-like umbo, hygrophanous (darker when wet). **Stem** 2.5-10cm, very slender and often randomly wavy/distorted, brittle, clay. **Flesh** clay. **Gills** clay, turning darker, rather crowded, adnexed. **Spore print** dark brown. **Smell** none. **Taste** muddy. **Habitat** path edges, lawns, playing fields, but most often sheep or horse pasture. **Season** autumn. **Distribution** widespread and common in temperate areas of Europe, rare or absent further south. Also present in the temperate and subtropical zones of Asia, North and South America, and South Africa. Introduced in Australia and New Zealand.

Similar species: The most dangerous lookalikes are *Conocybe* species (see page 318), which are potentially deadly.

Notes: The effects of consuming this species are similar to those of LSD. **It is illegal to pick or possess this mushroom in the UK and most European countries.** You could be forgiven for assuming this species is called a “Liberty Cap” because it “sets you free” if you eat it, but it’s actually named after a Phrygian cap – a hat worn in ancient Europe with the same conical shape and a floppy top resembling a nipple. Phrygian caps were more recently confused with another ancient conical cap – the “pileus”, which was worn by newly freed Roman slaves, hence “liberty cap”.

Blueleg Brownie

Psilocybe cyanescens

Blueleg Brownie, *Psilocybe cyanescens.*

Hallucinogenic.

Cap 2-6cm, with a lined, undulating margin, bruising dark cyan, hygrophanous. **Stem** 3-8cm, cylindrical with a swollen base, fibrous, white, bruising blue. **Flesh** white. **Gills** clay becoming dark brown, distant, adnate. **Spore print** purple-brown. **Smell** faintly mealy. **Habitat** dead deciduous wood, often on woodchip. **Season** autumn. **Distribution** possibly introduced (from North America), but established in Britain and central northern Europe, and spreading. Also introduced in New Zealand and Iran.

Similar species: The deadly Fool's Conecap (see page 319) could be mistaken for this species but its stem doesn't bruise blue.

Notes: Potent hallucinogen. **It is illegal to pick or possess this mushroom in the UK and most European countries.**

Poisonpies

Hebeloma spp.

Poisonous.

Poisonpies, *Hebeloma* spp.

The poisonpies include a group of eight mushrooms that are nearly impossible to tell apart without the use of scientific aids, all of them looking similar, and all smelling of radish. They are all also suspected to be poisonous, and although none of them will kill you, they are likely to make you very sick. The entire genus should be presumed toxic. One notable member is Rooting Poisonpie (*H. radicosum*), the "root" (in reality a deeply buried stem) of which can be followed underground to its source in the buried latrines or corpses of moles or other small animals.

Caps cream to pale brown, usually slightly slimy. **Stems** fibrous. **Gills and spore print** light grey-brown. **Smell** mostly of radish. ***Do not taste*. Habitat** woodland, often in rings. **Season** autumn. **Distribution** widespread and common in Europe. Present worldwide.

Similar species: Probably most likely to be mistaken for an *Agaricus*, although the smell is completely different and the gills don't turn dark brown.

Notes: The toxins have not been identified, but they cause severe gastrointestinal symptoms. There are no known fatalities.

Sweet Poisonpie

Hebeloma sacchariolens (syn. *H. pallidoluctosum*) **Poisonous.**

Sweet Poisonpie, *Hebeloma sacchariolens* (syn. *H. pallidoluctosum*).

Cap: 2-5cm, smooth, sometimes umbonate. **Stem** 2-6cm. **Gills** pale brown becoming redder and darker, rather crowded, adnate. **Spore print** brown. **Smell** strong, sickly sweet. ***Do not taste***. **Habitat** woodland. **Season** autumn. **Distribution** frequent in temperate areas of Europe, rare further south. Frequent in England, less so in other parts of the British Isles. This is a species complex, members of which are also present in North America and New Zealand.

Similar species: All members of the complex share the sweet, rather than radishy smell. I've included it due to the possibility of mistaking it for an edible woodwax (see page 430).

Notes: Toxicity same as other poisonpies.

Inocybaceae (Fibrecap family)

There are at least 80 European fibrecaps, and their only relevance to a forager is to be able to recognize the genus and steer well clear of it. There is usually little hope of a species ID without microscopy. The most toxic is the Deadly Fibrecap (until recently known as Red-staining Inocybe). Fibrecaps contain muscarine, the toxic effects of which are described on page 362. Most of them are rather small, and have caps that are varying degrees of conical, usually with an umbo and nearly always with fine, radiating fibres. The caps tend to split where these fibres meet the edge. With very few exceptions they are drab colours: greys and browns. The flesh often discolours red, and many of them smell unpleasant.

A typical (and typically unidentifiable) fibrecap: reddish-brown, radially streaked, splitting at the edges, conical becoming umbonate.

White Fibrecap

Inocybe geophylla

Poisonous.

White Fibrecap, *Inocybe geophylla*.

Cap 1-4cm, conical becoming flat but sharply umbonate, white, flushed grey-yellow, smooth, silky. **Stem** 2-6cm, often wavy or bent, fragile, bulbous at the base, white. **Flesh** white. **Gills** white becoming grey-brown, crowded, adnexed. **Spore print** brown. **Smell** earthy, mildly of bleach. ***Do not taste.*** **Habitat** woodland, often by paths, occasionally on lawns. **Season** late summer to autumn. **Distribution** very common throughout Europe. Also present in north Africa, North America, Asia and Australia.

Similar species: Fortunately, this species is too small to be mistaken for any popular edible species, although it is just possible somebody may think it was The Miller (see page 400). The Miller is larger and has a very strong mealy smell, decurrent gills and pink spores.

Notes: Contains muscarine, and although you'd probably need to eat quite a lot of them to get into serious trouble, they do turn up in gardens and might be eaten by a small child.

Lilac Fibrecap

Inocybe lilacina (syn. *I. geophylla* var. *lilacina*)

Poisonous.

Lilac Fibrecap, *Inocybe lilacina* (syn. *I. geophylla* var. *lilacina*).

Similar in all respects to the White Fibrecap (and considered by some mycologists to be a variant of that species), except the cap and flesh are lilac. The Lilac Fibrecap is also considerably less widespread and common in Europe than its white relative. Also present in North America.

Similar species: Could conceivably be mistaken for an Amethyst Deceiver (see page 328) or a Lilac Bonnet (see page 355).

Notes: Contains muscarine.

Deadly Fibrecap

Inocybe erubescens (syn. *I. patouillardii*) **Deadly poisonous.**

Deadly Fibrecap, *Inocybe erubescens* (syn. *I. patouillardii*).

Cap 3-8cm, conical becoming bell-shaped, eventually almost flat, with an umbo, staining red, splitting. **Stem** 3-10cm, stout, fibrous, staining red, darker or spotted at the base. **Flesh** white, unchanging. **Gills** pale pink, becoming brown, crowded, adnexed. **Spore print** brown. **Smell** faint, becoming unpleasant. ***Do not taste***. **Habitat** woodland, usually deciduous, especially with beech on chalk. **Season** late spring to early autumn. **Distribution** widespread but uncommon in Europe. Rare in most of the British Isles, more frequent in southern England. Also present throughout Asia, apart from India and the countries south of China.

Similar species: It's possible to mistake Deadly Fibrecap for one of the woodland *Agaricus* species, which have rings and (eventually) darker gills. Also possibly one of the fieldcaps, although the ground-fruiting species are considerably less chunky, and don't have the fibrous cap or red staining.

Notes: Contains a potentially lethal concentration of muscarine. Early recognition of symptoms and treatment with the antidote atropine is critical if death is to be avoided. Known to be responsible for at least one death in England (in Surrey, in 1937), a mass-poisoning in Germany in 1963 and numerous recorded fatal poisonings of dogs.[15]

Cortinariaceae (Webcap family)

Cortinarius is an enormous genus split into several subsections and identifying these mushrooms to species is a job for mycologists, not foragers. Like the fibrecaps, their relevance to a forager is to be able to recognize them as webcaps and avoid them. The Deadly and Fool's webcaps are second only to the deadly amanitas as dangerously poisonous European wild mushrooms. The very rare Splendid Webcap has also been responsible for fatalities, and many others are also toxic.

This is a difficult area and it is likely to take some time before you can consistently recognize them as webcaps. What gives them their name is important: the cortina. The word means "curtain" in Spanish and Portuguese and here it refers to a web of fibres that stretches between the edge of the cap and the upper-middle of the stem. This is a type of partial veil (see Chapter 2, page 37), and its purpose is to protect the immature gills from damage until they are ready to produce spores. All webcaps have cortinas, but they are usually gone by the time you find them, meaning that younger specimens are easier to identify, at least to genus, than mature ones (which is unusual in mushroom identification). However, the cortina leaves its mark on the stem, as the red-brown spores get trapped in the remnants of the web. This distinctly coloured "ring zone" is another clue that you're dealing with a webcap.

There *are* some edible webcaps. The most famous of these – The Gypsy – wasn't classified as a *Cortinarius* until recently, having long been classed in its own genus of *Rozites*.

The Bruising Webcap is supposedly edible. It is a dead ringer for a Wood Blewit (see page 366), and somebody must have noticed that this mistake did not lead to any serious poisonings; I do not recommend eating it. There are ten more species in the same section of *Cortinarius* (*Phlegmacium*) that have been described as edible, as well as two that are poisonous. Most of the other allegedly edible webcaps (five of them) are in the subsection *Myxacium*.

Violet Webcap

Cortinarius violaceus

Violet Webcap, *Cortinarius violaceus.*

Edible. Intermediate.

Cap 3-15cm, hemispherical then flatter, violet, dry, granular, margin inrolled. **Stem** 5-16cm, shape is rather variable but usually bulbous at the base, colour as cap, dry, fibrous. **Flesh** pale violet, darker at the edges of the stem and beneath the cap cuticle. **Gills** deep violet becoming dark brown, fairly crowded, adnate. **Spore print** red-brown. **Smell and taste** of cedar wood. **Habitat** acidic woodland or heathland. **Season** late summer to autumn. **Distribution** widespread in Europe but uncommon. Also present in the temperate and subtropical zones of North America, Asia and Australasia.

Similar species: If you're certain it's a webcap and it's distinctly violet, with a dry, granular cap, then it's likely to be this species. To confirm, check the smell. Its most similar relatives are the Goatcheese (*C. camphoratus*) and Gassy (*C. traganus*) webcaps, both of which have smooth caps and smell vile (of goats and acetylene gas respectively). This species could also, just about, be mistaken for a blewit, due to the colour.

Notes: Being one of the most easily identified webcaps, and widely described as edible, this is probably the most frequently eaten webcap apart from The Gypsy (see page 317). It's also not *that* rare – it can locally be quite common. However, apart from its obvious beauty, the main reason not to eat it is that it just isn't very appetizing. Maybe it is an acquired taste, but if so, I haven't acquired it. Can also be used to make a purple dye.

Blood-red Webcap

Cortinarius sanguineus

Poisonous.

Blood-red Webcap, *Cortinarius sanguineus.*

Blood-red Webcap, *Cortinarius sanguineus.*

Cap 3-5cm, broadly umbonate, deep red, finely fibrous. **Stem** 2-8cm, slender, deep red. **Flesh** red. **Gills** red, adnate. **Spore print** red-brown. **Smell** radish. **Taste** bitter. **Habitat** woodland, usually coniferous, often with pine and birch. **Season** autumn. **Distribution** widespread and frequent in Europe. Also present in the temperate and subtropical zones of Asia and North America.

Similar species: The Surprise Webcap (*C. semisanguineus*) has similar-coloured gills, but a brown cap.

Notes: This mushroom can be used to make red/yellow dyes, but it is also included in this book because, in the flesh, it is arguably the single most beautiful European mushroom. It contains the toxin (and dye precursor) anthracene.

Deadly Webcap / Fool's Webcap

Cortinarius rubellus / C. orellanus

Deadly poisonous.

Deadly Webcap, *Cortinarius rubellus.*

Cap 3-8cm, convex then more flattened, usually with an umbo, rusty brown, finely felty. **Stem** 3-10cm, variably shaped but often bulbous, especially towards the base, covered with woolly red-brown fibres (remnants of the universal veil), especially near the base. **Flesh** pale yellow. **Gills** ochraceous, then red-brown, distant, adnate or emarginate. **Spore print** red-brown. **Smell** of radish. ***Do not taste.*** **Habitat** with conifers, usually on acid soil, often in moss. **Season** autumn. **Distribution** primarily a northern species, common in Scandinavia but becoming much rarer further south. Rare in most of the British Isles, although frequent in the Scottish Highlands. Also present in the temperate zones of Asia and North America.

Similar species: The species described here is the Deadly Webcap. Stay away from anything that looks even remotely like the mushroom in the photo below. Without microscopy I can't be 100 per cent sure this photo really is of the Deadly Webcap, but it's close enough that I'd advise anyone who ate it to report to a hospital immediately. The Fool's Webcap is equally deadly and almost identical, apart from its habitat (with deciduous trees, usually oak, and with no preference for soil pH) and range (mainly southerly, rarer in the north, including the British Isles).

Notes: These two mushrooms contain a cocktail of toxins, the worst of which is orella-nine. Symptoms can take anywhere between a few hours and three weeks to appear, and initially resemble flu. These are followed by the symptoms of damaged kidneys, including an unquenchable thirst and diminishing output of urine. Death from kidney failure will soon follow without major medical intervention. Please note that the stem of these species is not always as bulbous as those shown here!

Splendid Webcap

Cortinarius splendens

Deadly poisonous.

Splendid Webcap, *Cortinarius splendens.*

Cap 3-8cm, hemispherical becoming flat or developing a central depression, bright yellow with darker spots/scales and a red-brown centre, smooth, greasy when wet. **Stem** 3-6cm, cylindrical with a bulbous base, yellow. **Flesh** yellow. **Gills** yellow becoming brown, crowded, adnate or emarginate. **Spore print** red-brown. **Smell and taste** mild. **Habitat** with beech on chalk, usually in ancient/primary woodland. **Season** autumn. **Distribution** widely distributed in Europe but rare. Very rare in the British Isles.

Similar species: Numerous other webcaps.

Notes: Causes kidney failure, but the identity of the toxin is not currently known.

Bruising Webcap

Cortinarius purpurascens

Bruising Webcap, *Cortinarius purpurascens*.

Supposedly edible. Expert.

Cap 4-15cm, initially hemispherical, then flatter and slightly umbonate or sometimes depressed, violet-brown, sometimes with streaks or blotches, margin usually paler. **Stem** 5-12cm, bulbous at the base, violet, dry. **Gills** purple becoming red-brown, bruising violet, adnate to free. **Spore print** red-brown. **Smell** faint, spicy. **Taste** faint, unpleasant. **Habitat** deciduous or coniferous woodland. **Season** autumn. **Distribution** widespread and frequent in Europe. Also present in the temperate zones of Asia and North America.

Similar species: Featured here because it is superficially very similar to a Wood Blewit (see page 366), but any number of other webcaps could be mistaken for it.

Notes: Edible, but it doesn't taste very nice and is best avoided.

The Gypsy

Cortinarius caperatus (syn. *Rozites caperatus*)

The Gypsy, *Cortinarius caperatus* (syn. *Rozites caperatus*).

Edible (delicacy). Advanced.

Cap 5-10cm, initially convex, becoming flatter with an umbo, pale yellow-brown, dry, finely scaly/silky. **Stem** 4-11cm, usually stout, sometimes very stout, swollen at the base, paler than the cap, finely streaky, with a persistent white ring (it is very unusual for a webcap to have a ring). **Flesh** very pale yellow. **Gills** very pale brown, becoming redder, rather crowded, adnate to free. **Spore print** brown. **Smell and taste** mild, pleasant. **Habitat** woodland or heathland, especially with pine on acid soil. **Season** autumn. **Distribution** primarily a northern species, most common (in Europe) in Scandinavia. Frequent in the Scottish Highlands and occasional in the New Forest, but you'll be lucky to find it anywhere else in the British Isles. Also present in the temperate zones of Asia and North America.

Similar species: There's nothing *very* similar but the very fact it is a webcap means caution is advisable. Could be confused with poisonpies (see page 304). This is an esteemed edible species, but not one for beginners.

Notes: Popular in many countries and commercially collected in some. Known to accumulate heavy metals, and probably not safe to eat in areas contaminated by the Chernobyl disaster.

Bolbitaceae

The Bolbitaceae are a family of small, saprophytic fungi, including a very common but very short-lived mushroom that inhabits grassland, and sometimes hay/straw – the Yellow Fieldcap (*Bolbitius titubans*). This species is too flimsy and insubstantial to be of any interest to foragers.

The only relevant group is *Conocybe*: a large genus consisting mainly of small brown fungi with fragile stems. None are edible, but many are poisonous, including a couple that are potentially deadly.

Common Conecap

Conocybe tenera

Deadly poisonous.

Common Conecap, *Conocybe tenera*.

Cap 1-4cm, conical, then bell-shaped, yellow-brown, smooth, lined, drying paler. **Stem** 3-10cm, very slender, paler than cap, fragile. **Flesh** thin. **Gills** pale red-brown, adnate, crowded. **Spore print** orange-brown. **Smell** faint, mushroomy. ***Do not taste.*** **Habitat** woodland and grassland. **Season** summer to early winter. **Distribution** widespread and frequent in Europe. Common in much of the British Isles, less so in Scotland. Present worldwide.

Similar species: This species could be mistaken for a hallucinogenic Liberty Cap (see page 302).

Notes: Contains the same toxins as the Deathcap (see page 412).

Fool's Conecap

Conocybe filaris (syn. *C. rugosa*, *Pholiotina rugosa*) **Deadly poisonous.**

Fool's Conecap, *Conocybe filaris* (syn. *C. rugosa*, *Pholiotina rugosa*).

Cap 0.5-2cm, conical or bell-shaped, brown/cream. **Stem** 1-4cm, slender, often wavy, white becoming pale yellow/brown, with a ring. **Flesh** thin. **Gills** colour as cap, adnateadnexed. **Spore print** red-brown. **Smell** faint, unpleasant. ***Do not taste.*** **Habitat** woodland, mulched beds, compost. **Season** autumn. **Distribution** widespread in temperate areas of Europe, but uncommon. Rare or absent further south. Also present in the temperate zones of Asia and North America.

Similar species: Could be mistaken for a hallucinogenic *Psilocybe* species.

Notes: Contains the same toxins as the Deathcap (see page 412).

Psathyrellaceae (Brittlestem family)

The Psathyrellaceae are a large family of fungi, most of which are of little foraging interest. There are some edible brittlestems (*Psathyrella*), but the only one I could recommend for its culinary value – the Yellowfoot Brittlestem (*P. cotonea*) – isn't common anywhere in Europe. For the record, the Pale (*P. candolleana*), Chestnut (*P. spadicea*) and Spring (*P. spadiceogrisea*) brittlestems are considered edible, along with the Common Stump Brittlestem featured below. There are also some poisonous (but not lethal) species, but little is known about them.

The inkcaps aren't much better as food. Split between the genera *Coprinellus*, *Coprinopsis* and *Parasola*, even if you manage to find and identify an edible one, and get it home in one piece, it will just disintegrate in the frying pan, producing a tasteless and textureless black mush. Weeping Widow is a slight improvement – it's relatively easy to identify and more substantial, but a little bitter.

The Psathyrellaceae family is also home to a genus of inedible/poisonous/hallucinogenic mushrooms called the mottlegills. Hallucinogenic: Egghead (*Panaeolus semiovatus*), Dewdrop (*P. acuminatus*) and Banded (*P. cinctulus*) mottlegills. Poisonous: Turf (*P. fimicola*) and Petticoat (*P. papilionaceus*) mottlegills.

Common Stump Brittlestem

Psathyrella piluliformis

Common Stump Brittlestem, *Psathyrella piluliformis*.

Edible (poor). Advanced.

Cap 2-4cm, bell-shaped becoming flatter, light brown with a darker centre, drying paler, with traces of veil remnants at the margin, smooth, fragile. **Stem** 4-10cm, cylindrical, usually curved, white flushed with light brown, fragile, no ring. **Flesh** white. **Gills** brown, crowded. **Spore print** dark brown. **Smell** faint. **Taste** slightly bitter. **Habitat** stumps and logs of deciduous trees, in dense tufts. **Season** spring to autumn. **Distribution** very common in north-west Europe, particularly the British Isles, and common in temperate areas of western Europe, but restricted to warmer parts of Scandinavia and rare further south and east. Also present in the temperate zone of North America.

Similar species: Could be mistaken by a beginner for quite a few fungi that fruit in dense tufts from dead wood, including the deadly Funeral Bell (see page 300).

Notes: I've included this species because it is very common in some parts of Europe, and because people might mistake it for other wood-fruiting species in this guide, not for its culinary value; it is not worth eating.

Common Inkcap or Tippler's Bane

Coprinopsis atramentaria (syn. *Coprinus atramentarius*) **Poisonous.** ⚠

Common Inkcap or Tippler's Bane, *Coprinopsis atramentaria* (syn. *Coprinus atramentarius*).

Cap 3-8cm high, initially egg-shaped, grey with dark scales at the centre, then more conical with an upturned edge, then splitting and turning black, deliquescing from the margin upwards, eventually leaving just a small black ring at the top of the stem. **Stem** 7-18cm, cylindrical, mainly white, darker near the base, smooth. **Flesh/gills** deliquescing (as cap), white in the stem. **Spore print** brown. **Smell and taste** pleasant. **Habitat** appearing to grow on soil, but associated with buried, rotting wood. **Season** spring to autumn. **Distribution** widespread and frequent. Common in the British Isles. Present worldwide. Suspected to be a species complex.

Similar species: The edible (and not closely related) Shaggy Inkcap (see page 280) is larger, white and more slender. The Common Inkcap's nearest lookalikes are quite a few of the smaller inkcaps (*Coprinopsis* and *Coprinellus* species), mostly of unknown edibility/toxicity.

Notes: This mushroom contains a chemical that prevents the liver from fully breaking down alcohol, causing the same unpleasant but non-fatal symptoms as those antibiotics that are not supposed to be consumed with alcohol. It was once used as a treatment for alcoholism, hence the traditional name. However, it has very recently been shown to contain carcinogens, and also may be responsible for causing male infertility.[9] Avoid.

Magpie Inkcap

Coprinopsis picacea (syn. *Coprinus picaceus*)

Magpie Inkcap, *Coprinopsis picacea* (syn. *Coprinus picaceus*).

Edible (caution). Beginner.

Cap 5-8cm high, elongated egg-shaped, becoming conical or bell-shaped and eventually flat with an upturned margin, brown-grey, covered in shaggy grey veil remnants. **Stem** 9-30cm, slim, smooth, white, becoming hollow. **Flesh and gills** initially white, then turning black and deliquescing. **Spore print** black. **Smell and taste** faint, slightly unpleasant. **Habitat** usually woodland, often with beech, and preferring calcareous soils. Usually solitary. **Season** late summer and autumn. **Distribution** frequent from the far south of Europe to England and Denmark in the north. Rare or absent further north, and uncommon in Wales and Ireland. Also present in North America.

Similar species: None. This is a striking, beautiful and distinctive mushroom.

Notes: Known to cause gastric upsets for some people, but others can consume it with no problems.

Glistening Inkcap

Coprinellus micaceus (syn. *Coprinus micaceus*)

Glistening Inkcap, *Coprinellus micaceus* (syn. *Coprinus micaceus*).

Edible. Intermediate.

Cap 1-4cm high, initially egg-shaped, then convex, deeply grooved and completely covered in tiny, glistening flecks, eventually the whole thing turning black. **Stem** 4-10cm, white. **Flesh** fragile. **Gills** white then brown, finally black and deliquescing. **Spore print** brown. **Smell and taste** indistinguishable. **Habitat** on dead wood, sometimes appearing on the ground growing from buried roots, and often fruiting in vast numbers. **Season** all year. **Distribution** widespread and common in Europe, apart from the far north. Very common in the British Isles, apart from the Scottish Highlands. Present worldwide.

Similar species: This species has numerous closely related lookalikes, most notably *Coprinellus deliquescens* (syn. *Coprinus silvaticus*), which is slightly larger, less glistening and more irregularly grooved. Many of these relatives are rather rare, and officially of unknown edibility, although there is no indication that any of them are poisonous. Could also be confused with a Common Inkcap (see page 322), although that species is considerably bigger. The edible Fairy Inkcap (*Coprinellus disseminatus*) is a miniature version of this species.

Notes: Can be eaten raw on the road (although it is unlikely to set your world alight). Collapses into a pointless mush if you try to cook it.

Weeping Widow

Lacrymaria lacrymabunda (syn. *L. velutina*)

Weeping Widow, *Lacrymaria lacrymabunda* (syn. *L. velutina*).

Edible. Intermediate.

Cap 3-10cm, initially convex, becoming flatter, slightly umbonate, pale brown, usually darker in the centre, initially woolly, becoming smoother, edge fringed with veil remnants. **Stem** 4-9cm, cylindrical, white near the apex, darker below, fibrous/woolly, with a distinctive ring zone which traps spores and becomes black. **Flesh** pale yellow-brown. **Gills** crowded, dark purple-brown with white edges, "weeping" water. **Spore print** black. **Smell** mild, mushroomy, earthy. **Taste** slightly bitter. **Habitat** waste ground, woodland paths, grassland, often in recently disturbed areas. **Season** spring to autumn. **Distribution** widespread and common in Europe. Also present in North America, and the temperate and subtropical zones of Asia. Introduced in New Zealand.

Similar species: Could be confused with other members of the Psathyrellaceae (Brittlestem family); too numerous to mention, but none of them are seriously toxic. The black ring zone on the stem is an important identifying feature, as are the weeping gills. *Lacrymaria pyrotricha* is a close relative or subspecies with a redder cap with woollier veil remnants, and is also (presumably) edible.

Notes: This species is a little bitter but can be rendered edible by frying with a generous helping of salt. It is never going to be a delicacy, though.

Hydnangiaceae

The Hydnangiaceae are a diverse family containing quite a few subterranean false truffles, such as the edible but tasteless Pink False Truffle (*Hydnangium carneum*). Foragers will only be interested in the deceivers (*Laccaria*). Few species of fungi deserve their common name more than The Deceiver. The problem is not that it is poisonous and deceives you into thinking it is something edible – it's edible and good. It's just that it has so many guises it is very easy to mistake it for something else and, more worryingly, similarly easy to mistake something else for it – including countless little brown mushrooms (LBMs) of unknown or dubious edibility. In addition to those featured here, there are several other European/British deceivers, all of which are edible but too small or rare to bother with.

Edibility/cooking (all deceivers): These mushrooms can be fried, but are probably best used in soups and stews. Can also be dried.

Bicoloured Deceiver

Laccaria bicolor

Bicoloured Deceiver, *Laccaria bicolor.*

Edible (good). Advanced.

Cap 2-6cm, convex, becoming flatter and either slightly depressed or slightly umbonate, with an inrolled margin, colours variable yellows/browns/pinks. **Stem** 4-14cm, downy at the base, bicoloured and sometimes twisted, giving the impression of a stick of seaside rock. **Flesh** thin, colour as cap. **Gills** pale lilac, drying paler but becoming darker with age, distant, adnate.
Spore print white. **Smell and taste** mild, pleasant. **Habitat** woodland and heathland, often with birch and pine. **Season** midsummer to autumn. **Distribution** widespread and frequent in Europe. Present worldwide.

Similar species: See The Deceiver (next page).

Notes: Edibility as for The Deceiver.

The Deceiver

Laccaria laccata

The Deceiver, *Laccaria laccata*.

Edible (good). Advanced.

Cap 0.5-6cm, convex, then usually flatter and sometimes ending up concave and wildly distorted, lined at the margin when wet, variable brown-pink, drying paler. **Stem** 1.5-10cm, sometimes twisted/wavy, usually thick, tough, colours as cap, covered in white fibres. **Flesh** thin, colour as cap. **Gills** pinkish, sometimes covered with white spores, thick, distant, adnate or decurrent. **Spore print** white. **Smell and taste** mild, pleasant. **Habitat** woodland, moorland, heathland, gardens. **Season** summer to early winter. **Distribution** widespread and very common in Europe. Present worldwide.

Similar species: Too many to mention. The extreme variability of this species means there are lots of other mushrooms you might think are it, and even experienced mushroom hunters can be fooled into thinking it is something else.

Notes: It is perhaps easier to forage for this species if you just stick to the specimens you're 100 per cent sure are The Deceiver, and reject those you're only 99 per cent sure about.

Amethyst Deceiver

Laccaria amethystina

Amethyst Deceiver, *Laccaria amethystina*.

Edibility suspect (but good). Basic.

Cap 1-6cm, shape can be almost as irregular as previous species, a beautiful shade of purple when wet, drying very pale. **Stem** 3-10cm, irregularly flattened, wavy or twisted, streaked with white fibres and downy near the base. **Flesh** thin, colour as cap. **Gills** colours as cap, sometimes covered with white spores, thick, distant, adnate with a decurrent tooth. **Spore print** white. **Smell and taste** mild, pleasant. **Habitat** woodland, especially with beech, and in nutrient-rich locations. **Season** summer to winter. **Distribution** widespread and common in Europe. Present worldwide, apart from western North America.

Similar species: The shape and appearance is almost as variable as The Deceiver (previous page), but the colour makes it instantly recognizable, at least when it hasn't dried out. Having said that, I have known people to mistake a poisonous Rosy Bonnet (see page 355) for it, but that species is more of a pale pink colour and less fibrous. The edible Violet Webcap (see page 310) is usually much larger. The poisonous Lilac Fibrecap (see page 308) has very different gills (crowded rather than distant).

Notes: Although this species is widely eaten, it has been found to accumulate toxins from its environment, especially arsenic and arsenic compounds used in wood-preserving products and pesticides. It also contains traces of hydrogen cyanide. These are seriously toxic chemicals, even in small quantities, and the risk was considered serious enough for the Nordic countries to recommend the prohibition of the sale of Amethyst Deceivers for food.[9]

Scurfy Deceiver

Laccaria proxima

Scurfy Deceiver, *Laccaria proxima*.

Edible. Advanced.

Cap 1-7cm. **Stem** 3-12cm, cylindrical, width variable, tough, colours as cap, base covered in white fibres. **Flesh** thin, colour as cap. **Gills** pale pink, thick, distant, adnate or decurrent. **Spore print** white. **Smell and taste** mild, pleasant. **Habitat** on nutrient-poor, wet soil in acidic woods and heaths. **Season** autumn. **Distribution** widespread and frequent in Europe. Also present in North and South America.

Similar species: Very similar to The Deceiver (see page 327), but slightly larger and paler.

Notes: Edibility as for The Deceiver.

Marasmiaceae (Parachute family)

The word "mushroom" is (probably) etymologically derived from the French word *mousseron*, which in France still refers to the best-known member of the Marasmiaceae. In a twist of linguistic irony, the traditional English name for the same species includes the word *champignon*– French for "mushroom". There's a further twist. This wasn't the original Mousseron in France. The original – Mousseron Vrai (Real Mushroom) – happens to be a species named in English after the patron saint of England – St George's Mushroom.

The sizeable genus *Marasmius* consists mainly of small or tiny inedible mushrooms that grow on twigs and leaves, and although there are some larger, ground-dwelling woodland species in Europe, they are of little foraging relevance. The most interesting is the Garlic Parachute (*M. alliaceus*), which could be used as a garlic substitute. However, it is uncommon, insubstantial and often solitary, so shouldn't be picked.

Widespread and common, but easily overlooked, the Collared Parachute (*Marasmius rotula*) is not considered edible. This species is typical of the smaller woodland *Marasmius*.

Fairy Ring Champignons (*Marasmius oreades*): probably growing on a roundabout near you.

Fairy Ring Champignon, Fairy Ring Mushroom or Scotch Bonnet (French: (Faux) Mousseron)

Marasmius oreades

Fairy Ring Champignons, Fairy Ring Mushrooms or Scotch Bonnets, *Marasmius oreades.*

Edible (delicacy). Intermediate.

Cap 2-5cm, initially convex, becoming flat with a broad umbo, faintly lined at the margin, yellow-brown when wet, sometimes with a darker centre, drying much paler, smooth. **Stem** 2-10cm, slender, cream at the apex, becoming darker towards the base, very tough. **Flesh** white. **Gills** white becoming cream, distant, adnexed or free. **Spore print** white. **Smell** of fresh sawdust. **Taste** pleasant. **Habitat** in rings and lines, nearly always in grassland: lawns, pasture, grass-covered roundabouts, etc, but also found on sand dunes. **Season** late spring to late autumn. **Distribution** widespread and very common in Europe, especially in warmer areas. Present worldwide, apart from Saharan and sub-Saharan Africa.

Similar species: Care must be taken not to mix it up with (deadly) Fool's Funnel (see page 362), which is a similar size, and grows in the same habitats, sometimes at the same time and right next to each other. Fairy Ring Champignons have a tougher stem, and Fool's Funnel smells mealy rather than of fresh sawdust. They don't actually look that similar when you see them side by side; most mistakes of this sort happen because people assume that any small cream/fawn mushroom growing in rings in grass must be a Fairy Ring Champignon. Hundreds of species actually grow in rings.

Notes: Fairy Ring Champignons are among the sweetest of mushrooms, containing a sugar (trehalose) that preserves them when completely desiccated in midsummer, so the rain can bring them back to life. They can be used as a substitute for dried fruit in biscuits, although the mushrooms need to be completely dry if you want to avoid the biscuits coming out soggy. More typically they are used in risottos, or to flavour sauces, casseroles and stews, but can also be briefly fried. In his book *Food for Free* (see Resources) Richard Mabey suggests frying them with chopped almonds or hazelnuts. Easily dried for storage.

This species is considered a pest by the sort of gardener who likes their lawn to look perfect, because the mycelium produces visible rings in the grass.

Russet Toughshank

Gymnopus dryophilus (syn. *Collybia dryophila*)

Russet Toughshank, *Gymnopus dryophilus* (syn. *Collybia dryophila*).

Edible (poor). Intermediate.

Cap 4-6cm, convex becoming flat, wavy, variable in colour, rather floppy and weak, rarely found in good condition. **Stem** 2-8cm, slender, swollen at the base, yellow-brown, darker towards the base. **Flesh** white, thin. **Gills** white then light brown, crowded, adnexed to free. **Spore print** white. **Smell and taste** indistinct. **Habitat** leaf litter in deciduous woodland. **Season** late spring to autumn. **Distribution** widespread and common in Europe. Also present in north Africa, Asia and North America.

Similar species: Easily confused with other members of this genus, none of which are seriously toxic, and despite being very common, its variability can make identification a bit tricky.

Notes: Of no culinary interest; included in this guide because it is very common.

Spindleshanks or Spindle Toughshank

Gymnopus fusipes (syn. *Collybia fusipes*)

Spindleshanks or Spindle Toughshank, *Gymnopus fusipes* (syn. *Collybia fusipes*).

Edible (culinary value disputed). Basic.

Cap 3-7cm, conical/convex becoming flatter with an umbo, dark red-brown, patchily hygrophanous, drying paler. **Stem** 5-12cm, twisted, distorted, flattened, fused at the bases of densely tufted groups, cream with brown areas, especially near the base. **Flesh** pale brown. **Gills** pink-brown, rather crowded. **Spore print** white. **Smell and taste** faint. **Habitat** on stumps and at the base of dead deciduous trees. **Season** all year. **Distribution** common from the far south of Europe to England and southern Scandinavia, where its range ends abruptly. Very rare in Scotland. Also present in the temperate zones of north Africa and Asia. Introduced in North America.

Similar species: No obvious similar species – the distorted, fused stems are a giveaway.

Notes: I'd be tempted to describe the caps as rather tasteless, and the stems as bordering on inedible, but some people consider this to be a decent edible species.

Clustered Toughshank

Gymnopus confluens (syn. *Collybia confluens*)

Clustered Toughshank, *Gymnopus confluens* (syn. *Collybia confluens*).

Edible (poor). Intermediate.

Cap 2-5cm, convex becoming flat, pale brown drying almost white. **Stem** 3-10cm, tough, slender, very pale red-brown at the apex, darkening towards the base, downy, especially at the base. **Flesh** thin, white. **Gills** cream, crowded, free. **Spore print** white. **Smell and taste** indistinct. **Habitat** in dense clusters in leaf litter, usually in deciduous woodland. **Season** summer to autumn. **Distribution** common in temperate areas of Europe, including the extreme north, rarer further south. Also present in Asia, Africa and North America.

Similar species: Might be confused with the deceivers (see page 326), which are edible, or other members of this genus, none of which are seriously toxic.

Notes: Of little culinary interest, but common and abundant.

White-laced Shank

Megacollybia platyphylla

White-laced Shank, *Megacollybia platyphylla*.

Edible (caution). Intermediate.

Cap 4-15cm, convex becoming flat, with dark radiating streaks, wavy at the edges, often split. **Stem** 6-15cm, cylindrical, with long, white mycelial "laces". **Flesh** white. **Gills** grey-white, distant, adnexed. **Smell** mild. **Taste** slightly bitter. **Habitat** on buried dead deciduous wood. **Season** summer and autumn. Widespread in temperate areas, absent further south and in the far north. **Distribution** widespread in temperate areas of Europe, absent further south and in the far north. Common in England and Wales, rare in Scotland. Also present in the temperate zone of western Asia.

Similar species: Very superficially resembles a Deathcap (see page 412), although it lacks a ring and volva. The "laces" make it easy to identify, provided you are paying attention.

Notes: Not a delicacy, but edible and locally very common. Also reported to cause gastric upsets for some people.

Butter Cap

Rhodocollybia butyracea (syn. *Collybia butyracea*)

Butter Cap, *Rhodocollybia butyracea* (syn. *Collybia butyracea*).

Edible (poor). Intermediate.

Cap 3-8cm, distinctly umbonate, convex becoming flatter, colour variable (greys and browns), greasy (feels like butter). **Stem** 4-9cm, tapering upwards, bulbous and woolly at the base, darker than the gills. **Flesh** light brown. **Gills** off-white, crowded, free. **Spore print** very pale pink. **Smell and taste** faint. **Habitat** usually woodland, with a particular liking for conifer plantations, but I've also found them growing in organic-debris-strewn grass in a cemetery, nowhere near any trees. **Season** mid-autumn to early winter, and also spring in warmer climates. **Distribution** widespread and extremely common in Europe. This species is very variable and hygrophanous; subspecies *asema* is paler, prefers deciduous woodland and is more common in northern areas. Also present in the temperate zones of Asia, North America and Australia.

Similar species: Rather tricky due to its variability and therefore there are a large number of potential lookalikes, including various species of unknown edibility (although nothing obvious that is seriously toxic). However, it is so common that it will not take long before you have encountered the many variations on its theme.

Notes: Included here because of its exceptional abundance rather than its culinary value. It is worth knowing this species, if only to eliminate it from your enquiries without wasting too much time.

Spotted Toughshank

Rhodocollybia maculata (syn. *Collybia maculata*)

Spotted Toughshank, *Rhodocollybia maculata* (syn. *Collybia maculata*).

Inedible.

Cap 3-12cm, smooth, margin undulating, initially white/cream but becoming progressively brown-spotted, especially in the centre. **Stem** 5-12cm, cylindrical or tapering upwards, white with brown areas, especially near the base, smooth, firm. **Flesh** white. **Gills** white becoming brown-spotted, crowded. **Spore print** pink/cream. **Smell** mild. **Taste** strong, bitter. **Habitat** woodland. **Season** summer and autumn. **Distribution** common in temperate areas of Europe, rarer further south. Also present in Asia, North America and Australia.

Similar species: Rather changeable in appearance as it matures, but also common so you'll have plenty of opportunities to get to know it.

Notes: Recorded as eaten in China, though surely famine food only – it's very bitter. But it's also common and rather variable, so worth being aware of.

Angel's Wings

Pleurocybella porrigens

Deadly poisonous.

Angel's Wings, *Pleurocybella porrigens.*

Cap 2-10cm, ear-shaped, then lobed and undulating, white. **No stem**. **Flesh** white. **Gills** white then cream, crowded, completely decurrent. **Spore print** white. **Smell and taste** mild. **Habitat** dead coniferous wood. **Season** late summer to autumn. **Distribution** frequent in Scottish Highlands, western coastal areas of Scandinavia and parts of central Europe, rare elsewhere. Also present in the temperate zones of North America and Asia.

Similar species: Could be mistaken for one of the paler Oyster Mushrooms.

Notes: Known to be responsible for at least 60 cases of serious brain injury and 17 deaths, most of which occurred in Japan in 2004. All of the victims had pre-existing kidney problems, and that year was a bumper year in Japan for this species, so much was consumed. The mushrooms contain a very high concentration of an amino acid precursor (now called pleurocybellaziridine). Six of the amino acids it leads to are novel (they do not normally exist in human bodies). In most situations the pleurocybellaziridine presumably gets broken down before it can do any serious damage, but for reasons still not fully understood, when large amounts of Angel's Wings are consumed by people with poor kidney function, it can reach the brain. Its presence there leads to the production of novel amino acids that cause irreversible brain damage.[16]

Jack O'Lantern

Omphalotus illudens / O. olearius

Poisonous.

Jack O'Lantern, *Omphalotus illudens / O. olearius.*

Cap 4-10cm, funnel-shaped, with an irregular, wavy margin, usually split, bright orange-yellow. **Stem** 4-20cm, tapering sharply downwards, colour as cap, with red patches. **Flesh** pale yellow. **Gills** orange-yellow, crowded, decurrent and bioluminescent. **Spore print** white. **Smell** strong, pleasant. **Taste** mild. **Habitat** deciduous stumps. **Distribution** *Omphalotus olearius* is frequent in the southern half of Europe, but rare or absent further north. *Omphalotus illudens* has a similar European range, but is rarer. Both species are also present in North America.

Similar species: These two species are very difficult to distinguish. They are regularly mistaken for Chanterelles (see page 166) in places where *Omphalotus* are common. However, *Omphalotus* species have true gills, rather than the vein-like wrinkles of a Chanterelle, they tend to grow in denser clusters and are a more intense orange, especially the flesh. They could also be confused with a poisonous Spectacular Rustgill (see page 289).

Notes: Symptoms of poisoning are mainly gastrointestinal.

Physalacriaceae (Bladder Fungus family)

The Physalacriaceae are a recently defined family of densely tufted wood-decomposing fungi, most European members of which are edible, and none seriously toxic, although *Physalacria* itself is a southern tropical genus not known for its edible species. Also included in this family, and supposedly edible but very small and not worth collecting, are Spruce Cone Cap (*Strobilurus esculentus*), Pine Cone Cap (*S. tenacellus*) and *S. stephanocystis.*

Honey Fungus (*Armillaria* spp.)

The genus *Armillaria* is a recently (in evolutionary timescale) diverged group of very similar species. They are easily mistaken for one another, as well as having a veritable snowstorm of Latin synonyms, the priority and validity of which will be argued about for some time to come. All of them are parasitic on trees and shrubs to some extent, and continue to live as saprophytes when their hosts die. They are well known to horticulturists and foresters because they take out weakened plants, or those not so well suited to their environment (as is the case with many exotic garden plants), and eradication from an area where they aren't wanted is not easy.

Their edibility/toxicity status is much confused. As edible mushrooms they remain rather obscure in western Europe, while in Russia and many eastern European countries they are highly prized as a delicacy. The Honey Fungi are reputed to be sometimes responsible for serious upsets of the stomach or lower digestive system, but the details are as clear as mud. They all cause problems if eaten raw, which has led some people to believe that all reports of problems are due to the mushrooms not being properly cooked. There is a consensus that some are worse than others, with the very common "true" Honey Fungus (*A. mellea*) thought to be the least problematic, and Dark Honey Fungus the most. There is also a school of thought that the upsets are due to a reaction with alcohol, which should be avoided 24 hours either side of consuming the mushrooms. I've never experienced any problems of this sort, although some people may be more susceptible

than others. A variant of this theory is that it isn't Honey Fungus that reacts with alcohol, but similar-looking scalycap species (see page 297), and therefore these poisonings are the result of misidentification.

Apart from the scalycaps, it is imaginable that somebody might mistake the poisonous Sulphur Tuft (see page 294) for one of the Honey Fungi, although that species is very bitter and easily recognized by the green-blue tinge to the gills, and the lack of the brown flecks of Honey Fungi caps. The edible Sheathed Woodtuft (see page 298) is another lookalike, but the only really dangerous one is the deadly Funeral Bell (see page 300), which is also brown and grows on decaying wood, but is smaller, trooping (grows in scattered groups) rather than tufted (in tightly packed groups), more fragile and less fibrous. So long as you are aware of Funeral Bell, this mistake seems unlikely, although it is potentially so serious that this on its own elevates the Honey Fungi to the intermediate level.

Try not to be put off by all this! Provided you're sure that what you've got really is one of the Honey Fungi and not something else, then the worst that can happen to you is some temporary digestive problems. If lots of people were regularly made ill as a result of foraging for these mushrooms, then presumably we'd have a clearer idea of what exactly is going on. I eat them every year and consider them to be top quality, and plenty of Continental Europeans are more than happy to find and eat them.

The first three species featured here are the most similar of the European variants. The fourth, Ringless Honey Fungus, is easily distinguished from the others by its lack of a ring. The name *Armillaria cepistipes* possibly refers to another variant, very similar to Bulbous Honey Fungus. Not featured are two rare species: Marsh Honey Fungus (*A. ectypa*), which is found in marshes and on fens and wet moors, usually in sphagnum moss, and *A. borealis*, which is a northern species most similar to Dark Honey Fungus.

The lower parts of Honey Fungi stems are tough, and should be discarded, and the caps are better when younger and best of all when they are still closed as "buttons". Old caps in poor condition should be rejected.

Cooking (all Honey Fungi): My favourite thing to do with them is put them in the roasting dish with a fatty joint of meat, where they can sizzle for half an hour and come out crispy and delicious (this works particularly well with pork). A quicker way to cook them is to boil for 3 minutes, drain thoroughly and discard the water, then fry in olive oil for 10 minutes until the slimy coating has gone. This works well with onions, garlic and a dash of dark wine or sherry. They are also excellent stewed. In Russia they are usually cooked and then pickled. Honey Fungus doesn't dry well, but can be frozen cooked.

Honey Fungus, *Armillaria mellea*.

Honey Fungus

Armillaria mellea

Honey Fungus, *Armillaria mellea*.

Edible (delicacy). Intermediate.

Cap 2-12cm, convex then flat, yellow-brown, covered in rings of brown flecks, darkening to the centre. **Stem** 5-20cm, convex becoming flatter but rather irregular and wavy, tough and fibrous, pale yellow-brown, paler towards the top, darker at the base, with a persistent pale yellow ring. **Flesh** white. **Gills** white, then yellow, finally spotted red-brown, crowded, adnate-decurrent. **Spore print** pale cream. **Smell** strong. **Taste** strong and rather unpleasant when raw. **Habitat** on weak or dead trees and shrubs, usually deciduous. **Season** late summer to early winter. **Distribution** widespread and very common in Europe. Present worldwide.

Dark Honey Fungus

Armillaria ostoyae (syn. *A. solidipes*)

Dark Honey Fungus, *Armillaria ostoyae* (syn. *A. solidipes*).

Edible, but suspected of causing gastric upsets in some people. Intermediate.

Cap 2-15cm, convex then flat and umbonate, **brown flecks darker and denser than mellea, especially in the centre**. **Stem** 4-15cm, base slightly bulbous, brown, paler towards the top, darker towards the base, with a thick, woolly, persistent ring. **Flesh** white. **Gills** white, then yellow, finally spotted red-brown, crowded, adnate-decurrent. **Spore print** pale cream. **Smell** strong. **Taste** strong and rather unpleasant when raw. **Habitat** dead and living wood, **usually coniferous**. **Season** late summer to early winter. **Distribution** widespread and frequent in Europe. Also present in the temperate zones of Asia and North America.

Notes: Famously billed as “the largest organism in the world”, after 880 hectares of woodland in Oregon, USA, were discovered to be home to a single mycelium, estimated to be 2,400 years old.

Bulbous Honey Fungus

Armillaria gallica (syn. *A. bulbosa*, *A. lutea*)

Bulbous Honey Fungus, *Armillaria gallica* (syn. *A. bulbosa*, *A. lutea*).

Edible (good). Intermediate.

Cap 2.5-10cm, flecks are concentrated in the centre, and there is a lighter area around the margin. **Stem** 4-12cm, cylindrical with a short-lived ring and a distinct bulb at the base, pink/yellow/brown, paler towards the apex, darker at the base. **Flesh** white. **Gills** white, then yellow, finally spotted red-brown, crowded, adnate-decurrent. **Spore print** pale cream. **Smell** strong. **Taste** strong and rather unpleasant when raw. **Habitat** dead and living wood, but also found growing on the ground (possibly on buried wood). **Season** autumn. **Distribution** widely but unevenly distributed in Europe, more common in temperate areas. Frequent in the British Isles. Also present in the temperate and subtropical zones of Asia and North America. Introduced in South Africa. Suspected of being a species complex.

Ringless Honey Fungus

Armillaria tabescens

Ringless Honey Fungus, *Armillaria tabescens.*

Edible (good). Intermediate.

Cap 2-8cm, convex becoming flatter and irregular, yellow-brown with dark flecks concentrated in the centre. **Stem** 4-10cm, tapering upwards, bulbous at the base, pale brown, **no ring**. **Flesh** white. **Gills** white, then yellow, finally pink-brown, crowded, adnexed to slightly decurrent. **Spore print** pale cream. **Smell** strong. **Taste** strong and rather unpleasant when raw. **Habitat** dead and living wood, usually deciduous. **Season** autumn. **Distribution** frequent in southern and western Europe, rare or absent in the north and east. Occasional in England, rare elsewhere in the British Isles. Also present in eastern North America, southern Asia, and Africa.

Other members of the Physalacriaceae

Velvet Shanks (Japanese: Enokitake)

Flammulina velutipes

Velvet Shanks, *Flammulina velutipes.*

Edible (good). Intermediate/basic.

Cap 1-10cm, initially convex, becoming flatter and sometimes umbonate, orange, sometimes darker towards the centre, slimy when wet, smooth and shiny when dry. **Stem** 3-10cm, yellowish at the apex, dark brown and velvety below, very tough, often curved and/or flattened. **Flesh** thin, tough, light brown. **Gills** white becoming grey-yellow, rather crowded, adnate or emarginate. **Spore print** white. **Smell and taste** mild and pleasant. **Habitat** dead or dying deciduous trees and shrubs. **Season** late autumn to early spring. **Distribution** widespread and common in Europe. Present worldwide, apart from Saharan and sub-Saharan Africa.

Similar species: The difficulty level of this species depends on the time of year. At the beginning of its fruiting season, late in the autumn, there are many other medium-sized, red-brown, wood-decomposing fungi about. These include the deadly Funeral Bell (see page 300), which could conceivably be mistaken for Velvet Shanks by somebody who isn't paying attention. Velvet Shanks are much slimier when wet, and with much tougher stems which don't have rings. As the really cold weather sets in, everything dangerous you might mistake for this species stops fruiting and disappears. *Flammulina elastica* is very similar, but it is equally edible.

Notes: In any well-stocked Asian supermarket you will find packets of long, thin stuff that looks a bit like spaghetti with bobbles on the end. Take a closer look and you will see that they are actually mushrooms, although completely unlike any other mushroom you've ever seen. They certainly bear very little resemblance to wild Velvet Shanks, although they are the same species. Only those wild specimens that have been hidden under the main tufts, or where the space, light and air are restricted, resemble cultivated Enokitake – and even then the resemblance is slight.

Presumably some observant Japanese person noticed the small ones are tastier, because the cultivated version is grown in the dark, in canisters with heightened levels of CO_2, ending up pure white, with massively extended stems and tiny caps. The cultivated and wild versions are usually used in similar ways – in soups and stews. Richard Mabey, author of *Food for Free* (see Resources), suggests adding them to a soup near the end of the cooking process, so they float around on the top like water-lily leaves. Unlike the cultivated form, the stems of the wild Enokitake aren't usually eaten. Slightly poisonous raw.

Enokitake.

Porcelain Fungus or Poached Egg Fungus

Oudemansiella mucida

Porcelain Fungus or Poached Egg Fungus, *Oudemansiella mucida*.

Edible (good). Beginner.

Cap 2-10cm, convex becoming flat with a slight umbo, sometimes wavy, white, slightly translucent, very slimy. **Stem** 3-10cm, slender, usually cylindrical with a slightly bulbous base, tough, white above the ring, darker below. **Flesh** thin. **Gills** white, very distant, adnate. **Spore print** white. **Smell and taste** faint. **Habitat** dead deciduous trees, nearly always beech. **Season** late summer to autumn. **Distribution** common in Europe where beech is native or widely introduced (warmer temperate areas, but not Mediterranean south or the bulk of Scandinavia). Common in the south of the British Isles, rarer in the north. Also present in the temperate and subtropical zones of Asia.

Similar species: If you find the hulk of an old beech tree decorated from top to bottom with beautiful but slimy white mushrooms, then

you've found Porcelain Fungus.

Notes: The slime should be washed or wiped off before eating. Once this has been done, they are surprisingly good to eat (fried). Only the larger caps are worth collecting, and the stems are tough so should be discarded.

A storm with a silver lining

Porcelain Fungus was one of the first wild mushrooms I ever found and ate. I had passed my driving test and got my first car in January 1987 – a gold Renault 12, which I drove for nine months without putting so much as a scratch on it. Then, on the night of 15 October, the worst storm to hit England in my lifetime passed over the North Downs, felling pretty much every beech tree within 15 kilometres of our house – the trunk of one smashing on to my car. Twelve months later, what was left of that same tree was plastered from one end to the other with bauble-like mushrooms that I easily identified as Porcelain Fungus. The tree had taken my car; eating the mushrooms that ate the tree felt like a little taste of revenge.

Rooting Shank

Xerula radicata (syn. *Oudemansiella radicata*)

Rooting Shank, *Xerula radicata*, (syn. *Oudemansiella radicata*).

Edible. Basic.

Cap 3-10cm, initially bell-shaped, becoming flat with an umbo, wrinkled, tan, slightly slimy. **Stem** 8-20cm, tall and slender, white at the apex becoming tan at the base, rooting, tough. **Flesh** thin. **Gills** white, thick, distant, adnexed. **Spore print** white. **Smell and taste** indistinct. **Habitat** sometimes on well-rotted stumps, more often on dead buried wood, especially beech. **Season** summer and autumn. **Distribution** widespread and frequent in most areas of Europe, absent in the far north. Common in England, rarer in Scotland and Wales. Also present in the temperate and subtropical zones of Asia and North America.

Similar species: A shield species (see page 409) could be mistaken for this species, some of which are inedible or mildly toxic. Unlike this species, they have pink spores.

Notes: I know of one location where this fungus grows in a field that was beech woodland until all the trees were blown over during the same storm mentioned in the previous entry. Twenty-eight years later, it is still living on the old roots.

Mycenaceae (Bonnet family)

Mycena is a large genus of mushrooms, most of which fruit from dead wood in large, dense tufts. Most are small and of little foraging interest.

In addition to those featured in this guide, other bonnets considered edible include Burgundydrop (*M. haematopus*), Saffrondrop (*M. crocata*), Milking (*M. galopus*), Black Milking (*M. galopus* var. *nigra*), Bleeding (*M. sanguinolenta*), Yellowleg (*M. epipterygia*) and Ivory (*M. flavoalba*) bonnets and *M. alcalina*.

This family also includes one of two genera with the common name “Oysterling” (the other is the unrelated *Crepidotus*).

Olive Oysterling (Japanese: Mukitake)

Sarcomyxa serotina (syn. *Panellus serotinus*)

Olive Oysterling, *Sarcomyxa serotina* (syn. *Panellus serotinus*).

Edible (good). Intermediate.

Cap 3-12cm, kidney-shaped, olive-green, sticky/slimy. **Stem** very short and stout, yellow. **Flesh** white with a gelatinous layer beneath cuticle. **Gills** yellow then fading to brown/cream, crowded, adnate. **Spore print** white. **Smell and taste** usually mild and pleasant, but can be bitter, depending on what tree they are growing on. **Habitat** dead deciduous wood, usually beech. **Season** autumn and early winter. **Distribution** This is a strictly northern species, frequent in central northern Europe, the British Isles and Scandinavia, including the extreme north, but absent in the south. Also present in northern areas of Asia and North America.

Similar species: No seriously poisonous lookalikes, but quite a few species of unknown edibility it could be mixed up with, including other *Panellus*/*Sarcomyxa* species as well as members of the genera *Panus* (in the Polyporaceae family) and *Crepidotus* (Crepidotaceae).

Notes: Cultivated in Japan. Best well cooked.

Common Bonnet

Mycena galericulata

Common Bonnet, *Mycena galericulata*.

Edible. Advanced.

Cap 2-6cm, broadly umbonate, variable in colour but usually grey-brown, lined at the margin. **Stem** 2-12cm, cylindrical, tough, slightly paler than cap, woolly at the rooting base. **Flesh** white. **Gills** white, turning pinkish, thin, distant with linking veins, adnate with a decurrent tooth. **Spore print** pale cream. **Smell and taste** variable, usually mealy. **Habitat** in tufts on dead wood, almost always deciduous. **Season** all year but especially late autumn and early winter. **Distribution** widespread and common in Europe. Very common in the British Isles. Also present in the temperate zones of Asia and North America.

Similar species: Rather variable and could be confused with quite a few other bonnets, but particularly Reddish-Spotted Bonnet (*M. maculata*), which is also edible, and Clustered Bonnet (*M. inclinata*), which is of dubious edibility but not dangerous. Clustered Bonnet consistently has a red-brown cap colour, and gills that develop red spots and eventually turn completely red. When young, it is sometimes impossible to distinguish between these three bonnets. Somebody who really isn't paying attention might mistake the deadly Funeral Bell (see page 300) for Common Bonnet.

Notes: There are widely varying opinions on the culinary value of this species, probably because the taste is rather variable. Usually passable fried in butter.

Rosy Bonnet / Lilac Bonnet

Mycena rosea / M. pura

Poisonous.

Rosy Bonnet, *Mycena rosea.*

Cap 2-6cm, bell-shaped becoming flatter, umbonate, colour very variable, usually lilac or pink but sometimes yellow or white, outer half lined. **Stem** 4-8cm, smooth, fragile, white or same colour as the cap. **Flesh** white. **Gills** pale lilac, distant, adnate. **Spore print** white. **Smell and taste** of radish. **Habitat** on soil (unusually for this genus), usually in deciduous or coniferous woodland, particularly with beech, but sometimes in other places. **Season** autumn. **Distribution** widespread and common in temperate areas of Europe, especially in the north, becoming rarer or absent further south. Very common in the British Isles. Also present in temperate and subtropical zones of Asia and North America. Suspected species complex.

Notes: There is some debate on whether or not these are two different species (Lilac Bonnet is described here). They're microscopically identical, but Lilac Bonnet is generally smaller, more lilac and more widespread, whereas Rosy Bonnet is larger and pinker, and has a more southerly distribution. If considered to be separate, the illustrated species is Rosy Bonnet. If considered conspecific (belonging to the same species), both are just forms of Lilac Bonnet. There are two other very similar species (*M. pelianthina* and *M. diosma*) – both of which are uncommon and of unknown edibility. The main reason for including these pink-purple bonnets is that they are among the few mushrooms that can be mistaken for an Amethyst Deceiver (see page 328). They're really quite different – Amethyst Deceivers are a deeper purple (apart from when very dry), the gills are darker and the stem isn't fragile. As is so often the case, this mistake is only likely if you don't know about the lookalikes.

These bonnets are described as edible in some older guides, but they have recently been declared inedible, as they are now known to contain muscarine. The concentrations are low, but given that they are of little culinary value anyway, they should no longer be on the forager's menu.

Tricholomataceae – Knight family

The Tricholomataceae are a large family containing many edible species and quite a few poisonous ones too, including one notorious little grassland mushroom. A lot of them are rather tricky to identify.

Funnels

The genus name *Clitocybe* translates as "sloping head", which is a bit misleading, because a lot of them end up as flat as an average mushroom. They are saprophytes, mostly found in woodland, and the group contains a fair number of both edible and toxic species. None are suitable for beginners.

Edible funnels not covered in detail in this guide: *C. costata*, *C. squamulosa.* Probably poisonous: White (*C. candicans*) and Chicken Run (*C. phaeophthalma*) funnels.

Clouded Funnel

Clitocybe nebularis (syn. *Lepista nebularis*)

Clouded Funnel, *Clitocybe nebularis* (syn. *Lepista nebularis*).

Edibility disputed (but good when young). Intermediate.

Cap 5-20cm, convex becoming flat and slightly depressed in the centre, rather variable in colour (greys and browns), often with a white bloom. **Stem** 5-10cm, stout, usually tapering upwards and/or bulbous towards the base, paler than the cap, rather brittle, becoming hollow. **Flesh** white and unchanging. **Gills** pale cream, crowded, slightly decurrent. **Spore print** pale cream. **Smell and taste** strong, sweet or cheesy (like ripe Brie). **Habitat** woodland, often in rings. **Season** autumn, usually the second half of. **Distribution** widespread and common in Europe, especially the north. Very common in the British Isles. Also present in the temperate and subtropical zones of Asia, and North and South America. Introduced in New Zealand.

Similar species: The poisonous Livid Pinkgill (see page 398) is quite similar, but is less grey, has pinkish gills and spores, gills that aren't decurrent, and smells very different. Once you are familiar with Clouded Funnel (which shouldn't take very long) then the smell makes identification relatively simple.

Notes: There's significant disagreement about the edibility of this species. It has widely been eaten, and in entirely non-scientific tests where I've offered it to people with no knowledge of its reputation, the overwhelming majority say they like it, and some rate it as excellent. The taste is quite strong. I've had no reports of problems. However, it has a reputation for causing gastric upsets, especially older specimens (which smell more intense and unpleasant). Research[17] has pinpointed a probable culprit in the form of an adenosine-like compound that has been named "nebularin". If you feel like eating it regardless, this mushroom goes well as part of a meaty mixed grill, or fried breakfast.

Trooping Funnel (Italian: Fungo di San Martino)

Clitocybe geotropa (syn. *Infundibulicybe geotropa*)

Trooping Funnel in a coniferous habitat and showing the important distinguishing umbo in the centre of the cap; this is the stage at which they should be picked for eating.

Trooping Funnel in a deciduous habitat.

Edible (delicacy). Advanced.

Cap 4-22cm, initially flat **with a distinct umbo**, soon depressed and eventually funnel-shaped, margin inrolled, surface dry, cream, smooth or very finely velvety. **Stem** 5-15cm, cylindrical or tapering upwards, slightly bulbous base, tough and fibrous, **slightly** woolly at the base. **Flesh** white, firm, unchanging. **Gills** colour as cap, crowded, deeply decurrent. **Spore print** white. **Smell and taste** sweet and pleasant. **Habitat** woodland, usually in troops or rings. **Season** Autumn. **Distribution** widespread and common in most of Europe, but rare or absent in the far north. Common in the British Isles, especially in the south. Also present in the temperate and subtropical zones of Asia and North America.

Similar species: The main lookalikes to avoid are smaller funnels, especially the potentially deadly Frosty Funnel (next page), which in addition to the size difference has a stronger smell, a woollier base, usually a slightly "frosted" appearance to the cap and *no umbo*. There are other poisonous funnels, but they're all much smaller than Trooping Funnel. A Livid Pinkgill (see page 398) might also be mistaken for this species by an inexperienced collector, but smells stronger and less pleasant, has pink spores and a much broader, blunter umbo (or no umbo). Club Foot (see page 388) also has a darker cap, a markedly swollen stem base and tastes foul. As for edible lookalikes, when young, Trooping Funnel is very similar to Giant Funnel (see page 385) and its related species, the very rare and smaller *Leucopaxillus paradoxus*. Giant Funnel usually grows in grass (but not always) and also reaches a bigger eventual size (up to 40cm across). Alexander's Funnel (*C. alexandrii*) is a rare relative (critically endangered in Britain) that might well be mistaken for a rather fat-stemmed young Trooping Funnel. Officially it is of unknown edibility, although its close similarity to Trooping Funnel suggests we'd know if it was poisonous. Clouded Funnel (see page 356) has a darker cap and stronger smell.

Notes: Only the caps are eaten and they are at their best when young. The stems and older specimens are too tough. Used in stews, roasted or fried. Esteemed in northern Italy, and a personal favourite.

Frosty Funnel

Clitocybe phyllophila

Poisonous, potentially deadly.

Frosty Funnel, *Clitocybe phyllophila*.

Cap 3-10cm, convex then wavy, irregular and funnel-shaped, pale cream, initially covered with a dull white bloom. **Stem** 3-8cm, cylindrical or tapering upwards, with a swollen, downy base, cream. **Flesh** cream. **Gills** white becoming cream, crowded, decurrent. **Spore print** pink-cream. **Smell** strong, sweet. ***Do not taste.*** **Habitat** woodland, usually with beech. **Season** autumn. **Distribution** widespread and frequent in Europe. Also present in northern North America.

Similar species: Trooping Funnel (previous entry), which is larger, has a less downy base and a milder smell.

Notes: Contains dangerous levels of muscarine (see Fool's Funnel, page 362).

Mealy Frosted Funnel

Clitocybe ditopa

Poisonous.

Mealy Frosted Funnel, *Clitocybe ditopa*.

Cap 2-6cm, convex then funnel-shaped, “frosted” when young, hygrophanous (dark grey-brown drying white). **Stem** 2-6cm, shape rather variable, pale grey-brown, fibrous-downy towards the base. **Flesh** grey-brown. **Gills** grey, crowded, decurrent. **Spore print** white. **Smell and taste** mealy, rancid, unpleasant. **Habitat** organic debris in woodland, usually coniferous. **Season** autumn. **Distribution** frequent in the northern half of Europe, rare or absent further south. Frequent in England, occasional elsewhere in the British Isles. Also present in North America.

Similar species: Most likely to be mistaken for other funnels.

Notes: Suspected to contain muscarine.

Fool’s Funnel or Ivory Funnel

Clitocybe rivulosa (syn. *C. dealbata*)

Deadly poisonous.

Fool’s Funnel or Ivory Funnel, *Clitocybe rivulosa* (syn. *C. dealbata*).

Cap 1-7cm, convex-flat, sometimes depressed and irregular, light grey-brown with fine powdery effect to the surface. **Stem** 2-4cm, shape rather variable, colour as cap or paler, tough, powdery at the apex, sometimes woolly at the base. **Flesh** whitish. **Gills** white or slightly pink/brown, crowded, adnate to slightly decurrent. **Spore print** white. **Smell** faintly mealy. ***Do not taste.*** **Habitat** grassland, often in troops or rings. **Season** late summer to late autumn. **Distribution** widespread and frequent in Europe. Frequent in Britain but unevenly distributed and less common in Scotland. Also present in the temperate and subtropical zones of Asia and North America. Older guide books list *C. rivulosa* and *C. dealbata* as separate species; they are now considered by some mycologists to be the same species, and there’s certainly no reason to distinguish between them from a foraging point of view.

Similar species: This species is regularly mistaken for several edibles, most frequently the Fairy Ring Champignon (see page 332), which is a similar size, and also grows in grassland, often in rings. It is less often but still very easily mistaken for The Miller (see page 400), which it closely resembles, and which is avoided by many foragers because of its similarity to this species. Occasionally it is also mistaken for one of the white or brown waxcaps (see page 438).

Notes: Contains a lethal concentration of muscarine. Typical poisoning starts with headache, vomiting and constriction in the throat, followed by salivation, perspiration and visual disturbances, and then diarrhoea and polyuria. It ends with serious breathing difficulties, hypotension, circulatory shock and sometimes cardiac arrest. Timely diagnosis is crucial, and administering the antidote atropine is 100 per cent effective.

Common Funnel

Clitocybe gibba (syn. *Infundibulicybe gibba*)

Common Funnel, *Clitocybe gibba* (syn. *Infundibulicybe gibba*).

Edible. Advanced.

Cap 3-9cm, distinctly funnel-shaped and remaining that way, margin wavy, pale orange-brown, sometimes pinkish. **Stem** 2-8cm, tough, cylindrical or tapering upwards, woolly and slightly swollen at the base, very pale orange-brown. **Flesh** very pale brown. **Gills** pale orange-yellow, crowded, decurrent. **Spore print** white. **Smell and taste** pleasant, faintly of almonds. **Habitat** varied, but most frequently in deciduous woodland. **Season** midsummer to autumn. **Distribution** widespread and common in Europe. Frequent in Scotland, common in the rest of the British Isles. Also present in North America and Australia.

Similar species: There's no shortage of toxic funnels you could mistake for this species, including all of those listed in the introduction to this section. Its shape helps, as does the smell, but it is probably best avoided. Of particular concern is a very rare species described from Morocco in 1975, but also recorded in southern France, called the Paralysis Funnel (*C. amoenolens*). Consumption of this species results in erythromelalgia (burning pain and redness in the extremities), lasting for months or even years. The most obvious distinguishing feature is the smell – the Paralysis Funnel is said to smell "fruity" or "flowery".

Notes: There's a dispute over whether this species should be taken as the type species of *Clitocybe*. If it is, then the blewits should be placed in the genus *Lepista*. If instead Clouded Funnel is taken as the type, the blewits belong in *Clitocybe*.

Aniseed Funnel

Clitocybe odora

Aniseed Funnel, *Clitocybe odora*.

Edible (good). Intermediate.

Cap 3-10cm, convex becoming flatter and irregular, slightly umbonate, margin usually wavy, blue-green fading to grey, smooth or finely velvety. **Stem** 3-7cm, cylindrical, white flushed with blue-green, woolly and slightly bulbous at the base. **Flesh** very pale grey. **Gills** off-white, crowded, slightly decurrent. **Spore print** white. **Smell and taste** strongly of aniseed. **Habitat** woodland, usually deciduous. **Season** midsummer to autumn. **Distribution** widespread and frequent across almost all of Europe, but comparatively scarce in the north and west of Scotland. Also present in the temperate and subtropical zones of Asia, north Africa and North America.

Similar species: The smell helps to distinguish it from most other fungi. You could still get it mixed up with Fragrant Funnel (*C. fragrans*), although that species is a different colour (white). *Clitocybe albofragrans* and *C. anisata* also smell of aniseed (both are of unknown edibility and are quite rare). Also be aware of the blue *Stropharia* species (see page 286), which lack the aniseed smell, and are slimy. If the habitat of Aniseed Funnel was grassland then it would rank as advanced, for fear of confusion with Fool's Funnel (see page 362).

Notes: You can get really creative with this one. It works particularly well in a sauce for white fish, but can also be dried, powdered and used as an aniseed flavouring. Some European sources describe this species as poisonous, but I don't know why. I've eaten it on many occasions, and have given it to plenty of other people, and nobody has reported any problems.

Blewits

There is an argument regarding whether or not the genus *Lepista* is synonymous with *Clitocybe* (see notes for Common Funnel on page 364). If not, then the blewits are members of *Lepista.* They are saprophytes, most of which are lilac-blue-tinged. Blewits not covered here, edible but uncommon/rare: *L. ovispora*, *L. glaucocana.*

Cooking advice (for all edible blewits): Both of the famous blewits are excellent stewing mushrooms. They can also be fried in egg and breadcrumbs, and one old book recommends boiling them for 5 minutes in a 50/50 mixture of vinegar and cider, then serving chilled with onion and herbs. Blewit caps were traditionally used in England as a substitute for tripe, and cooked in the same way. They can be pickled too.

Wood Blewit

Lepista nuda (syn. *Clitocybe nuda*)

Wood Blewit, *Lepista nuda* (syn. *Clitocybe nuda*).

Edible (delicacy, caution). Intermediate.

Cap 3-15cm, initially convex, then flatter with a broad umbo and eventually depressed or funnel-shaped, becoming irregular, especially round the margin, blue-lilac, fading to grey-brown. **Stem** 3-11cm, stout, especially at the base, streaked with purple fibres. **Flesh** grey, marbled with lilac, particularly in the stem. **Gills** colours as cap, crowded, adnate or emarginate. **Spore print** pale pink. **Smell** rich, flowery, frozen orange juice. **Taste** nutty. **Habitat** varied, including woodland, parks and gardens, compost heaps and roadsides. **Season** usually mid- to late autumn, but can turn up at any time of year. **Distribution** widespread and common in Europe, but absent from the coldest parts of Scandinavia. Common in the British Isles apart from north Wales and the Scottish Highlands. Also present in the temperate and subtropical zones of Africa, Asia, and North and South America. Introduced in Australia. Suspected species complex.

Similar species: The smell is important in this case, to the extent that people with a poor sense of smell should avoid picking it at all. Wood Blewits resemble quite a few of the more substantial, purple-brown webcaps, especially the Bruising Webcap (see page 316), which is so similar that I know of at least one field mycologist who admits to having made this mistake while leading a public foray. Bruising Webcaps are of disputed edibility and unlikely to be dangerous, but the whole genus is to be treated with a great deal of caution, as the majority contain toxins. Once you are familiar with the smell of a Wood Blewit, identification becomes easier. It is also very easily confused with the edible Sordid Blewit (next entry).

Notes: This species is known to cause allergic reactions in sensitive individuals. Eating them raw increases the probability of this reaction, and also causes indigestion, so they should always be cooked. Has been cultivated.

Sordid Blewit

Lepista sordida (syn. *Clitocybe sordida*)

Sordid Blewit, *Lepista sordida* (syn. *Clitocybe sordida*).

Edible (good). Intermediate.

Cap 2-8cm, convex then flat, becoming wavy and irregular, sometimes split, lilac drying paler and fading to brown. **Stem** 3-7cm, usually rather stout, cylindrical and slightly swollen at the base, finely fibrous. **Flesh** lilac-grey. **Gills** lilac fading to light brown, crowded. **Spore print** pale pink. **Smell** faint, sweet. **Taste** mild. **Habitat** among organic debris in woodland or gardens. **Season** late summer to autumn. **Distribution** widespread and frequent in Europe, apart from the far north. Frequent in the south of the British Isles, rarer in Scotland, but can be locally abundant anywhere. Also present in the temperate zones of Asia and North America.

Similar species: Very easily confused with a Wood Blewit (previous entry) and generally very variable. Wood Blewits tend to be larger and smell stronger but there's not much in it.

Notes: Edibility is similar to Wood Blewit, but not quite as highly regarded.

Field Blewit

Lepista saeva (syn. *Clitocybe saeva*, *Tricholoma personatum*, *Lepista personata*)

Field Blewit, *Lepista saeva* (syn. *Clitocybe saeva*, *Tricholoma personatum*, *Lepista personata*).

Edible (delicacy). Basic.

Cap 6-12cm, initially convex, then flatter and wavy, dull clay-pink. **Stem** 3-9cm, stout, swollen, with distinct violet streaks. **Flesh** off-white, marbled with darker grey/tan. **Gills** colour as cap, crowded. **Spore print** pale pink. **Smell and taste** distinctively floral but of varying strength. **Habitat** grassland, usually pasture, often in rings. **Season** autumn to midwinter. **Distribution** frequent in southern parts of the British Isles, southern Scandinavia and north-western Continental Europe. Very rare further north than that (including Scotland), and rare in southern parts of temperate Europe. Also present in the temperate zones of Asia and North America.

Similar species: No seriously poisonous lookalikes, although it could be confused with Clouded Funnel (see page 356), which lacks the violet streaks, smells different and normally inhabits woodland.

Notes: More highly prized than the Wood Blewit (see page 366), this is one of the few wild edible fungi to have been commercially collected historically in England.

Spotted Blewit

Lepista panaeolus (syn. *L. panaeola*, *L. luscina*, *Clitocybe luscina*)

Spotted Blewit, *Lepista panaeolus* (syn. *L. panaeola*, *L. luscina*, *Clitocybe luscina*).

Edible (good). Advanced.

Cap 2-12cm, convex becoming flatter, wavy at the margin, pale grey-brown with darker spots, which can be in a concentric ring near the margin, or bunched in the centre, or both. **Stem** 2-7cm, usually stout and roughly cylindrical, pale grey-brown. **Flesh** white, rather fragile. **Gills** pale lilac becoming grey, crowded, adnate or slightly decurrent. **Spore print** pale pink. **Smell and taste** strong, sweet, mealy. **Habitat** old grassland, particularly in coastal areas. **Season** autumn. **Distribution** frequent in the Iberian peninsula and present across much of Europe as far north as Denmark, but absent further north. In the British Isles, most frequent in the south and west, and the west coasts of Scotland and Ireland.

Similar species: There is a serious risk of Fool's Funnel (see page 362) being mistaken for this species. They are about the same size, they look, feel and smell similar, and are found in the same habitat. I've seen them growing side by side. Fool's Funnel is never spotted, and is generally browner and has a thinner stem.

Notes: This is a good edible species, but please don't pick unless you find it growing abundantly.

Tawny Funnel

Lepista flaccida (syn. *L. inversa*, *Clitocybe flaccida*)

Tawny Funnel, *Lepista flaccida* (syn. *L. inversa*, *Clitocybe flaccida*).

Edible. Intermediate.

Cap 2-9cm, convex becoming funnel-shaped with an irregular, inrolled margin, orange-brown. **Stem** 2-5cm, shape variable but usually cylindrical and rather stout, tough, woolly at the base, becoming hollow. **Flesh** thin, pale yellow. **Gills** pale yellow-orange, crowded, deeply decurrent. **Spore print** very pale cream. **Smell and taste** oily, spicy. **Habitat** in all types of woodland, often in very large troops or rings, prefers rich soils. **Season** late summer to autumn. **Distribution** widespread and very common in Europe. Also present in the temperate and subtropical zones of Asia and North America.

Similar species: A rather variable fungus that could be confused with several *Clitocybe* species, but has distinctively deep decurrent gills. Particularly, you need to be aware of the Paralysis Funnel (see Common Funnel, page 364). It is common enough that you should be able to thoroughly familiarize yourself with it quite quickly.

Notes: Not a delicacy; a bit chewy but just about passable and some people seem to like it. Known to accumulate toxins from its environment.

Knights

The genus *Tricholoma* has recently been given the common name of "Knight", after the highly prized European type species of the genus, the Yellow Knight (*T. equestre*). The specific epithet *equestre* means "man on horseback" and refers to the ban on medieval French peasants picking the mushroom, as it was reserved for the lower nobility or "knights". Unfortunately, this is one of two choice edible members of the group now known to be potentially deadly. The Matsutake, a legendary edible species in Japan that is now known to occur in Europe too, is also a member of this genus. The related European Matsutake (*T. caligatum*) is highly prized in some parts of southern Europe, but still considered inferior to the real thing. It can be found in pine woodland, but does not occur in temperate zones and is not included in this guide.

Other knights considered edible: Bitter (*T. acerbum*), Dark Scaled (*T. atrosquamosum*), Girdled (*T. cingulatum*), Giant (*T. colossus*), Poplar (*T. populinum*) and Scaly (*T. vaccinum*) knights, and *T. orirubens* and *T. goniospermum* (non-British, rare in Europe, highly regarded in Spain and Italy).

Poisonous: Aromatic Knight (*T. lascivum*) and *T. inamoenum*.

Edibility disputed: Deceiving (*T. sejunctum*), Orange (*T. aurantium*) and Booted (*T. focale*) knights.

Yellow Knight or Man on Horseback

Tricholoma equestre (syn. *T. flavovirens*)

Suspected to be deadly poisonous.

Yellow Knight or Man on Horseback, *Tricholoma equestre* (syn. *T. flavovirens*).

Cap 4-9cm, convex then flattening, variable colours (yellows, browns and greens), scaly at the centre. **Stem** 4-10cm, stout, colour similar to cap. **Flesh** pale yellow. **Gills** bright yellow, adnexed. **Spore print** white. **Smell and taste** mild, pleasant. **Habitat** woodland, usually coniferous. **Season** late summer and autumn. **Distribution** widespread and frequent in most of Europe, including Scotland, but uncommon elsewhere in the British Isles. Also present in Asia, and North and South America. Suspected species complex.

Similar species: Very easily mixed up with other knights and, much more dangerously, the colour scheme is similar to that of a Deathcap (see page 412), although that species has a ring and a volva.

Notes: Esteemed for centuries, but strongly suspected for the last 15 years to be responsible for serious poisonings, including deaths. In all cases the victims had eaten this species at least three times in the previous two weeks. It causes rhabdomyolysis – a breakdown of skeletal muscle tissue, which releases further toxins that can cause kidney failure. The identity of the toxin is currently unknown, but see the Grey Knight notes on the next page. There is some disagreement about the possibility that alleged Yellow Knight poisonings were actually caused by misidentified Grey Knights, but the two mushrooms are rather different and current best advice is to avoid both of them.

Grey Knight

Tricholoma terreum

Deadly poisonous.

Grey Knight, *Tricholoma terreum.*

Cap 3-9cm, convex then flatter with an umbo, grey, felty. **Stem** 3-9cm, cylindrical, white, smooth, felty at the apex. **Flesh** pale grey. **Gills** pale grey, adnate to emarginate. **Spore print** white. **Smell and taste** mild, pleasant. **Habitat** with conifers, usually pine. **Season** late summer to autumn. **Distribution** widespread and frequent in Europe. Also present in the temperate zone of Asia. Introduced in Australia.

Similar species: Easily confused with numerous other grey *Tricholoma* species, some of which are of unknown or dubious edibility. The Leopard Knight (*T. pardinum*) causes severe gastric upsets and is frequently mistaken for edible grey *Tricholoma* species in Continental Europe (not found in Britain). The only safe advice is *don't eat any grey* Tricholoma *species*.

Notes: Traditionally esteemed, now known to cause rhabdomyolysis. In 2014 Chinese chemists[18] isolated the likely culprit (or rather two of them, which may work together as toxins).

Sulphur Knight

Tricholoma sulphureum

Poisonous.

Sulphur Knight, *Tricholoma sulphureum.*

Cap 3-8cm, convex becoming flat, yellow. **Stem** 3-10cm, usually cylindrical and rather slender, but shape can vary, yellow, covered in fine red-brown fibres. **Flesh** yellow. **Gills** yellow, fairly distant, adnate to emarginate. **Spore print** white. **Smell** very strong, has been described as “coal gas” or a cross between a full ashtray and fresh faeces. ***Do not taste.*** **Habitat** woodland. **Season** summer and autumn. **Distribution** common in the south, less so further north and absent in Scandinavia. Common in the British Isles, apart from Scotland, where it is occasional. Also present in Asia and North America.

Similar species: The smell makes this species unmistakable.

Notes: Symptoms of poisoning are mainly gastrointestinal.

Burnt Knight

Tricholoma ustale / T. ustaloides

Poisonous.

Burnt Knight, *Tricholoma ustale / T. ustaloides.*

Cap 4-11cm, brown, margin lighter and inrolled, sticky/slimy when wet. **Stem** 3-8cm, fibrous, brown, paler at the apex (especially in *T. ustaloides*). **Flesh** white, turning brown. **Gills** cream becoming spotted red-brown, crowded, adnate to emarginate. **Spore print** white. **Smell** mealy (*T. ustaloides*) or faint (*T. ustale*). ***Do not taste.*** **Habitat** deciduous woodland, usually with beech. **Season** autumn. **Distribution** Both species are widespread and frequent in Europe, becoming rarer or absent in the north. Also present in Asia and North America.

Similar species: These two species are very similar and, from a foraging point of view, there isn't much point in trying to tell them apart. Both could be mistaken for numerous brown knights, including some edible species.

Notes: Symptoms are mainly gastrointestinal, but the toxin (ustalic acid, which inhibits the sodium-potassium pump in cells) could be potentially lethal in high enough doses. Well known for causing poisonings in Japan.

Birch Knight

Tricholoma fulvum

Birch Knight, *Tricholoma fulvum.*

Edible. Intermediate.

Cap 3-12cm, brown with a paler margin, convex becoming flatter with an umbo, with fine radiating fibres, sticky-slimy when wet. **Stem** 4-12cm, rather slender, pale yellow, covered in brown fibres but less so towards the apex. **Flesh** pale yellow, whiter in the cap. **Gills** **pale yellow**, becoming **distinctively brown-spotted**, crowded, adnate to emarginate. **Spore print** white. **Smell** faint until cutting, then strong, mealy. **Taste** mealy. **Habitat** with deciduous trees, **usually birch**. **Season** midsummer to autumn. **Distribution** widespread and common in Europe, including the far north, less frequent in the far south. Also present in Asia and North America.

Similar species: The easiest of the brown knights to identify due to its specific habitat and brown-spotted gills, and one of the easiest in the genus.

Notes: Not a delicacy, but quite widely eaten regardless.

Matt Knight

Tricholoma imbricatum

Matt Knight, *Tricholoma imbricatum.*

Edible (good). Advanced.

Cap 3-10cm, conical-convex becoming flatter and usually umbonate, dull brown, paler at the margin, matt. **Stem** 4-11cm, cylindrical, usually tapering at the base. **Flesh** white. **Gills** white becoming darker with red-brown spots, adnate. **Spore print** white. **Smell** mild, mealy. **Taste** mild, mealy or slightly bitter. **Habitat** woodland. **Season** autumn. **Distribution** widespread and frequent in Europe. Occasional in the British Isles. Also present in North America.

Similar species: There are countless brown knights of unknown or dubious edibility, especially the Burnt Knight (see page 376).

Notes: This species was traditionally an important source of food in several European countries.

Soapy Knight

Tricholoma saponaceum

Soapy Knight, *Tricholoma saponaceum.*

Edibility disputed (good when young). Advanced.

Cap 5-15cm, often split and irregular at the edges, usually grey-green but variable in colour, surface greasy when damp. **Stem** 5-12cm, usually tapering downwards, white with greyish fibres, sometimes bruising red at the base. **Flesh** firm, white. **Gills** off-white, distant, emarginate. **Spore print** white. **Smell and taste** strong and distinctive. **Habitat** deciduous or coniferous woodland. **Season** late summer to autumn. **Distribution** widespread and frequent in Europe. Also present in the temperate and subtropical zones of Asia and North America. Suspected species complex.

Similar species: The most likely lookalike is the Deceiving Knight (*T. sejunctum*), which is of disputed edibility, having been dismissed as mildly toxic in Europe, although it is routinely consumed in China. A beginner might also confuse Soapy Knight with a Deathcap (see page 412), but knights have no ring and no volva and Soapy Knight has much firmer flesh than a Deathcap; it is altogether a much *meatier* proposition. Some variants of the complex may turn out to be less edible than others.

Notes: Given the specific epithet *saponaceum* because it supposedly smells of soap, or "institutional washrooms", it has now ended up with the rather silly common name of "Soapy Knight". It is often claimed to be either inedible or mildly toxic, but I can find no information about the toxins it is supposed to contain, nor their effects, and it has been recorded[7] as edible in many places. I have eaten it on many occasions, suffered no ill effects and consider it a decent edible species. Yes, it has a strong taste, but "soap"? When I offered it to my wife, having not told her anything about its name or reputation, she gave it the thumbs up and likened its taste to salami.

Matsutake

Tricholoma matsutake (syn. *T. nauseosum*)

Matsutake, *Tricholoma matsutake* (syn. *T. nauseosum*).

Edible (delicacy). Advanced.

Cap 5-20cm, convex becoming flat, covered in brown scales/fibres. **Stem** 4-15cm, cylindrical or tapering, colours and fibres as cap below ring zone, white above. **Flesh** firm, white. **Gills** white, adnate. **Spore print** white. **Smell and taste** strong, spicy. **Habitat** with conifers, usually pine. **Season** autumn. **Distribution** frequent in Scandinavia, rare or absent elsewhere in Europe. No official British records, but possibly present in northern Scotland. Also present in China, Russia, Japan, Korea, Laos, Scandinavia and northeastern North America.

Similar species: Other brown/white knights, especially the European Matsutake (*T. caligatum*), although that is a southern species.

Notes: The European species *T. nauseosum* can only have been given that name by 19th-century Norwegian mycologist Axel Blytt because he found it nauseating. And regardless of it being quite common in Scandinavia, it has been ignored as a food item by the natives of that region. *Tricholoma matsutake* is, by contrast, the most highly prized and expensive non-subterranean fungus in the world. This is especially so in Japan, where it is in steep decline, perhaps because so many are picked while still in the button stage and hence haven't had a chance to release spores; but also because of the spread of a nematode worm that attacks the pine trees that are the Matsutake's host. Genetic testing has recently demonstrated that, despite their very different reputation and history, *T. nauseosum* and *T. matsutake* are in fact the same species.

Yellowing Knight

Tricholoma scalpturatum

Yellowing Knight, *Tricholoma scalpturatum.*

Edible (good). Advanced.

Cap 3-8cm, conical then bell-shaped then flatter with an umbo and a wavy margin, grey, eventually turning yellow, covered in felty scales. **Stem** 3-8cm, white, sometimes flecked with darker scales. **Flesh** white, darker in the stem. **Gills** white, eventually turning yellow, crowded, emarginate. **Spore print** white. **Smell and taste** strong, mealy. **Habitat** woodland, usually deciduous, especially beech, but sometimes also with pine. **Season** summer and autumn. **Distribution** widespread and frequent in Europe. Frequent in the south of the British Isles, rare in Scotland.

Similar species: *Tricholoma* is a tricky genus, and this species is not an exception. Easiest to identify when it starts to go yellow, at which point it is past its best for eating. Otherwise easily confused with other knights.

Notes: Traditionally eaten in several European countries.

Blue Spot Knight

Tricholoma columbetta

Blue Spot Knight, *Tricholoma columbetta.*

Edible (delicacy). Advanced.

Cap 5-10cm, convex becoming flat and wavy, white, *sometimes* with blue spots when mature. **Stem** 5-12cm, stout, usually cylindrical, sometimes blue-green at the base. **Flesh** white. **Gills** crowded, white. **Spore print** white. **Smell and taste** mild. **Habitat** woodland, usually with oak or beech. **Season** summer and autumn. **Distribution** widespread but only occasional in Europe, and absent in the colder parts of Scandinavia. Also present in North America.

Similar species: Many toxic species could be mistaken for this one, including White Domecap (see page 392) and Livid Pinkgill (page 398). Distinguishing Blue Spot Knight (and other white knights) from White Domecap is tricky without a microscope. White Domecap usually grows in dense clusters, whereas the knights usually grow singly or in very small groups. Older specimens of Blue Spot Knight sometimes have violet/blue/green spots; White Domecap does not. Livid Pinkgill can be distinguished by smell. It has a characteristic strong and unpleasant smell, while Blue Spot Knight has a faint, pleasant smell. The most serious potential mistake involves the deadly *Amanita* species, even though they have volvas and rings. The poisonous White Knight (*T. album*) is also rather similar, but is very bitter.

Notes: Prized species in France.

The Coalman (French: Charbonnier)

Tricholoma portentosum

The Coalman, *Tricholoma portentosum.*

Edible (delicacy). Advanced.

Cap 5-10cm, conical then bell-shaped then flatter and broadly umbonate, various shades of grey, covered in dark, radiating streaks, sticky when wet. **Stem** 4-12cm, usually stout and tapering upwards, white becoming yellow, especially at the base. **Flesh** white. **Gills** white becoming yellow, distant, broad, adnate. **Spore print** white. **Smell and taste** mealy. **Habitat** with conifers on acid soil, usually pine. **Season** autumn. **Distribution** widespread and frequent in Europe. Occasional in the British Isles, more frequent in the Scottish Highlands. Also present in Asia and North America.

Similar species: The inedible Ashen Knight (*T. virgatum*) is rather similar, but tastes hot/bitter, smells of damp earth and is found with deciduous trees, and the other greyish members of this genus it could be confused with are too numerous to mention (see notes for the Grey Knight, page 374). The poisonous Leopard Knight (*T. pardinum)* is scaly.

Notes: Traditionally a popular edible species in many European countries, especially France. *Charbonnier* means "charcoal/carbon maker/seller", in reference to the dark colour of this mushroom.

Other members of the Tricholomataceae

This section contains species that are either very common or well known as edible species. It does not include the following species, which are edible but rare: *Pseudoclitocybe expallens*, *Leucopaxillus gentianus*, *L. paradoxus* (looks like St George's Mushroom – see page 394), White Webcap (*Leucocortinarius bulbiger*).

Imperial Mushroom

Catathelasma imperiale

Imperial Mushroom, *Catathelasma imperiale*.

Edible (delicacy) ***but should not be picked outside Scandinavia.***

Cap 10-30cm, initially convex and sometimes remaining dome-shaped, sometimes flattening with a depression, orange-brown with large blotches, sticky when young, then dry. **Stem** 10-18cm, stout, pale brown, rooting, with two rings. **Flesh** white, firm. **Gills** white, crowded, slightly decurrent. **Spore print** white. **Smell and taste** strong, mealy. **Habitat** coniferous woodland. **Season** late summer and autumn. **Distribution** very rare or absent in most of Europe; more frequent in Sweden and Norway, and some parts of the Alps. Not found in the British Isles. Present in the temperate zones of Asia and western North America.

Similar species: The only European member of its genus, and unlikely to be confused with anything apart from some large knights, which do not have decurrent gills.

Notes: Historically something of a prized edible species, but rare, apparently declining, and on Red Lists in several countries.

Giant Funnel

Leucopaxillus giganteus

Giant Funnel, *Leucopaxillus giganteus.*

Edible (good, caution). Basic.

Cap 10-40cm, flat becoming funnel-shaped with an inrolled margin, cream, finely felty, eventually cracking in the centre. **Stem** 4-7cm, stout, cream. **Flesh** white. **Gills** cream becoming darker, crowded, decurrent, forked. **Spore print** white. **Smell and taste** mild, pleasant. **Habitat** grassland, roadsides, hedgerows, woodland. **Season** late summer to autumn. **Distribution** widespread and occasional in Europe. Also present in the temperate and subtropical zones of Asia and North America. Introduced in New Zealand.

Similar species: When mature there is nothing you could confuse this species with, apart from maybe a very large Trooping Funnel (see page 358), which isn't toxic, or one of the very large milkcaps (which exude milk from the gills). Its (non-British) relatives *L. candidus* and *L. lepistoides* are also edible, and collected for consumption in Spain and other southern European countries.

Notes: Giant Funnel is best eaten when small. There are reports of some people experiencing gastric reactions to this species.

Plums and Custard

Tricholomopsis rutilans

Plums and Custard, *Tricholomopsis rutilans.*

Edible (poor). Basic.

Cap 4-14cm, convex becoming flat, custard yellow with widely varying amounts of plum-coloured scales. **Stem** 3-12cm, usually cylindrical and rather stout, but variable, yellow, also with scales but fewer than the cap. **Flesh** custard yellow. **Gills** custard yellow, rather variable spacing, adnate to emarginate. **Spore print** white. **Smell and taste** unpleasant. **Habitat** on rotting conifer wood, usually at the base of stumps. **Season** summer and autumn. **Distribution** widespread and very common in Europe. Also present in Asia and North America. Introduced in Australia and New Zealand.

Similar species: The distinctive colour scheme makes this one of the easiest mushrooms to identify, the most similar lookalike being its smaller and rarer relative Prunes and Custard (*T. decora*), which also has poor eating quality.

Notes: This species is right on the boundary of what counts as “edible”, even when qualified with “poor”. Some guides recommend boiling before eating, but this does little to improve the taste. They are better left to decorate the countryside.

The Goblet

Pseudoclitocybe cyathiformis (syn. *Clitocybe cyathiformis*)

The Goblet, *Pseudoclitocybe cyathiformis* (syn. *Clitocybe cyathiformis*).

Edible (good). Advanced.

Cap 2-8cm, goblet-shaped, colour variable but usually a dark silvery grey-brown, smooth with a markedly inrolled margin. **Stem** 4-9cm, usually straight with a bulbous base, grey-brown, covered with silvery white fibres. **Flesh** thin, paler than cap. **Gills** pale grey-brown, adnate to decurrent, often forked. **Spore print** white. **Smell and taste** faint. **Habitat** varied, usually on soil in woodland, sometimes on rotting wood, sometimes in grassy areas near trees. **Season** late autumn and early winter. **Distribution** widespread and frequent in Europe. Also present in the temperate and subtropical zones of Asia and North America.

Similar species: There are so many small members of this family you could confuse it with, some of which are of dubious edibility, that it can only be recommended for experienced collectors. The most similar is *Omphaliaster asterosporus* (which is occasional in Scandinavia, rare or absent elsewhere). The shape of The Goblet's cap is important, as are the fibrous colours of its stem. The rare (and tasty) Humpback (*Cantharellula umbonata*) is very similar, but has an umbo.

Notes: Typically available late in the season, when other species have stopped fruiting.

Club Foot

Ampulloclitocybe clavipes

Club Foot, *Ampulloclitocybe clavipes*.

Edible (poor, caution). Intermediate.

Cap 3-8cm, flattish, grey. **Stem** 3-7cm, uniquely shaped – the entire stem sometimes consisting of the swollen, downy base, or tapering upwards in an extreme manner, or otherwise distorted, finely fibrous. **Flesh** white, thick. **Gills** cream, crowded, decurrent, forked. **Spore print** white. **Smell and taste** unpleasant. **Habitat** woodland, heathland, moorland. **Season** late summer and autumn. **Distribution** widespread and common in temperate areas of Europe, including the extreme north. Also present in the temperate zone of Asia, and the whole of North America.

Similar species: Could be confused with many small, white-gilled agarics, but the swollen stem base helps with the identification. Also similar to Clouded Funnel (see page 356), which is bigger.

Notes: This species reacts badly with alcohol, causing headaches, hot flushes, vertigo, stomach upsets and a rash. Even if it weren't for this problem, it wouldn't be worth eating anyway. Avoid.

Elm Leech or Elm Oyster

Hypsizygus ulmarius

Elm Leech or Elm Oyster, *Hypsizygus ulmarius.*

Edible (culinary value disputed). Basic.

Cap 5-15cm, convex becoming almost flat with a slightly inrolled margin, white becoming tan, and cracking in the centre. **Stem** stout, club-shaped, usually very curved and off-centre, colour as cap. **Flesh** firm, white. **Gills** white, rather distant, adnate or slightly decurrent. **Spore print** white. **Smell** mild, aniseed. **Taste** mild, sweet, nutty. **Habitat** dead deciduous wood, preferring elm. **Season** autumn. **Distribution** common in Scandinavia, much rarer further south of Europe. Occasional in England, rare elsewhere in the British Isles. Also present in the temperate zones of Asia and North America.

Similar species: Looks a bit like a white oyster mushroom. There are no poisonous lookalikes.

Notes: This species was common during the Dutch elm disease epidemic, but rarer now there are no dead elms about. It is easily cultivated on a wide range of substrates, but reports of its culinary value vary from "delicious" to "disappointing". I've never eaten it, but it allegedly goes well with seafood.

Lyophyllaceae (Domecap family)

The Lyophyllaceae include one famous spring-fruiting delicacy, another good edible that is poorly known in Europe, and a couple of unusual mushrooms that only live on the dead hulks of other mushrooms. Edible species that aren't included in this guide are the Pink Domecap (*Calocybe carnea*) and Mealy Oyster (*Ossicaulis lignatilis*), which are both rather uncommon and of little culinary interest.

Clustered Domecap (American: Fried Chicken Mushroom)

Lyophyllum decastes

Clustered Domecap, *Lyophyllum decastes*.

Clustered Domecap, *Lyophyllum decastes*.

Edible (delicacy). Intermediate.

Cap 4-10cm, initially hemispherical, then flatter with an umbo and irregular, colour variable shades of grey and brown, smooth and silky, quite hard when fresh. **Stem** 3-10cm, irregular, tough, fibrous, white at the top and darker below. **Flesh** white with grey tinges. **Gills** white/grey, crowded, adnate. **Spore print** white. **Smell and taste** mildly of chicken. **Habitat** open woodland, cemeteries, waste ground, gardens, nearly always in **very dense clusters**. **Season** late summer to autumn. **Distribution** widespread and frequent in Europe. Also present in Asia, North America and Australia. This is a species complex.

Similar species: Smell is important. The closely related, spring-fruiting *L. loricatum* is edible, and the Ethereal Domecap (*L. eustygium*) is a very rare relative of unknown edibility, with a bitter taste and slightly blue-grey flesh. *Lyophyllum fumosum* is also similar, but with an

unpleasant smell (although described as a good edible species on one Spanish website I visited) and the poisonous Smoky Domecap (*L. gangrenosum*) can easily be distinguished because its flesh immediately turns blue when cut. All these *Lyophyllum* species are considerably less common than Clustered Domecap. You could also mistake any of the grey or brown knights (several of which are poisonous) for this species if it wasn't for the excessively *clustered* way it usually grows. If not in a large cluster, you should consider this to be an advanced level species.

Notes: This is an overlooked or underrated edible species. It goes well with beef, but also makes a fine centrepiece for a meal. Best sautéd. It can be dried or frozen cooked and is excellent preserved in olive oil. There are some reports of allergies, usually of the gastric variety. Long cooking may reduce the risk.

White Domecap

Lyophyllum connatum

Poisonous (carcinogenic).

White Domecap, *Lyophyllum connatum.*

Cap 3-7cm, convex then flatter, often wavy, white. **Stem** 4-8cm, tapering downwards or spindle-shaped, white. **Flesh** white. **Gills** white becoming cream/yellow, rather crowded, adnate or slightly decurrent. **Spore print** white. **Smell and taste** mild, pleasant, sweet. **Habitat** woodland, parks, gardens, often near oaks. **Season** autumn. **Distribution** widespread in temperate areas of Europe, especially common in the north. Frequent. Also present in the temperate zones of Asia and North America. Introduced in Australia.

Similar species: It is very difficult to distinguish this species from the poisonous White Knight (*Tricholoma album*), apart from the smell and taste – White Knight has an unpleasant smell and tastes very bitter. White Domecap also has a much greater tendency to grow in clusters. The edible Blue Spot Knight (see page 382) is also very similar, and there are other white knights, which should be avoided – apart from the edible *T. columbetta*. *Tricholomella constricta* is another very similar species, rare in Britain, and edible (but poor). A deadly Destroying Angel (page 416) could be mistaken for White Domecap by a beginner, although that species has a ring and volva.

Notes: Traditionally considered a good edible species, it has been reported that it contains carcinogens.[5]

Powdery Piggybacks / Silky Piggybacks

Asterophora lycoperdoides / A. parasitica

Powdery Piggybacks, *Asterophora lycoperdoides.*

Inedible.

Cap 0.5-2cm, white becoming grey and very powdery (these are the spores). **Stem** 1-2cm. **Habitat** on the decaying fruit bodies of Blackening Brittlegills (page 125). **Season** late summer and autumn. **Distribution** present in most of Europe, but absent in the far north and rare in the far south. Uncommon in Britain. Also present in the temperate and subtropical zones of Asia and North America.

Similar species: The species described and pictured is Powdery Piggybacks. Powdery Piggybacks have lost the use of their gills, producing spores on the top of the cap instead. Silky Piggybacks are very similar, but with functional gills instead of powdery caps and a slightly more extensive European distribution.

Notes: One of the very few mushrooms that only grows on other mushrooms. They are very small, but easy to spot because they are white and their habitat is black (although very occasionally they turn up on other members of the Russulaceae than Blackening Brittlegills). Fun to look for and always a nice find.

St George's Mushroom (French: Mousseron Vrai)

Calocybe gambosa (syn. *Tricholoma gambosum*)

St George's Mushroom, *Calocybe gambosa* (syn. *Tricholoma gambosum*).

Edible (delicacy). Intermediate.

Cap 4-15cm, initially rounded, becoming flatter and irregular, cracking, margin slightly inrolled, cream. **Stem** 3-8cm, usually stout, bulbous at the base, cream, sometimes with a marbled effect. **Flesh** cream, sometimes with a marbled effect, unchanging. **Gills** cream, very crowded, emarginate. **Spore print** white. **Smell and taste** strong, pleasant and very distinctive, somewhere between melon rind and bonemeal. **Habitat** almost anywhere, although with a preference for chalk/limestone. **Season** typically late spring and early summer, often appearing very close to St George's Day (23 April), but can turn up at other times of the year. **Distribution** widespread and frequent in Europe, becoming rarer in the far north. Common in England, less so in the rest of the British Isles. Also present in the Asian temperate and subtropical zones.

Similar species: If you are familiar with the smell then identification is relatively easy. If you aren't then take care not to mistake the dangerously poisonous Livid Pinkgill (see page 398) for this species, as that can also fruit in the spring. The smell of both is often described as "mealy", but the Pinkgill has a distinctly unpleasant element. The flesh of that mushroom is also more brittle and it produces a pink spore print. If you think you have found St George's Mushroom and aren't familiar with the smell or aren't 100 per cent certain of the ID, then I advise you to check the spore colour. A less likely but considerably more dangerous mistake would involve the deadly Spring Destroying Angel (see page 416), which has a ring and volva.

Notes: Some people find the taste too much, but these mushrooms are rightly regarded as a delicacy. They are best sautéd, and traditionally served with offal or strongly flavoured fish, but also lovely with chicken, on brown toast, or in a risotto with asparagus. They go well with another foraged spring favourite – wild garlic or ramsons, and can also be eaten raw as part of a salad. They also dry well. Commercially collected in several European countries.

Entolomataceae (Pinkgill family)

The Entolomataceae comprise one very large genus (*Entoloma*) of mostly toxic mushrooms and two very small ones containing species that are good to eat, but easy to get into trouble with if you aren't paying close attention. The common name "Pinkgill" refers to the genera *Entoloma* and *Rhodocybe*.

Entoloma

For a forager, *Entoloma* is a particularly awkward genus of fungi. They share certain characteristics with the webcaps and fibrecaps: there's a lot of them, most of which are very difficult to identify to species without microscopy, few/none are edible, many are toxic, and one or two can kill you. However, you do at least have a decent chance of identifying fibrecaps, and to a reasonable extent also webcaps, *to genus* in the field. Fibrecaps have distinctive conical, fibrous caps, which split around the edges, and they are a fairly consistent

grey/red/brown, with one or two white ones thrown in for good luck. Webcaps have a cortina, or at least the remnants of one, catching the red-brown spores in the ring zone, as well as distinctive, distant, red-brown gills. All members of both groups are only found in woodland. *Entoloma* species have pinkish gills at maturity but that's about the only clue you're going to get. They come in a wide range of shapes, sizes and colours, and can turn up almost anywhere. The two included here are the most common and the most dangerous.

Three of the spring-fruiting species are considered edible in some parts of Europe, but there have been recent accounts of poisonings involving these also (and I do not recommend eating any of them). Those three are the April (*E. aprile*) and Shield (*E. clypeatum*) pinkgills, and *E. saundersii*. Another handful are also of disputed edibility, while at least seven are known to be poisonous, the worst of which is the Livid Pinkgill (see page 398). The other well-known toxic species are the Wood (*E. rhodopolium*), Silky (*E. sericeum*), Lilac (*E. porphyrophaeum*), Blue Edge (*E. serrulatum*), Indigo (*E. chalybaeum* var. *lazulinum*) and Mousepee (*E. incanum)* pinkgills.

Star Pinkgill

Entoloma conferendum (syn. *Nolanea staurospora*)

Star Pinkgill, *Entoloma conferendum* (syn. *Nolanea staurospora*).

Toxicity disputed.

Cap 2-6cm, convex, vaguely umbonate, streakily hygrophanous (dark red-brown drying much paler). **Stem** 2-8cm, usually slender and cylindrical, covered in silky white fibres. **Flesh** colour as cap. **Gills** white becoming pink, spacing variable, adnate to emarginate, almost free. **Spore print** pink. **Smell** mild, mealy. **Taste** unpleasant. **Habitat** grassland. **Season** autumn. **Distribution** very common in temperate areas of Europe.

Similar species: There are countless similar pinkgills, but fortunately this very common grassland mushroom does not resemble any popular edible species.

Notes: It is not clear whether this mushroom is actually poisonous, or just tastes bad.

Livid Pinkgill

Entoloma sinuatum

Poisonous.

Livid Pinkgill, *Entoloma sinuatum.*

Cap 5-20cm, convex then flattening but never completely flat, rolled and wavy at the margin, ivory-grey with fine radiating silky fibres. **Stem** 4-20cm, bulbous, colour as cap. **Flesh** white, firm but rather brittle. **Gills** pale yellow becoming pink, fairly crowded, adnate to emarginate, almost free. **Spore print** pink. **Smell** strong and distinctive, melon rind mixed with something unpleasant but hard to describe – maybe some sort of cleaning fluid – "sharp". ***Do not taste.*** **Habitat** usually open deciduous woodland, but can turn up in a variety of other places. **Season** spring to autumn. **Distribution** common in southern Europe and frequent as far north as the south of Scandinavia, but rare or absent further north. Frequent in southern England, becoming rarer further north in the British Isles. Also present in the temperate and subtropical zones of Asia and North America.

Similar species: Has been mistaken for a St George's Mushroom (see page 394), a risk made worse by the fact that it often fruits in the spring and has a strong and vaguely similar smell, as well as being a similar colour and size. St George's don't have the silky fibres on the cap, the flesh is less brittle, and lacks the unpleasant component of the odour. Could also be mistaken for The Miller (see page 400) when young, although that species is smaller, has softer flesh and a more pleasant smell. Has also been mistaken for an *Agaricus* species.

Notes: This species is not usually considered deadly, but there are some unconfirmed reports of fatalities and it is widely agreed that the symptoms are extremely unpleasant (mainly gastric, but also reports of nervous disorders that can persist for several months). Responsible for a significant proportion of serious mushroom poisonings in southern Europe.

Other members of the Entolomataceae

The genus *Rhodocybe* can be summed up with the description *uncommon, obscure and hard to identify*. I've never eaten any *Rhodocybe* species. In addition to the Tan Pinkgill featured here, *R. popinalis* is edible but bitter, *R. fallax* is also bitter, of unknown edibility and could be mistaken for The Miller (next page) and *R. nitellina*, also of unknown edibility, could be mistaken for one of the small brown/orange milkcaps or Tawny Funnel (see page 371).

Tan Pinkgill

Rhodocybe gemina (syn. *R. truncata*)

Tan Pinkgill, *Rhodocybe gemina* (syn. *R. truncata*).

Edible (good). Advanced.

Cap 5-10cm, convex becoming flatter, creamy brown. **Stem** 3-8cm, stout, same colour as cap. **Flesh** cream. **Gills** cream-pink, rather crowded, slightly decurrent. **Spore print** cream-pink. **Smell** mealy, spicy. **Taste** strong, nutty. **Habitat** usually deciduous woodland, but can turn up in a wide variety of other places. **Season** autumn. **Distribution** widespread in Europe but uncommon, and absent in the far north. Rare in the British Isles. Introduced in New Zealand.

Similar species: The very poisonous Livid Pinkgill (previous page) could easily be mistaken for this species, but the smell is very different.

Notes: Considered a delicacy in Germany.

The Miller or Sweetbread Mushroom

Clitopilus prunulus

The Miller or Sweetbread Mushroom, *Clitopilus prunulus*.

Edible (delicacy). Advanced.

Cap 3-10cm, very variable in shape and size, white, with a texture like soft leather. **Stem** 2-5cm, often off-centre, white. **Flesh** white, unchanging, soft and fragile. **Gills** white becoming pale pink, crowded, deeply decurrent. **Spore print** pink. **Smell and taste** strongly mealy (wet flour, or "an old mill"). **Habitat** woodland (or, as shown here, grass near trees). Suspected to be parasitic on, or symbiotic with, various species of large bolete, including the Penny Bun (see page 188), with which it is often found. **Season** summer to late autumn. **Distribution** widespread and common in Europe. Also present in north Africa, Asia and North America.

Similar species: There's only one problem with this species, but it's a humdinger: it so closely resembles the deadly Fool's Funnel (see page 362) that it is sometimes impossible to tell whether a photograph is of one or the other. In real life it is easier to tell them apart, but a mistake is still likely. The Miller is a woodland species that never fruits in rings, whereas Fool's Funnel inhabits grassland, often appearing in rings. The texture of the flesh is also different – The Miller is softer and more fragile. And while they both smell "mealy", the odour of The Miller is significantly stronger. The Miller also produces a pink spore print, while the spores of Fool's Funnel are white. The slightly larger Frosty Funnel (see page 360) is also similar enough to pose a threat, grows in woodland and contains a dangerous concentration of muscarine. Young Livid Pinkgills (see page 398) have been mistaken for The Miller, although they have a more fibrous appearance, and an even stronger (and less pleasant) smell. And a White Fibrecap (see page 307) could conceivably be mistaken for The Miller, but the smell is completely different, as are the gills. The rare *C. scyphoides* is much smaller and officially of unknown edibility, but presumably not toxic.

Apart from The Miller and *C. scyphoides*, the only other *Clitopilus* of interest is *C. pinsitus*, which is of unknown edibility, is described as having a horrible smell, and might just be mistaken for an Oyster Mushroom (see page 406) or, more likely, one of the oysterlings (*Panellus* or *Crepidotus* – see Crepidotaceae, page 402).

Notes: Perfect fried in butter, then served on toast with a splash of lemon juice. Also goes well with marsh samphire. The smell diminishes when cooked. Dries well. It's a shame this mushroom isn't safer to collect.

Crepidotaceae

Peeling Oysterling

Crepidotus mollis

Peeling Oysterling, *Crepidotus mollis*.

Edible (caution). Intermediate.

Cap 1.5-7cm, convex then flat, kidney-shaped, white, smooth with small brown scales, slimy when wet, with a peelable cuticle. **Stem** absent. **Flesh** white, thin. **Gills** grey turning red-brown, crowded, decurrent to point of attachment. **Spore print** brown. **Smell and taste** mild. **Habitat** dead deciduous wood. **Season** summer and autumn. **Distribution** widespread and common in Europe, apart from the far north. Present worldwide apart from Saharan and sub-Saharan Africa.

Similar species: Could be mixed up with several other small oysterlings, but there are no reports of any of these being seriously toxic. It could also be mistaken for one of the oyster mushrooms, although much smaller.

Notes: There is no history in Europe of eating *Crepidotus* species, and most guides list this one as inedible, possibly poisonous or to be avoided. However, there is also no information on toxicity or reliable reports of poisoning either, and it *is* recorded[7] as edible in China and Nepal. I've consumed it on multiple occasions with no problems.

Schizophyllaceae (Splitgill family)

Splitgill

Schizophyllum commune

Splitgill, *Schizophyllum commune*.

Edible (caution). Basic.

Cap 1-4cm, fan-shaped, lobed, pale grey, covered in white-purple down. **Stem** absent. **Flesh** tough. **Spore-bearing surface** gills-like structures, pale red-grey, radiating from point of attachment, split lengthwise, rolling back as they dry out. **Spore print** pale cream. ***Do not smell*** (see notes). **Taste** indistinct. **Habitat** usually dead deciduous wood, but many other places, including bales of hay wrapped in polythene film. **Season** all year. **Distribution** widespread and frequent in Europe apart from the far north. Locally common in parts of south-east England, rare in Wales and Scotland. Present worldwide.

Similar species: Nothing seriously poisonous. The gills are very distinctive.

Notes: Although this species is described as inedible in many European guides, it is popular and commercially collected in Mexico and India, where it is protected against heat and humidity by its rubbery texture. It is also being investigated for anti-cancer properties, and is already marketed for medical use. It is also the only edible species in this book that can infect humans (it can cause sinusitis and basidioneuromycosis, a very rare but nasty brain infection). This is why you should avoid smelling it too closely. It absorbs uranium, and has been proposed for use in cleaning up contaminated sites. And it also has in excess of 28,000 sexes.

Pleurotaceae (Oyster Mushroom family)

This is a family of mostly edible, saprophytic wood-fruiting mushrooms, many of which are, rather surprisingly, also carnivorous – their mycelium traps and consumes nematode worms. Several species are easily and widely cultivated. In addition to those featured here, the group also includes the King Oyster (*Pleurotus eryngii*), now widely cultivated and often found in supermarkets. In the wild this is a southern European species, also found in north Africa, the Middle East and southern Asia. There are also two rather obscure edible species in the genus *Hohenbuehelia*, both rare in the British Isles but more frequent in other parts of Europe. *Hohenbuehelia petaloides* is the more common and widespread of the two, while *H. fluxilis* is only frequent in southern Scandinavia.

Cooking (all oysters): Best casseroled, stewed, grilled or deep-fried.

Pale Oyster

Pleurotus pulmonarius

Pale Oyster, *Pleurotus pulmonarius*.

Edible (good). Basic.

Cap 2-10cm, shell-shaped but irregular, flattening with age, white. **Stem** 1-4cm, shell-shaped, white. **Flesh** white and quite tough. **Gills** white then cream, crowded, deeply decurrent. **Spore print** lilac. **Smell** mild, mealy or ammoniacal. **Taste** mild. **Habitat** deciduous stumps and logs. **Season** summer to mid-autumn. **Distribution** widespread and frequent in temperate areas of Europe, particularly the north, much rarer in the south. Frequent in England, less so in the rest of the British Isles. Also present in North America.

Similar species: See Oyster Mushroom (next entry).

Notes: The specific epithet *pulmonarius* refers to the supposed similarity of young fruit bodies to lungs.

Oyster Mushroom

Pleurotus ostreatus

Oyster Mushroom, *Pleurotus ostreatus*.

Oyster Mushroom, *Pleurotus ostreatus*.

Edible (good). Basic.

Cap 4-20cm, shell-shaped, flattening with age, colour very variable. **Stem** 0-3cm, usually oyster-shaped, white with a woolly base. **Flesh** white and quite tough. **Gills** white then cream, crowded, deeply decurrent. **Spore print** lilac. **Smell and taste** mild, mushroomy. **Habitat** trunks and stumps of dead and dying deciduous and coniferous trees, and sometimes on worked timber. **Season** all year, but especially winter. **Distribution** widespread and common in Europe. Also present in Asia, North and South America, Australia and New Zealand.

Similar species: Its variability makes it easy to confuse with other *Pleurotus* species, but these are all edible. Some of the much smaller oysterlings (genera *Crepidotus*, *Panus* and *Panellus*) are of disputed or dubious edibility, but they are certainly not dangerous. Angel's Wings (see page 340) are potentially deadly, but these are pure white, smaller and more fragile than Oysters. The rather rare Oyster Rollrim (*Tapinella panuoides*) is a bit like an Oyster Mushroom crossed with a Brown Rollrim (see page 178), with drab brown colours

and a yellow-brown spore print. This is of unknown edibility, but may well be poisonous and is best avoided.

Notes: Contains a cholesterol-lowering statin called lovastatin.

Branching Oyster

Pleurotus cornucopiae

Branching Oyster, *Pleurotus cornucopiae.*

Edible (good). Basic.

Cap 4-12cm, convex, becoming depressed and funnel-shaped, cream becoming brown, margin becoming wavy and split. **Stem** 2-6cm, bases fused together, colour as cap or white. **Flesh** white. **Gills** white, distant, deeply decurrent. **Spore print** pale lilac. **Smell** mealy and faintly ammoniacal. **Taste** pleasant. **Habitat** dead deciduous wood. **Season** spring to autumn. **Distribution** occasional in the British Isles and central Europe, uncommon or absent elsewhere in Europe. Also present in western Asia and North America. Introduced in Australia.

Similar species: No poisonous lookalikes (although see note about Angel's Wings in Oyster Mushroom 'similar species', previous entry).

Notes: This species is cultivated.

Veiled Oyster

Pleurotus dryinus

Veiled Oyster, *Pleurotus dryinus*.

Edible (good). Basic.

Cap 4-15cm, white, fibrous or scaly, veil remnants overhanging the margin. **Stem** 2-6cm, stout, velvety, sometimes several fused at the base, white. **Flesh** white. **Gills** white, decurrent. **Spore print** white. **Smell** faint, mealy, mushroomy. **Taste** pleasant. **Habitat** dead wood, usually deciduous. **Season** autumn and winter. **Distribution** widespread in Europe but only occasional. Occasional in England, uncommon elsewhere in the British Isles. Also present in Asia and North America.

Similar species: No poisonous lookalikes.

Notes: This is the only oyster mushroom to have a veil over its gills (hence the name). Best eaten when young.

Plutaceae (Shield family)

The Plutaceae are saprophytes with pink spores and free gills. Two large groups – the shields (*Pluteus*) and cavaliers (*Melanoleuca*) contain numerous edible, but poor, species. Only the rosegills are worthy of inclusion.

Stubble Rosegill

Volvopluteus gloiocephalus (syn. *Volvariella gloiocephala*)

Stubble Rosegill, *Volvopluteus gloiocephalus* (syn. *Volvariella gloiocephala*).

Edible (good when young). Advanced.

Cap 5-12cm, oval becoming flat, light brown-grey, viscid and darker when wet. **Stem** 7-20cm, wider at the base, which is enclosed in a large but rather fragile volva, **smooth**, white; **no ring**. **Flesh** white. **Gills** white turning pink, crowded, free. **Spore print** pink. **Smell and taste** mild, pleasant, **bean sprouts**. **Habitat** very often on agricultural land, in bare fields among stubble, but sometimes on other organic debris such as compost heaps or manure, waste ground, disturbed ground or by the sides of roads. **Season** summer to autumn. **Distribution** widespread and frequent in Europe. Common in England, less so elsewhere in the British Isles. Present worldwide.

Similar species: There is a very real possibility of people, especially Asian people who are used to collecting the famous cultivated species Paddy Straw Mushroom (*Volvariella volvacea*), mistaking a Deathcap (see page 412) for a Stubble Rosegill or a close relative. Paddy Straw Mushrooms do grow wild in Europe, but they are rare. Deathcaps are mycorrhizal species that only occur near trees, whereas both the Stubble Rosegill and Paddy Straw Mushroom are saprophytes that grow on organic debris, but the similarity between them is sufficient to ensure there will be casualties. Both species have a pronounced volva (see photo in Chapter 6, page 74) and they are a similar size and colour. The key differences, apart from the habitat, are the Deathcap's ring and its shaggier stem. No members of the Plutaceae have rings, but all the toxic amanitas do (though some are ephemeral).

Notes: Stubble Rosegills can be used in the same way as Paddy Straw Mushrooms, although they aren't as good.

Silky Rosegill

Volvariella bombycina

Silky Rosegill, *Volvariella bombycina*.

Edible, *but best left in the interests of conservation*. Intermediate.

Cap 5-20cm, initially ovoid, becoming flat with a broad umbo, white, covered in beautiful silky fibres. **Stem** 6-18cm, tapering upwards, usually curved, with a large volva at the base, white. **Flesh** white. **Gills** white becoming pink, crowded, free. **Spore print** pink. **Smell and taste** pleasant. **Habitat** dead deciduous wood, preferring elm or beech. **Season** summer to autumn. **Distribution** widespread and occasional in Europe, as far north as southern Scandinavia, but absent further north. Uncommon in England, rare elsewhere in the British Isles. Present worldwide, apart from South America.

Similar species: Distinctive, but it is white and has a volva, and is therefore similar enough to the deadly amanitas that beginners should take care. *Edible rosegills don't have rings, poisonous amanitas do.* There are at least six other *Volvariella* species in Europe, of varying degrees of rare, and in most cases of unknown edibility.

Notes: I have never tried eating this species and sources disagree over its culinary value, from "not worth eating" to "the tastiest wild mushrooms I've ever eaten". It is indisputably one of the most beautiful of European fungi and was very common in the wake of the Dutch elm disease epidemic, but dead elm trees are now very scarce

Amanitaceae (Amanita family)

This is the very first group of mushrooms any fungi forager should learn about, because it includes the most dangerous fungi of all – two of which are common in Britain – as well as several others capable of putting you in a hospital. It is home also to the classic fairytale toadstool – the one with the bright red cap and white spots; once you're familiar with it, autumn just wouldn't be the same without the Fly Agaric. There are some excellent edible amanitas as well.

This guide features all the good edible and most dangerous toxic amanitas present in temperate areas of Europe. Not covered in detail are four white species, all rare and of dubious edibility at best: the Bearded (*A. ovoidea*) and Warted (*A. echinocephala*) amanitas, and *A. strobiliformis* and *A. vittadinii*. The Heavy Amidella or in Spanish "Gurumelo" (*A. ponderosa*) is a highly rated delicacy, confined in Europe to the far south-west of the Iberian peninsula. It is a spring species, and white, making it dangerously easy to confuse with the deadly Spring Destroying Angel as well as another poisonous southern species called the Near Neighbour Amidella (*A. proxima*).

There is also another genus in this family that contains edible species: the slimecaps (*Limacella*), of which only one is included in this book (the others are rarer and even more obscure).

General cooking advice: Most amanitas are best used fresh, but they can also be dried.

Deathcap

Amanita phalloides

Deadly poisonous.

Deathcap, *Amanita phalloides.*

Cap 4-12cm, hemispherical becoming convex then flat, rather variable in colour, usually a dirty grey-green (but sometimes more yellow and there is also a white form), with very fine radiating fibres, margin sometimes very finely lined. **Stem** 5-15cm, usually tapering upwards, with a large ring and a conspicuous, persistent, bag-like volva, white. **Flesh** white. **Gills** white, crowded, free. **Spore print** white. **Smell** indistinct at first, progressively more unpleasant. ***Do not taste.*** **Habitat** woodland, usually with oak or beech, very occasionally with conifers. **Season** late summer to autumn. **Distribution** widespread and common in Europe, apart from the far north. Common in the south of the British Isles, less so further north. Also present in the temperate and subtropical zones of western Asia and north Africa. Introduced in North America, southern Africa, Australia and New Zealand.

Similar species: This is the single most dangerous poisonous fungus in the world. It is responsible for more European deaths from eating wild mushrooms than all the others combined, and in Britain for almost every fatal mushroom poisoning since the advent of modern medicine. It occupies the number-one slot for two reasons: firstly it is common, and secondly it is considerably easier to confuse with popular edible species than the others. Most frequently it is mistaken for one of the *Agaricus* species, but it is also regularly picked by people who think it is a Paddy Straw Mushroom or Stubble Rosegill (see page 410). Very young specimens, still to emerge from their universal veil, have been mistaken for small puffballs (see page 237) – cut them open to ensure this doesn't happen. Other cases involved people believing they were one of the green/grey brittlegills (which don't have rings or volvas, and do have more brittle, granular flesh). There have also been recorded cases of people believing a Deathcap to be one of the knights, and it could very easily be confused with an edible amanita called a Snakeskin Grisette (see page 428), which is superficially rather similar but lacks the ring, and usually has veil remnants on the cap and a more deeply striated margin.

Notes: Deathcaps contain a lethal cocktail of toxins, the worst of which, known as alpha-Amanitin, interrupts the fundamental biochemistry of cells, preventing the synthesis of mRNA, which in turn prevents cells from synthesizing proteins, which rapidly kills them. The worst affected areas are the liver and kidneys – the two organs in our body normally responsible for dealing with toxins. The kidneys can slowly filter out those amatoxins that reach them, but only if the victim is aggressively hydrated, otherwise the kidneys are also damaged. The initial symptoms are typically delayed for several hours, followed by two days of severe gastrointestinal distress. After that, the victim is cruelly fooled into believing they are recovering as the gastric symptoms subside. In reality the amatoxins are still busily doing their brutal work and death by liver and/or kidney failure soon follows. It looks likely that a new treatment for amatoxin poisoning may soon be available. It involves a drug derived from Milk Thistle (*Silybum marianum*), which prevents the liver from absorbing the toxins, so protecting it while the kidneys expel them.

False Deathcap

Amanita citrina var. *citrina*

False Deathcap, *Amanita citrina* var. *citrina*.

Allegedly edible. Expert.

Cap 4-10cm, hemispherical becoming flat, usually covered in patches of off-white veil remnants, white with a lemon tinge, although there is also a completely white form (the odourless var. *alba*). **Stem** 6-10cm, tapering upwards, with a persistent ring that adheres to the stem, and a bulbous base encased in the remains of the volva, white. **Flesh** white. **Gills** white, crowded, free. **Spore print** white. **Smell** strongly of raw potatoes. ***Do not taste***, just in case. **Habitat** all sorts of woodland. **Season** summer to late autumn. **Distribution** widespread and common in Europe, but absent in the far north. Common in the British Isles, particularly south-east England. Also present in the temperate and subtropical zones of north Africa, Asia and North America.

Similar species: *Amanita citrina* var. *alba* is a rarer white form that doesn't smell so strongly of potatoes. False Deathcap is also very similar to the deadly amanitas.

Notes: This fungus is not poisonous, but who in their right mind would want to eat a mushroom that closely resembles two extremely toxic species and smells of raw potatoes? It is included in this book because it can be so abundant in many parts of England that you are guaranteed to find it. Eating it is strongly discouraged.

Destroying Angel / Spring Destroying Angel

Amanita virosa / A. verna

Deadly poisonous.

Destroying Angel, *Amanita virosa*.

Cap 4-12cm, hemispherical then flatter but never completely flat, often lopsided, white. **Stem** 6-12cm, shaggy, with a fragile ring and a bulbous base enclosed in large, bag-like volva, white. **Flesh** white. **Gills** white, crowded, free. **Spore print** white. **Smell** indistinguishable when young, increasingly of honey as it matures. ***Do not taste.*** **Habitat** woodland. **Season** summer to autumn. **Distribution** primarily a northern European species, very common in Scandinavia, becoming rare or absent in the south. Common in the north of the British Isles, less so further south. Also present in eastern Asia.

Similar species: The species described is Destroying Angel. Spring Destroying Angel, as the name suggests, tends to fruit in the spring, although it can also be found in the summer and autumn. It is very similar in most respects to *A. virosa*, but has a smoother stem. It likes warm climates and is very rare in Britain. There are also other pure white, deadly poisonous amanitas, often sharing the common name, in Asia and North America. Edible mushrooms they can be mistaken for include the White Dapperling (which has no volva, see page 282), very young *Agaricus* (ditto) and *Volvariella* species (no ring) and a highly prized, spring-fruiting Spanish/Portuguese relative: the Heavy Amidella or Gurumelo (*A. ponderosa*).

Notes: Toxicity as for the Deathcap (see page 414).

Fly Agaric

Amanita muscaria

Hallucinogenic/poisonous. ⚠

Fly Agaric, *Amanita muscaria*.

Cap 5-20cm, initially hemispherical then flattening, bright red, covered with white pyramidal warts, which can sometimes wash off. **Stem** 6-20cm, slightly woolly with a persistent ring attached right at the top of the stem and a bulbous, scaly base, enclosed in the remnants of the volva. **Flesh** white. **Gills** white, crowded, free. **Spore print** white. **Smell** indistinguishable. ***Do not taste.*** **Habitat** in all sorts of woodland, especially with birch, sometimes in rings. **Season** autumn. **Distribution** widespread and common in Europe. Also present in the temperate and subtropical zones of Europe and Asia. Introduced in South America, Australia and New Zealand.

Similar species: Pretty unmistakable until its spots are knocked off, at which point it could be mistaken for the edible Caesar's Mushroom (see page 424). The red colour can also fade. The Brown Fly Agaric (*A. regalis*) is a closely related species common in Scandinavia and north-eastern Europe, but not found in Britain.

Notes: This species was traditionally used as food in some remote northern areas, but only after extensive preparation. The toxins are water-soluble, so repeatedly boiling and discarding the water renders it edible. It is not, contrary to some sources and widely believed mythology, deadly. However, it *is* both hallucinogenic and vomit-inducing, which is not exactly an appealing combination. Plenty of theories abound about how to get the hallucinogenic effect without the stomach ache, and some of them might even work, but I can't tell you which. What I *can* tell you is that I've known quite a few people who've tried eating them recreationally once, but not many who chose to repeat the experience.

The name Fly Agaric is derived from the belief that this fungus was used as an insecticide. The theory is that the caps were broken up into saucers of milk, and flies attracted to the ibotenic acid ended up being killed. However, insect larvae are as fond of these fungi as they are of most fleshy mushrooms, and do not come to any harm on a diet of pure Fly Agaric, and there is some doubt about whether the theory actually works.

Panthercap

Amanita pantherina

Hallucinogenic/poisonous and potentially deadly.

Panthercap, *Amanita pantherina*.

Cap 6-11cm, convex then flat, grey-brown, covered in white woolly veil remnants, finely striated at the margin. **Stem** 8-13cm, white, with a superior ring, a distinct rim at the top of the bulbous base, and one or two woolly bands just above the rim. **Flesh** white. **Gills** white, crowded, free. **Spore print** white. **Smell** indistinguishable. ***Do not taste.*** **Habitat** woodland, usually deciduous and preferring beech or oak. **Season** midsummer to late autumn. **Distribution** widespread and frequent in Europe. Also present in the temperate and subtropical zones of western Asia and north Africa. Introduced in South Africa and British Columbia.

Similar species: See The Blusher (page 420).

Notes: Toxicity as for the Fly Agaric (previous page), but with a significantly higher concentration of toxins and potentially lethal if consumed in large quantities.

Jewelled Deathcap

Amanita gemmata

Poisonous, possibly deadly.

Jewelled Deathcap, *Amanita gemmata*.

Cap 5-7cm, variable in colour from bright yellowish to rather pale, usually with patches of white veil remnants on the cap. **Stem** 6-10cm, bulbous at the base, white or cream, with an *ephemeral* ring. **Flesh** white. **Gills** white, crowded, free. **Spore print** white. **Smell** indistinguishable. ***Do not taste.*** **Habitat** woodland, usually with pine and birch on acid soil. **Season** autumn to early winter. **Distribution** widespread in Europe, but infrequent. More common in the south and absent from the far north. Uncommon in the British Isles, very rare in Scotland, more frequent in southern England. Also present in Asia, and North and South America.

Similar species: Could be mistaken for several other amanitas, including the rare southern European Pebbly Soil Amanita (*A. gioiosa*) – edibility unknown.

Notes: Contains the same toxins as the Fly Agaric (see page 417) and Panthercap.

The Blusher

Amanita rubescens

The Blusher, *Amanita rubescens.*

Edible (good). Advanced.

Cap 5-15cm, hemispherical then flat, brown-pink, usually paler near the margin, covered in grey-pink woolly veil remnants, rather variable. **Stem** 6-15cm, white above the striate ring, more grey-pink below, with a very bulbous base but no discernible volva. **Flesh** white, **slowly turning pink on exposure to air**, particularly noticeable in areas of slug damage. **Gills** white becoming pink, crowded, free. **Spore print** white. **Smell** faint. **Taste** (raw) slightly sweet, then slightly acrid. **Habitat** all types of woodland, usually solitary but sometimes in troops and very occasionally in rings. **Season** late spring to late autumn. **Distribution** widespread and very common in Europe. Also present in north Africa. Introduced in South America and Australia.

Similar species: There is a very real possibility of mistaking one of the other brown amanitas for The Blusher, the most dangerous of which is a Panthercap (see page 418). The Blusher has grey-pink veil remnants on the cap and has flesh that discolours pink, whereas a Panthercap is all white and stays that way. The Blusher has a striate ring (the top surface bears an imprint of the gills) and the Panthercap's ring is smooth, and the bulb at the base of The Blusher's stem lacks the rim and woolly bands of the Panthercap. Also easily mixed up with a Grey Spotted Amanita (next entry). If Panthercaps were more common and The Blusher less variable then the situation would be a little easier. The reality is that most people will find hundreds of inconsistent-looking Blushers before they set eyes on their first Panthercap, which can leave them wondering which of The Blushers were actually Panthercaps, even though none of them were. The bottom line is that The Blusher blushes – its flesh turns pink. The Panthercap stays white and the base of the stem is markedly different.

Notes: Eaten raw, this mushroom causes a form of anaemia. The toxins break down at 80°C.

I am rather fond of The Blusher. It's a very common and widespread species, it fruits from early summer right through to late autumn, it's a substantial mushroom and makes good eating. The flavour is strong and it goes particularly well (fried) with a mixed grill, steak or sausages.

Grey Spotted Amanita or False Blusher

Amanita spissa (syn. *Amanita excelsa* var. *spissa*)

Grey Spotted Amanita or False Blusher, *Amanita spissa* (syn. *Amanita excelsa* var. *spissa*).

Amanita excelsa var. *excelsa*: less common than *A. spissa*, which is why *A. spissa* is considered by some mycologists to be a species in its own right. You may not even realize this is an amanita if you examine the stem, because sometimes the base is so deeply buried you can't find it.

Edibility disputed. Advanced.

Cap 6-10cm, initially almost spherical, becoming flat, colour variable greys and browns, covered in patches of veil remnants, which are very variable in shape and colour and sometimes get washed off completely. **Stem** 6-12cm with a bulbous base, finely scaly below the large, striate ring. **Flesh** white. **Gills** white, crowded, free. **Spore print** white. **Smell and taste** slightly radishy, or like grass. **Habitat** woodland. **Season** summer and autumn. **Distribution** widespread and frequent in Europe. This is a species complex, members of which are also present in Africa and western Asia.

Similar species: This mushroom confused me for years, until I was eventually informed it is a highly variable species complex. *Amanita excelsa* (syn. *Amanita excelsa* var. *excelsa)* lacks the radishy smell and has a deeply buried stem, but even within *spissa* itself there are wide variations in cap colour, veil remnants, size and habitat. As a result, the Grey Spotted Amanita is more easily mixed up with both the Panthercap (see page 418) and The Blusher (previous entry) than those two species are with each other. Be careful.

Notes: Listed in some guides as poisonous, and I've even seen claims it contains potentially deadly amatoxins. It is possible the confusion is partially the result of it being a species complex, with some variants being edible and others poisonous. Although I have eaten this species on numerous occasions, it is probably best avoided.

Caesar’s Mushroom

Amanita caesarea

Caesar’s Mushroom, *Amanita caesarea*.

Edible (delicacy). Intermediate.

Cap 6-19cm, sticky when wet, lined at the margin, with large veil remnants, red-orange. **Stem** 5-15cm, tapering downwards towards the large cup-like volva, pale golden yellow, large ring, with striations on top. **Flesh** white, orange near the edges. **Gills** golden yellow, crowded, free. **Spore print** white or pale yellow. **Smell and taste** mild, pleasant. **Habitat** with deciduous trees. **Season** summer to autumn. **Distribution** This is a southern European species, becoming rare north of the Alps and absent in the north. Not found in the British Isles. Present in north Africa and south-west Asia.

Similar species: This is a distinctive species. The most likely imposter would be a hallucinogenic and toxic Fly Agaric (see page 417) that has lost its spots, and also possibly an edible Orange Grisette (see page 427), although both those mushrooms have white stems.

Notes: Commercially collected and highly prized throughout its range.

Grisette

Amanita vaginata

Grisette, *Amanita vaginata*.

Edible (delicacy). Advanced.

Cap 5-12cm, hemispherical becoming convex then flat with a broad umbo, usually silver-grey or grey-brown (there is a rare white form), distinctly lined at the margin, sometimes with veil remnants. **Stem** 10-20cm, tapering towards the top, **no ring**, sheath-like persistent volva, white. **Flesh** white. **Gills** white, crowded, free. **Spore print** white. **Smell and taste** mild. **Habitat** with deciduous trees, often in parks and gardens, or on heathland. **Season** late summer and autumn. **Distribution** widespread and frequent in Europe. Also present in the temperate and subtropical zones of Asia and North America. Introduced in Australia.

Similar species: Many authorities advise against consumption because of the possibility of eating a poisonous amanita instead. You *could* mistake a rather small and grey Deathcap (see page 412) for a Grisette, but Deathcaps have a ring, a greener cap and much fainter grooves at the edge of the cap (if any grooves at all). If you're familiar with Deathcaps then you shouldn't have much difficulty distinguishing them from a Grisette. The Grey-veiled Amanita (*A. porphyria*) is also rather similar, apart from its ring, and is considered slightly poisonous (and doesn't taste very nice). Several other ringless silver-grey amanitas bear a much closer resemblance to a Grisette. There's a rule sometimes quoted here, although its accuracy is hard to verify: *all ringless amanitas* (collectively known as "grisettes") *are edible when cooked*. At least according to my own personal experience, the rule holds true. The problem is that there are quite a few rare European grisettes, and grisettes in general are not among the most widely eaten species, regardless of being good edibles. It is therefore not impossible that one of the rare ones is an exception to the rule. Rare grisettes include the Silvery (*A. argentea*) and Banded (*A. battarae*) amanitas.

Notes: Delicious fried in butter, probably toxic raw.

Tawny Grisette

Amanita fulva

Tawny Grisette, *Amanita fulva*.

Edible (good). Intermediate.

Cap 4-10cm, egg-shaped, soon becoming flat with a distinctly striated margin, **no volval remnants**, tawny brown. **Stem** 7-15cm, white with a persistent bag-like volva, but **no ring**. **Flesh** white. **Gills** white, crowded, free. **Spore print** white. **Smell** faint. **Taste** smoky. **Habitat** heathland or woodland, especially on acid soil with birch. **Season** summer to autumn. **Distribution** widespread and common in Europe, particularly in northern areas. Very common in Britain. Also present in north Africa, south-west Asia and North America.

Similar species: Could be confused with several other small grisettes, including the Fragile Amanita (*A. friabilis*), which has a smaller volva that isn't bag-like, the Pale Grisette (*A. lividopallescens*), which is larger and paler, and the Peeling Paint Grisette (*A. submembranacea*). All of these are rare. Could also be mixed up with *A. eliae*, which doesn't have a bag-like volva, does have a ring that is rather small and easily lost, and is of uncertain edibility. The main difference between all these species and a Tawny Grisette is veil remnants on the cap – they usually have remnants and the Tawny Grisette always lacks them. The greatest risk here is due to the Tawny Grisette being so common and the others being much rarer: it is easy to forget it has lookalikes of uncertain edibility, and because the Tawny Grisette is itself not that widely eaten, the normal "presumably edible" assumption doesn't apply to the rare lookalikes.

Notes: Toxic raw – must be cooked.

Orange Grisette

Amanita crocea

Orange Grisette, *Amanita crocea*.

Edible (good, caution). Intermediate.

Cap 4-12cm, bell-shaped becoming flat, smooth, grooved, usually with a broad umbo, becoming upturned at the margin, usually free of volval remnants, orange. **Stem** 6-15cm, covered in a snakeskin pattern of woolly scales, base not bulbous but encased in a persistent volva, **no ring**. **Flesh** white. **Gills** white with a cream/pink tinge, crowded, free. **Spore print** white. **Smell and taste** pleasant, sweet. **Habitat** woodland, especially with birch. **Season** summer to autumn. **Distribution** widespread and frequent in Europe. Frequent in the British Isles, but unevenly distributed. Rare in much of eastern England and western Scotland. Also present in south-west Asia.

Similar species: The Tawny Grisette (see previous page), though this is smaller and browner, and Caesar's Mushroom (see page 424), both of which are edible. Some sources warn of confusion with a Deathcap (page see page 412), but while they are a similar size and belong to the same genus, they don't have much else in common.

Notes: Widely overlooked/underrated. This is a decent-sized mushroom with good flavour. Like all the grisettes, it is poisonous raw, and there are reports of it causing gastric problems for some people even when cooked.

Snakeskin Grisette

Amanita ceciliae

Snakeskin Grisette, *Amanita ceciliae*.

Edible (good). Expert.

Cap 7-15cm, hemispherical becoming convex, grey-brown-green with large, grey, shaggy patches of veil remnants that can wash off, striated at the edge. **Stem** 8-20cm, widening towards the base, with shaggy bands of veil remnants, a snakeskin pattern and a loose volva that falls apart, **no ring**. **Flesh** white. **Gills** white, crowded, free. **Spore print** white. **Smell and taste** mild, pleasant. **Habitat** open deciduous woodland. **Season** autumn. **Distribution** widespread in Europe, but uncommon. Frequent in England, occasional elsewhere in the British Isles, but can be locally abundant. Also present in south-west Asia.

Similar species: Far too similar to a Deathcap (see page 412) for anybody who doesn't know that species very well to consider picking and eating this one. Deathcaps have rings, and no veil remnants or striations on the cap margin, which is also slightly greener. Snakeskin Grisettes could also be mixed up with several smaller amanitas. The rare Peeling Paint Grisette (*A. submembranacea*) is similar, but considerably smaller. Its edibility status is just as confused, and probably for the same reason: it looks so much like a small Deathcap that a decision has been taken to tell people it is poisonous, even though it isn't. Although I will qualify this by saying I've never personally tried eating a Peeling Paint Grisette.

Notes: Listed as "very possibly poisonous" in Roger Phillips' book *Mushrooms* (see Resources) and in many other guides as inedible, but edible by Eric Boa.[7] I have eaten these mushrooms several times with no ill effects, and thought they were rather good (in line with most of the grisettes). Nice sautéd in bacon fat. Probably toxic raw.

Weeping Slimecap

Limacella guttata

Weeping Slimecap, *Limacella guttata*.

Edible (good). Advanced.

Cap 5-15cm, hemispherical becoming almost flat with a broad umbo, sticky (often covered in debris), becoming wrinkled/cracked in the centre, cream or pale brown, with a darker centre. **Stem** 8-15cm, white with a large, floppy ring and a slightly bulbous base, but **no volva**. **Flesh** white. **Gills** white, crowded, free. **Spore print** white. **Smell and taste** strong, pleasant, slightly mealy with overtones of cucumber. **Habitat** woodland, usually deciduous, in leaf litter in damp locations, prefers alkaline soil. **Season** summer and autumn. **Distribution** widespread but uncommon in Europe. Rare in the British Isles. Also present in Asia and North America.

Similar species: Similar enough to the dangerous amanitas (and some potentially nasty dapperlings) to pose a serious risk to inexperienced collectors. The dapperlings do not have sticky caps.

Notes: This species is too rare in the British Isles to be of much relevance to foragers. It is more frequent in other parts of Europe and considered a good edible species in Italy, where it is preserved in oil. The cuticle should be removed before eating.

Hygrophoraceae (Woodwax family)

The Hygrophoraceae are mainly comprised of two genera, the woodwaxes and the waxcaps, nearly all members of which are edible and none of which are seriously poisonous. The rare Humpback (*Cantharellula umbonata*) is also edible (and good).

Woodwaxes

There are at least twenty European woodwaxes (*Hygrophorus*), of which seventeen are found in Britain, and all but one of them are edible. None are poisonous. They are mycorrhizal woodland species and most are rather rare. This guide features those species that are popular edibles at least somewhere in Europe.

British/European woodwaxes not covered in detail, considered edible but not highly regarded: the Yellowing (*H. discoxanthus*), Rosy (*H. pudorinus*), Gold-flecked (*H. chrysodon*), Blotched (*H. erubescens*), Oak (*H. arbustivus*), Almond (*H. agathosmus*) and Larch (*H. lucorum*) woodwaxes; also *H. lindtneri*, *H. unicolor*, *H. hedrychii* and *H. leucophaeus.*

Cooking advice (all edible woodwaxes): The woodwaxes are not usually consumed raw. I would recommend frying them in olive oil, or pickling them.

Ivory Woodwax
(American: Cowboy's Handkerchief)

Hygrophorus eburneus

Ivory Woodwax, *Hygrophorus eburneus.*

Edible (good). Intermediate.

Cap 2-7cm, convex becoming flatter, almost pure white, very slippery, especially when wet. **Stem** 3-8cm, very variable and sometimes highly irregular, white. **Flesh** white, unchanging. **Gills** white/cream, crowded, decurrent. **Spore print** white. **Smell and taste** faint, pleasant, mandarins. **Habitat** usually with beech on alkaline soil. **Season** autumn. **Distribution** widespread in Europe but only occasional, locally common. Frequent in the south and west of England, rarer elsewhere in the British Isles. Also present in temperate and subtropical zones of Asia and North America.

Similar species: The Goat-moth Woodwax (*H. cossus*) is very similar, and inedible because of a strong and unpleasant smell of goats (or the caterpillar of the goat moth, which supposedly smells a bit like goats). This species could also be mixed up with other woodwaxes, but these are edible, as is the Snowy Waxcap (see page 440), which sometimes appears in woodland. Ivory Woodwax is rather variable, and so is Sweet Poisonpie (see page 305), and I can imagine somebody confusing these two. Sweet Poisonpie has a strong, sickly-sweet smell and darker gills. If somebody was being particularly foolish they might even mistake a deadly Destroying Angel (see page 416) for this species. Both grow in woodland, have gills and are pure white, but the Destroying Angel has a volva at the base of its stem, which is rather shaggy, and a ring.

Notes: Ivory Woodwax wins the prize for the slipperiest mushroom in this book. Sometimes people have trouble picking it up or holding it – it literally slips out of their hands. It is well regarded in China, where it is combined with yak's milk to make a fermented drink. If you can get past the slipperiness, it is firm, sweet-tasting and well worth collecting. I fry it in olive oil.

Ebony Woodwax (Spanish: Llenega Negra)

Hygrophorus latitabundus

Ebony Woodwax, *Hygrophorus latitabundus.*

Edible (delicacy). Intermediate.

Cap 5-15cm, convex becoming flat, margin remaining inrolled, slightly umbonate, slimy, olive-coloured with a darker brown centre. **Stem** 5-15cm, robust, more slender above the ring zone, white, slimy and flaky. **Flesh** white. **Gills** white, rather distant, decurrent. **Spore print** white. **Smell and taste** mild, pleasant. **Habitat** with pine on calcareous soils. **Season** autumn. **Distribution** frequent in southern Europe, becoming rarer in the north. Very rare in the British Isles.

Similar species: *Hygrophorus persoonii* is similar, but grows with deciduous trees, as is the Olive Woodwax (*H. olivaceoalbus*), which grows with spruce. Both are edible.

Notes: The cuticle should be removed. Popular and commercially collected in Catalonia.

Matt Woodwax

Hygrophorus penarius

Matt Woodwax, *Hygrophorus penarius.*

Edible (delicacy). Intermediate.

Cap 5-10cm, convex becoming flat with a slight umbo, hard, smooth, slimy becoming dry, white becoming ivory and mottled yellow. **Stem** 3-6cm, usually stout, colour as cap. **Flesh** white, firm. **Gills** white, thick, rather crowded, decurrent, forked. **Spore print** white. **Smell** mildly of boiled milk. **Taste** pleasant. **Habitat** deciduous woodland, usually with beech. **Season** summer and autumn. **Distribution** frequent in the far south and as far north as the southern Scandinavian coast, absent further north. Rare in the British Isles, absent from Scotland.

Similar species: Several other woodwaxes are very similar, but they have slimier caps (see Ivory Woodwax, page 430).

Notes: This species is highly regarded in Italy.

March Woodwax

Hygrophorus marzuolus

March Woodwax, *Hygrophorus marzuolus*.

Edible (delicacy). Basic.

Cap 3-11cm, broadly convex, becoming flatter, grey-brown, paler at the margin, smooth, sticky. **Stem** 3-10cm, cylindrical or tapering downwards, white, slightly hairy near the apex. **Flesh** pale grey. **Gills** white becoming grey-blue, distant, adnate. **Spore print** white. **Smell and taste** mild, pleasant. **Habitat** coniferous woodland in mountainous areas. **Season** spring, usually during the snow melt. **Distribution** frequent in the mountains of central Europe. Not found in the British Isles or Scandinavia. Present in the temperate zones of Asia and North America.

Similar species: Only other woodwaxes, but this is a spring species, making it easier.

Notes: Considered a delicacy in northern Spain.

Pinkmottle Woodwax

Hygrophorus russula

Pinkmottle Woodwax, *Hygrophorus russula*.

Edible (good). Intermediate.

Cap 4-13cm, convex becoming flatter, colour variable pinks and purples, bruising yellow, mottled, sticky-slimy. **Stem** 3-7cm, cylindrical or tapering downwards, white with pink streaks. **Flesh** thick, firm, pale pink. **Gills** pale pink becoming darker, rather crowded, slightly decurrent. **Spore print** white. **Smell and taste** faint. **Habitat** woodland, usually oak. **Season** late summer and autumn. **Distribution** widespread in Europe and frequent as far north as southern Scandinavia, but very rare in the British Isles. Also present in North America.

Similar species: Resembles a brittlegill (hence the specific epithet *russula*), but lacks the crumbly, granular flesh.

Notes: Highly regarded in Tuscany.

Arched or Dusky Woodwax

Hygrophorus camarophyllus

Arched or Dusky Woodwax, *Hygrophorus camarophyllus.*

Edible (good). Basic.

Cap 2-10cm, convex, becoming flatter but never completely flat, uneven, with a broad umbo, dark grey with radiating streaks. **Stem** 3-13cm, stout, usually cylindrical, white and grey. **Flesh** white. **Gills** white becoming pale grey-yellow, distant, adnate, waxy. **Spore print** white. **Smell and taste** mild, pleasant. **Habitat** usually with pine. **Season** late summer and autumn. **Distribution** common in mountainous areas of central Europe, and in Scandinavia. Very rare in the British Isles. Also present in northern North America.

Similar species: Most likely to be confused with other dark-capped woodwaxes, although it tends to be larger.

Notes: Popular edible species in northern Spain.

Herald of Winter

Hygrophorus hypothejus

Herald of Winter, *Hygrophorus hypothejus.*

Edible (good). Basic.

Cap 3-6cm, hemispherical becoming flatter, but margin always inrolled olive-brown, darker at the centre, very slimy. **Stem** 4-8cm, cylindrical or tapering downwards, pale yellow, slimy. **Flesh** pale yellow bruising orange. **Gills** white becoming yellow, distant, slightly decurrent. **Spore print** white. **Smell and taste** mild, pleasant. **Habitat** with conifers, usually pine. **Season** late autumn and early winter. **Distribution** widespread and frequent in temperate areas of Europe. Also present in the temperate zones of Asia and North America.

Similar species: No poisonous lookalikes. The edible *H. pustulatus* is a bit similar (a northern species with a brown-spotted stem).

Notes: Rather slimy, but tastes nice (cooked).

Waxcaps

The waxcaps (historically the genus *Hygrocybe*, which is now being split up) are known not so much as great edible mushrooms but for being the poster boys of fungi conservation. The Pink (or Ballerina) Waxcap is something like the fungal equivalent of a dormouse – edible, but far too cute and uncommon to even consider eating, especially given the effort put into protecting its habitat. The waxcaps are ecologically important because, at least in the temperate climate of north-west Europe, their preferred habitat is what has been called "unimproved grassland" – old grassland that has not been tainted with fertilizers or other agrochemicals. This is a threatened habitat, and waxcaps therefore tend to thrive in places where endangered plants and insects are also likely to be found. Fortunately they can also be very abundant in certain man-made habitats such as cemeteries, churchyards and village cricket pitches.

Typically, you will find multiple species of waxcap growing together. Curiously, although waxcaps tend to be grassland specialists in Europe, in Asia and North America they are more often found in woodland.

This guide features the best-known edible species. Other waxcaps considered edible: Citrine (*H. citrinovirens*), Butter (*H. ceracea*), Goblet (*H. cantharellus*), Vermillion (*H. miniata*) and Heath (*H. laeta*) waxcaps. Toxic or inedible: Peristent (*H. persistens*), Blushing (*H. ovina*) and Bitter (*H. mucronella*) waxcaps. Edible but threatened and should not be picked: Orange (*H. aurantiosplendens*) and Oily (*H. quieta*) waxcaps.

Waxcaps thrive in old churchyards and cemeteries.

Cooking advice (for all edible waxcaps): The brightly coloured waxcaps are best used in any sort of dish where those colours are on display (eg risotto). They can be eaten raw, sliced in a salad. They dry well and add colour to a mixed dried mushroom mix. Meadow Waxcaps are tasty and robust enough to be served on their own, fried.

Meadow Waxcap

Cuphophyllus pratensis (syn. *Hygrocybe pratensis*)

Meadow Waxcap, *Cuphophyllus pratensis* (syn. *Hygrocybe pratensis*).

Edible (delicacy). Intermediate.

Cap 2-12cm, initially convex, becoming flatter with a very broad umbo, yellow-brown. **Stem** 2-10cm, usually colours as cap but paler. **Flesh** very pale brown, thick. **Gills** pale buff, distant, deeply decurrent. **Spore print** white. **Smell and taste** mild, mushroomy, pleasant. **Habitat** unimproved grassland, pasture, short turf, very occasionally woodland. **Season** mid- to late autumn. **Distribution** widespread and common in Europe, particularly in temperate areas. Also present in the temperate and subtropical zones of north Africa, Asia, North and South America, Australia and New Zealand.

Similar species: A Fairy Ring Champignon (see page 332) might be misidentified as a Meadow Waxcap (similar cap colour, size and habitat) but they have very different stems and are edible anyway. A much more serious potential mistake involves Fool's Funnel (see page 362), which should be studied carefully by anybody thinking of foraging for small, white/cream/fawn grassland mushrooms. Fool's Funnel smells mealy, feels less waxy and is usually greyer.

Notes: The best edible waxcap; can be "fried" in its own juices (no fat required).

Snowy Waxcap

Cuphophyllus virgineus (syn. *Hygrocybe virginea*)

Snowy Waxcap, *Cuphophyllus virgineus* (syn. *Hygrocybe virginea*).

Edible (good). Intermediate.

Cap 1-4cm, convex, becoming flatter, eventually depressed, white becoming slightly darker. **Stem** 2.5-7cm, tapering slightly downwards, white. **Flesh** white. **Gills** white, distant, decurrent. **Spore print** white. **Smell and taste** mild. **Habitat** grassland, rarely woodland. **Season** autumn. **Distribution** widespread and very common in temperate areas of Europe. Also present in Asia and North America. Introduced in Australia.

Similar species: See note about Fool's Funnel in Meadow Waxcap 'similar species' (previous page); Snowy Waxcaps are even more similar. They are pure white – with no hint of grey or brown – and they feel waxy. Mistaking Fool's Funnel for a Snowy Waxcap is the sort of thing that's very easy if you don't know Fool's Funnel, but fairly easily avoided if you are aware of Fool's Funnel and are paying attention. The Cedarwood Waxcap (*H. russocoriacea*) is very similar, but smells mildly of pine-scented disinfectant, rendering it inedible.

Notes: The most common waxcap. Small, but worth collecting if you find a lot of them.

Scarlet Waxcap

Hygrocybe coccinea

Scarlet Waxcap, *Hygrocybe coccinea*.

Edible (good). Beginner.

Cap 2-5cm, convex then flatter with a small, nipple-like umbo, initially slimy, then dry, scarlet. **Stem** 2-6cm, often flattened and/or hollow, scarlet at the apex, becoming yellow towards the base. **Flesh** red/orange/yellow. **Gills** red/orange with a yellow edge, spacing, adnate with a decurrent tooth. **Spore print** white. **Smell and taste** mild. **Habitat** grassland, particularly coastal. **Season** mid- to late autumn. **Distribution** widespread in temperate areas of Europe and common in the north. Very common in the British Isles. Also present in the temperate zones of Asia and North America.

Similar species: This species is unlikely to be confused with anything apart from other edible red-orange waxcaps. It is larger than most of them and smaller than a Crimson Waxcap (next page). No dangerous lookalikes.

Notes: One of the few mushrooms that can grow under rhododendrons (not usually in Europe, though).

Crimson Waxcap

Hygrocybe punicea

Crimson Waxcap, *Hygrocybe punicea.*

Edible (good). Beginner.

Cap 4-15cm, convex then flatter with a broad umbo, often becoming rather irregular and cracked, crimson, fading with age, slightly slimy. **Stem** 5-20cm, hollow, white and pointed at the base. **Flesh** red/yellow under the cap cuticle, white elsewhere. **Gills** white-yellow, becoming red, distant, adnexed to slightly decurrent. **Spore print** white. **Smell and taste** mild. **Habitat** unimproved grassland. **Season** mid- to late autumn. **Distribution** widespread in Europe but only occasional in the south, becoming more common in the north. Common in the British Isles. Also present in Asia and North America.

Similar species: The only thing you could confuse this species with is the Splendid Waxcap (*H. splendidissima*), which is very similar and equally edible.

Notes: The second best edible waxcap after the Meadow Waxcap.

Blackening Waxcap

Hygrocybe conica

Blackening Waxcap, *Hygrocybe conica*.

Edibility disputed. Basic.

Cap 3-8cm, extremely conical, often very irregular, lobed or split, orange or red, turning black with age and on handling. **Stem** 3-9cm, cylindrical, colours as cap. **Flesh** colours as cap. **Gills** yellow/orange, bruising black, crowded, broad, adnexed to free. **Spore print** white. **Smell and taste** faint. **Habitat** grassland. **Season** autumn. **Distribution** widespread and common in Europe. Present worldwide, including the polar zones. Suspected species complex.

Similar species: This species is very variable, but has no seriously poisonous lookalikes.

Notes: Despite being widespread and common, the edibility of this mushroom is not clear. There is an old report of poisoning in China, but it may turn out to be more than one species, with some variants more likely to cause problems than others. Also, because of its slimy nature and rather alarming colour scheme, not many people experiment with eating this mushroom, resulting in less information than would otherwise be available – especially as there are usually more appealing waxcaps around at the same time in the same place.

Golden Waxcap

Hygrocybe chlorophana

Golden Waxcap, *Hygrocybe chlorophana.*

Edible (caution). Intermediate.

Cap 3-7cm, convex becoming flat and often umbonate, sticky, lined at the margin. **Stem** 5-7cm, sometimes flattened and/or grooved, paler than cap. **Flesh** pale yellow. **Gills** white becoming yellow, adnate or adnexed, distant. **Spore print** white. **Smell and taste** mild. **Habitat** unimproved grassland, cemeteries, occasionally woodland. **Season** autumn. **Distribution** common in the British Isles and Scandinavia, rarer further south in Europe. Also present in the temperate zones of Asia, North America and Australia.

Similar species: Easily confused with other yellow waxcaps, some of which are of unknown/questionable edibility (although none of them are seriously poisonous).

Notes: Golden Waxcaps are red listed in Germany, Switzerland and Poland. Despite being common further north, they are widely described as being of unknown edibility, or simply “not edible” with no explanation as to why they aren’t edible. I’ve eaten them with no problems, but it is worth pointing out the lack of corroborating claims of edibility from other parts of the world. Maybe they disagree with some people.

Slimy Waxcap

Hygrocybe irrigata

Slimy Waxcap, *Hygrocybe irrigata.*

Edible. Basic.

Cap 2-5cm, convex or bell-shaped, becoming flatter, grey-brown, lined at the margin, very slimy. **Stem** 3-10cm, cylindrical, sometimes wavy or grooved, same colour as cap but whiter towards the base, slimy. **Flesh** grey. **Gills** grey-white, distant, adnate with a decurrent tooth. **Spore print** white. **Smell and taste** mild. **Habitat** unimproved grassland, cemeteries. **Season** autumn to early winter. **Distribution** frequent in the British Isles and Scandinavia, but absent in the far north and south of Europe, and uncommon in much of the centre. Also present in Asia, North America and Australia.

Similar species: Not many. Fairly obviously a waxcap, even though it isn't brightly coloured.

Notes: A bit slimy, but not bad and can be locally abundant.

Pink Waxcap, Ballerina Waxcap or Pink Ballerina

Hygrocybe calyptriformis

Pink Waxcap, Ballerina Waxcap or Pink Ballerina, *Hygrocybe calyptriformis.*

Edible *but should not be picked*.

Cap 3-8cm, originally conical then expanding but retaining a pointed umbo, deeply splitting and flaring up like a ballerina doing a twirl, pale pink. **Stem** 5-12cm, with fine fibres running lengthwise, white. **Flesh** pale pink. **Gills** pink, rather distant, adnexed to free. **Spore print** white. **Smell and taste** mild. **Habitat** unimproved grassland, cemeteries. **Season** late summer to autumn. **Distribution** occasional in the British Isles, apart from East Anglia and the Scottish mountains. Very rare elsewhere in Europe, and largely restricted to a few coastal locations. Also present in north-eastern North America.

Similar species: None.

Notes: Perfectly edible, and not quite as rare as it was thought to be when it was chosen as the mascot of unimproved grassland conservation. On the other hand, it isn't that common either, even in its British heartland. Please leave this fungus to reproduce.

Parrot Waxcap

Hygrocybe psittacina (syn. *Gliophorus psittacinus*)

Parrot Waxcap, *Hygrocybe psittacina* (syn. *Gliophorus psittacinus*).

Edible (caution). Basic.

Cap 1-6cm, initially bell-shaped, then flatter, umbonate, sometimes flared upwards at the edges, multicoloured (usually green, pink and yellow), slimy. **Stem** 2-8cm, cylindrical and usually slender, multicoloured but usually green at the top. **Flesh** mainly white. **Gills** multicoloured, distant, adnate. **Spore print** white. **Smell and taste** mild. **Habitat** grassland. **Season** late summer and autumn. **Distribution** widespread and very common in temperate areas of Europe, rare further south. Also present in temperate and subtropical zones worldwide, apart from South Africa and Australia.

Similar species: The colour scheme makes this one quite easy to identify, although do watch out for the poisonous Mousepee Pinkgill (*Entoloma incanum*), which looks a little similar but smells very different (strongly of "mouse pee").

Notes: Mildly toxic, so should not be consumed in large quantities.

Fistulinaceae (Beefsteak Fungus family)

The Fistulinaceae are a small family with only one notable European member. Genetic testing has placed it within the Agaricales, although it bears no resemblance to anything else in that taxonomic order. There's only one fungus that looks, feels and bleeds like a slab of liver.

Beefsteak Fungus

Fistulina hepatica

Beefsteak Fungus, *Fistulina hepatica.*

Beefsteak Fungus, *Fistulina hepatica.*

Edible (delicacy). Beginner.

Fruit body 5-28cm across, initially almost spherical, pale and velvety, soon becoming radially grooved, tongue or kidney-shaped, lobed, wavy, tiered and otherwise irregular, sometimes exuding blood-like droplets, sometimes with a very short stem, colour of a slab of meat (especially like ox tongue). **Upper surface** sticky and slightly rough, red. **Lower surface** white/yellow bruising red/brown and eventually turning red/brown. **Flesh** red, fibrous, steak-like. **Smell** pleasant. **Taste** sour/fruity, of variable strength. **Season** late summer to mid-autumn. **Distribution** widespread in Europe and frequent as far north as southern Scandinavia. Common in England, slightly less so in the rest of the British Isles. Also present in the temperate and subtropical zones of north Africa, Asia, and North and South America. Introduced in Australia.

Similar species: None.

Notes: It may look like meat, but it tastes more like a fruit and poses an unusual culinary challenge. It is best used raw, very thinly sliced, as the centrepiece of an exotic salad, but this only works when it is as least as young and fresh as the one in the photo. Older specimens contain more tannin, sometimes to the point of inedibility. Boiling older specimens in milk to remove the tannin has been suggested, but I've not found this method to be very successful. Another possibility is to finely chop it and make it into a consommé, with stock. You can also just rip it into chunks and briefly sauté it, or cook it slowly with onion and parsley.

Phallales

Phallaceae (Stinkhorn family)

The Phallaceae are some of the weirdest of all fungi, and not the most obvious candidates for a food item. I'm not talking about the native European Common Stinkhorn, which is just very smelly and a bit rude (Charles Darwin's daughter Etty found them so offensively phallic that she made it her business to destroy any on her land before the servants caught sight of them). No, "weird" means the *Clathrus* and *Aseroe* species that would pass for special effects from a science fiction horror film: sinister red claws emerging from the ground, a flesh-like red "cage" and, most extreme of all, the Anemone Stinkhorn (*A. rubra*), which I am not even going to attempt to describe.

Common Stinkhorn

Phallus impudicus

Stinkhorn eggs, perfect for eating.

Top: Emerging from its egg: the whole process from egg to fully erect takes only a few hours. Above: A freshly erupted stinkhorn, laden with flies.

Edible (egg stage only). Beginner.

Egg stage white-grey leathery sphere 3-6cm in diameter, dense/heavy, cut open it reveals the embryonic "horn". **Mature stage** there's no getting away from this: it looks like a penis, the stem composed of a material remarkably similar to expanded polystyrene. **Cap** initially covered in foul-smelling grey-green slime, which contains the spores and is rapidly removed by flies to reveal a white honeycomb-like structure that people sometimes mistake for a morel. **Habitat** woodland, gardens, dunes, often near old stumps. **Season** late spring to late autumn. **Distribution** common in Europe. Also present in Asia, Africa and North America. Introduced in Australia.

Similar species: The adult form is about as unmistakable as a fungus gets, while the egg stage could be any of number of things, and is often mistaken for a puffball. Other members of the Phallaceae also emerge from eggs, and while none of them are poisonous, they are not prime candidates for eating either. The most common of these is the considerably smaller Dog Stinkhorn (*Mutinus caninus*) – no prizes for guessing what it looks like.

Notes: Slice open the "egg" and fry in butter. Perhaps not to everybody's taste – a bit radishy and earthy – but it will certainly provide a talking point if you serve it at a dinner party. Can be sliced and eaten raw (only the central portion – remove the jelly). This mushroom was once consumed in western Europe because it was believed to be an aphrodisiac, but it is the Chinese who are the really enthusiastic stinkhorn eaters.

Red Cage (*Clathrus ruber*): common in southern Europe, a rare find further north.

Devil's Claw (*Clathrus archeri*): native to Australasia but widely introduced in the northern hemisphere, and frequent in temperate areas of Europe.

Anemone Stinkhorn (*Aseroe rubra*): another Australasian alien, naturalized but very rare in Europe.

Gomphaceae (Pig's Ear family)

Gomphus is one of the genera that have recently been moved as a result of DNA evidence, in this case from the Cantharellaceae (an old common name for Pig's Ear was Violet Chanterelle). Pig's Ear itself is an unusual-looking species with a long history of human consumption as far afield as Mexico and Nepal. It is now sadly in decline – last recorded in England in 1927.

The most important edible genus is *Ramaria* – although many members are tough to identify to species, of disputed edibility (they are either bitter or cause diarrhoea, or both) and/or rare. *Ramaria aurea* in particular has been traditionally collected for food in several countries, but it is rare in Europe and extremely easy to confuse with inedible or poisonous species, so much better left alone.

Pig's Ear

Gomphus clavatus

Pig's Ear, *Gomphus clavatus.*

Edible *but too rare to justify picking anywhere in Europe.*

Fruit body multiple violet-brown vase-shaped caps with a single base. **Spore-bearing surface** violet-brown wrinkles. **Habitat** leaf litter in moist, shady woodland. **Season** summer and autumn. **Distribution** probably extinct in Britain, rare across Europe and protected in many countries. Present in the temperate zones of Asia and North America.

Similar species: This species is unmistakable. *Gyromitra ancilis* is a rare and totally unrelated species that happens to share the same English common name.

Notes: Traditionally an esteemed edible species, although reported to cause a laxative effect in sensitive individuals, this species has been listed as threatened in seventeen different European countries and is legally protected in three (Hungary, Slovakia and Slovenia). It is declining internationally due to habitat loss and eutrophication (contamination of habitat with excess nutrients from industrialized farming).

Rosso Coral

Ramaria botrytis

Rosso Coral, *Ramaria botrytis*.

Edible (delicacy).

Fruit body 7-15cm high, slightly wider than it is tall, resembling a multiply branching light pink-yellow coral. **Flesh** white, firm. **Smell and taste** pleasant, fruity. **Habitat** on the ground in ancient woodland with deciduous trees, usually beech. **Season** summer and autumn. **Distribution** frequent in southern Europe and occasional as far north as southern Scandinavia. Uncommon to rare in the British Isles. Present worldwide apart from Saharan and sub-Saharan Africa.

Similar species: Many, but the pinkish colour makes it relatively easy to distinguish from its relatives.

Notes: Can cause diarrhoea in some people. This species is commercially collected in several eastern Asian countries, and Spain, where it is considerably more common than it is in Britain. Can be dried.

Hymenochaetales

Hymenochaetaceae

There are no edible fungi in the Hymenochaetaceae, but several are known to be both poisonous and of medicinal use. The most famous is Chaga – something that most people probably wouldn't even recognize as a fungus at all, because it looks more like a burl or a cancerous growth on the wood.

Species not covered here include Willow Bracket (*Phellinus igniarius* – poisonous, medicinal), *P. conchatus* (poisonous, medicinal) and the rather beautiful but poisonous Tiger's Eye (*Coltricia perennis*).

Chaga

Inonotus obliquus

Chaga, *Inonotus obliquus.*

Medicinal.

Fruit body 10-40cm, resembling an area of burned bark. **Flesh** corky, yellow-brown. **Habitat** living deciduous wood, usually birch. **Season** all year. **Distribution** common in the Scottish Highlands and Scandinavia, becoming much rarer further south in Europe. Also present in northern Asia and North America.

Similar species: Many people mistake birch burls for this fungus.

Notes: Very important in traditional Russian medicine, and the subject of a large amount of research into anticancer, antiviral and many other alleged medical properties.

Shaggy Bracket

Inonotus hispidus

Shaggy Bracket, *Inonotus hispidus.*

Medicinal.

Fruit body initially almost spherical and peach-coloured, becoming a bracket 5-25cm across with a hairy upper surface and droplets hanging from the underside. **Habitat** deciduous trees, especially ash. **Season** summer and autumn. **Distribution** widespread and frequent as far north as England and southern Scandinavia, rare or absent further north in Europe. Also present in the temperate and subtropical zones of Asia and North America.

Similar species: None when mature, but looks a bit like Beefsteak Fungus (see page 448) when very young.

Notes: Rather like Chaga (previous page), this fungus is important in traditional Asian medicines, and is now being intensively researched to discover what, if any, are its scientifically demonstrable medical properties. Claimed to have anticancer, antiviral, antioxidant and immune-system-boosting properties.

Polyporales

Fomitopsidaceae (Red-belted Bracket family)

The Fomitopsidaceae are a large family of wood-decomposing bracket fungi. Only one of them (Chicken of the Woods) is well known for its culinary value; the family is better known for being put to other uses.

Red-belted Bracket

Fomitopsis pinicola

Red-belted Bracket, *Fomitopsis pinicola*.

Inedible, allegedly medicinal.

Fruit body hoof-shaped bracket 8-30cm across. **Upper surface** smooth and shiny, covered in a resin that melts if a flame is applied, orange-yellow with a white band at the margin becoming grey-brown, usually with a red band at the margin. **Pores** small, circular, white bruising/ageing yellow-brown. **Smell** strong and unpleasant. **Taste** bitter. **Habitat** on the dead wood of coniferous and deciduous trees. **Season** perennial (fruit body keeps growing for several years). **Distribution** widespread and frequent in Europe, apart from the British Isles (where it is rare). Also present in northern areas of Asia and North America.

Similar species: Hoof Fungus (see page 472) lacks the resinous coating and the red belt.

Notes: Widely claimed to contain very high levels of Beta-1,3-(D)-Glucan, an immune-system-boosting polysaccharide becoming very popular as a natural remedy.

Conifer Blueing Bracket / Blueing Bracket

Postia caesia / P. subcaesia

Conifer Blueing Bracket, *Postia caesia.*

Edible (good). Basic.

Fruit body semicircular bracket 1-8cm across, up to 1cm thick, usually in overlapping groups. **Upper surface** slightly hairy, white at first then grey-white with blue tinges. **Lower surface** white, becoming grey-blue. **Smell** of blue cheese. **Taste** sour, tangy, cheesy. **Habitat** on the dead wood of coniferous and deciduous trees, often on sawn surfaces. **Season** all year. **Distribution** common in Europe, especially in the south of the British Isles. Also present in temperate and subtropical zones of Asia and North America. This is a species complex.

Similar species: These two species are very similar, both are edible and they are considered by some mycologists to be conspecific (belonging to the same species). There are many other bracket fungi that look a bit similar, none of which are known to be poisonous. Most are very tough or bitter.

Notes: Fry gently in butter; the cheesy-tangy taste remains through cooking.

Birch Polypore or Razorstrop Fungus

Piptoporus betulinus

When Birch Polypore is nice and fresh you can use a knife to remove the pore-bearing surface, which peels off and then sticks to your flesh very much like a plaster (although the first time I attempted a demonstration of this, I cut myself with my penknife and ended up in need of a plaster, so be careful).

Birch Polypore or Razorstrop Fungus, *Piptoporus betulinus.*

Inedible, medicinal, useful.

Fruit body 5-30cm wide, roughly shell-shaped. **Upper surface** smooth, light brown, eventually cracking. **Lower surface** (pores) white, eventually turning light brown. **Flesh** white, tough. **Spore print** white. **Smell** mild, mushroomy. **Taste** bitter. **Habitat** dead and dying birch trees. **Season** all year. **Distribution** widespread and very common in temperate areas of Europe. Also present in the temperate and subtropical zones of Asia and North America.

Notes: Inedibly bitter, even when very young. One of the most common species in northern Europe, it is found everywhere there are dead birch trees, and the fruit bodies persist all year. It was traditionally used to sharpen blades (on the dried upper surface), and can also be used to make a dressing for a wound. It has natural antibacterial properties,[19] and has been used medicinally to treat stomach and intestinal complaints. This species is also believed to have anti-inflammatory properties. Birch Polypore is one of two fungus species found with "Ötzi

the Iceman", whose 5,300-year-old body was discovered frozen in the Italian Alps in 1991. Presumably he was carrying the mushroom for medicinal purposes. Ötzi was infected with an intestinal parasite called whipworm, and Birch Polypore contains a chemical toxic to the worm.[20] (The other fungus he carried was Hoof Fungus or Tinder Bracket – see page 472.)

Chicken of the Woods

Laetiporus sulphureus

Chicken of the Woods, *Laetiporus sulphureus.*

A very young Chicken of the Woods, at its absolute best for eating.

Chicken of the Woods fruiting from the roots of a fallen tree.

All traces of bark and foliage must be removed if you pick this species from a yew tree.

Edible (delicacy). Basic.

Bracket 10-40cm, initially a soft, pale yellow mass, soon becoming fan-shaped and a mixture of lemon yellow to deep orange colours, usually in tiers. **Upper surface** a bit lumpy and velvety. **Lower surface** very fine, circular pores, pale lemon yellow. **Flesh** initially very soft and succulent, steadily becoming tougher and eventually crumbly. **Spore print** white. **Smell and taste** of chicken, becoming sour with age. **Habitat** dead and living trees, especially oak, beech, cherry, sweet chestnut and yew. **Season** late spring to early autumn. **Distribution** frequent in Europe, apart from the far north. Also present in North America east of the Rockies, Asia including the islands between Asia and Australia, and Africa.

Similar species: People often mistake the edible Giant Polypore (see page 474) for Chicken of the Woods, but it lacks the bright colouring and the chicken smell. Dryad's Saddle (see page 469) is also sometimes mistaken for Chicken of the Woods, but this is also edible, and has a distinctly different colour scheme, much larger pores and a different shape.

Notes: This is a great fungus for experimenting with in the kitchen. It really does taste like chicken, and when in prime condition it best fried in butter, salt and pepper for 5-10 minutes, then add chives, double cream and a sprinkling of paprika. As the fungus becomes older and

more sour then you have to take the sourness into account – it works well in a beef casserole with red cabbage.

Chicken of the Woods doesn't dry well, but can be frozen cooked.

Chicken of the Woods toxicity theories

It is claimed that up to 10 per cent of people experience an allergic reaction to this species (the symptoms being swollen lips, dizziness, disorientation and nausea/vomiting). There are several theories as to why, including that some people are just much more sensitive than others, or that the problems are caused by people eating old specimens that have started to decay (the colours fade, flesh becomes tough, very bitter/sour, then crumbly and the chicken smell is lost).

Another theory is that the fungi have taken up toxins from the wood they grow on, and I have tested this theory to breaking point. The claim is that you shouldn't eat Chicken of the Woods if it is growing on yew (which is extremely poisonous). However, the toxin in yew (taxine) doesn't cause the symptoms described above – it causes accelerated heart rate, muscle tremors, convulsions, breathing and circulation impairment and, in severe cases, cardiac arrest.

One autumn I ran into a German lady online who told me she'd eaten Chicken of the Woods growing on the same yew tree every year for the last 20, and had never suffered any ill effects. The following spring I found more of it growing in one very ancient tract of yew woodland than I'd seen in all other places combined, ever. I took home as much as I could carry, and then ate as much of it as I could fit in my stomach. I was absolutely fine. So I held a dinner party, and allowed my guests to eat as much as they wanted to (which was a lot). They were all absolutely fine.

I can find no evidence of confirmed cases of taxine poisoning from Chicken of the Woods and I have therefore concluded that the theory is wrong and that it is safe to eat this species, even if it is growing on yew *provided it is very carefully cleaned, removing every trace of wood, bark and foliage incorporated into the flesh as it grew. Even dry, dead matter is dangerously poisonous.* It should be noted that the above was not a scientific test, and does not *prove* that it is safe to eat Chicken of the Woods growing on yew. I am merely relating my own relevant experiences.

Ganodermataceae (Lacquered Bracket family)

Lacquered Bracket / Hemlock Varnish Shelf
(Japanese: Reishi, Chinese: Lingzhi)

Ganoderma lucidum / G. tsugae

Lacquered Bracket, *Ganoderma lucidum.*

Inedible, medicinal.

Bracket 10-30cm across, kidney-shaped, concentrically grooved and coloured, shiny, usually on a stalk. **Pore surface** white. **Spore print** brown. **Habitat** deciduous wood, usually on roots or stumps or at the base of the trunk. **Season** all year. **Distribution** widespread and frequent in Europe, but absent in the far north. Occasional in the southern half of England, rare elsewhere in British Isles. This is a species complex, members of which are present worldwide.

Similar species: Hemlock Varnish Shelf is very similar to Lacquered Bracket, but prefers coniferous wood.

Notes: All members of the complex are sought for their medicinal properties. They have been used in Chinese medicine for over 2,000 years. Scientific tests into their usefulness for a host of different conditions are ongoing – hundreds of scientific papers have been published on the topic. This is the single most important medicinal fungus.

Artist’s Fungus / Southern Bracket

Ganoderma applanatum / G. australe

Artist’s Fungus, *Ganoderma applanatum.*

Inedible, useful.

Bracket 10-60cm across, brown, woody, wrinkled/grooved. **Pore surface** white, bruising brown. **Spore print** rusty brown. **Habitat** deciduous trees, dead or alive, usually beech. **Season** all year. **Distribution** Artist’s Fungus is common everywhere in Europe but the far north; Southern Bracket is rarer and has a more southerly distribution. Both are common in the British Isles. Also present in the temperate zones of Asia, North America and Australia.

Similar species: These two brackets are almost indistinguishable from each other.

Notes: Both fungi can be drawn on. When very fresh, if you put any pressure on the pores, then they turn from white to brown. Within a few days the surface dries, touching the pores no longer causes a colour change, and any image already present is preserved.

Polyporaceae (Polypore family)

The Polyporaceae are a very large family of bracket fungi. A few of them are well known edible species, but this family is also notable for its fungi of medicinal importance as well as those that, historically, have been used for a wide range of other purposes – from tinder to making textiles and even by dentists to dry people’s teeth after swilling and spitting.

Umbrella Polypore

Polyporus umbellatus

Umbrella Polypore, *Polyporus umbellatus.*

Edible (delicacy). Basic.

Fruit body up to 50cm across, consisting of individual caps 2-5cm across on branching stalks, colour rather variable greys, pinks and yellows. **Flesh** white. **Pores** medium, angular, white or cream. **Spore print** white. **Smell** pleasant. **Taste** delicious. **Habitat** on the roots of deciduous trees. **Season** spring to summer. **Distribution** present in most temperate areas of Europe, but uncommon. Absent in the far north and rare or absent in the Mediterranean south. Rare in the south of the British Isles, very rare in the north. Also present in Asia and North America.

Similar species: No poisonous lookalikes.

Notes: This species is cultivated for food in China. It is also being investigated for several different potential medical uses.

Dryad's Saddle

Polyporus squamosus

Dryad's Saddle, *Polyporus squamosus.*

Edible when young (good), useful. Basic.

Bracket 5-60cm across, yellow, covered in concentric lines of dark brown, flat scales, margin slightly inrolled, often in tiers. **Stem** 3-10cm, smooth and dark near the base. **Flesh** thick, initially quite soft becoming much tougher. **Pores** large, angular, white becoming pale yellow. **Spore print** white. **Smell and taste** of melons. **Habitat** parasitic and saprophytic on wood, usually deciduous, especially sycamore and horse chestnut. **Season** summer to autumn. **Distribution** widespread and common in Europe. Also present in Asia, Africa and North America east of the Rockies. Introduced in Australia.

Similar species: Could be mixed up with its smaller, edible relative the Tuberous Polypore (*P. tuberaster*), and I have seen people mistake quite a few other bracket fungi for it, although none of them were poisonous and they really aren't that similar.

Notes: If your knife slices through it effortlessly then it is edible, but if you have trouble cutting it then it will be too tough to chew. This toughening can occur at different growth stages – sometimes rather small specimens are already inedible, while larger specimens are still tender enough to eat. It can be sliced into "chips" and deep-fried, or dried and powdered. You can also make paper out of this fungus, and it was historically compressed, dried and the upper surface used as a razor strop.

Turkeytail

Trametes versicolor

Turkeytail, *Trametes versicolor.*

Inedible, medicinal.

Fruit body multiple overlapping tiers of tough, leathery, concentrically zoned, multicoloured brackets. Very variable. **Smell and taste** indistinct. **Habitat** deciduous wood. **Season** all year. **Distribution** very common everywhere but the coldest parts of the far north. Present worldwide.

Similar species: Very variable colours, but ubiquitous and you will soon become familiar with it. No poisonous lookalikes.

Notes: Possibly of use clearing up pollution and allegedly of medicinal use – a chemical derived from this fungus is used to treat gastric cancer in China and Japan.[21]

Dyer’s Mazegill

Phaeolus schweinitzii

Dyer’s Mazegill, *Phaeolus schweinitzii.* Above right: A young fruit body of Dyer’s Mazegill, bearing little resemblance to its handsome adult form.

Inedible, dye.

Fruit body initially a furry yellow blob, eventually becoming hairy and bracket-shaped or circular, with concentric gold, brown and red zones, finally turning black.

Stem very short. **Flesh** brown. **Tubes** 3-10mm. **Habitat** on conifers, usually on dead stumps and roots but also attacking living trees. **Season** autumn. **Distribution** widespread and common in Europe. Also present in the temperate zone of North America. Introduced in Australia, New Zealand and South Africa.

Notes: This species is well known to foresters, who do not want it anywhere near their trees. The rest of us can wonder at its metamorphosis, admire the beauty of its adult form and, as the name suggests, use it to make a natural, high-quality green, gold or brown dye.

Hoof Fungus or Tinder Bracket

Fomes fomentarius

Hoof Fungus or Tinder Bracket, *Fomes fomentarius.*

Inedible, many uses.

Fruit body up to 25cm across and equally thick, silver/grey/brown, hard, bumpy but smooth to the touch, hoof-shaped. **Pore-bearing surface** cream, becoming darker. **Spore print** white. **Habitat** dead and dying deciduous trees. **Season** perennial (fruit body continues to grow for several years). **Distribution** widespread and common, particularly in the north. Common in Scotland, less so further south in the British Isles. Also present in Asia, Africa and eastern North America.

Similar species: Red-belted Bracket (see page 458) is rather similar, but has red zoning, usually near the edge.

Notes: This inedible species has traditionally been the most useful fungus of all for humans. Fresh, young fruit bodies are boiled in water, then cut into pieces and beaten until the fibres can be extracted. The resulting material, known as "red amadou", is one of the finest natural forms of tinder, capable of catching fire from a tiny spark. It can also be used to make clothing and other items, and was once used by surgeons as a styptic and by dentists to dry teeth. It is still used to dry the artificial flies used in fly fishing. "Ötzi the Iceman" was carrying some of this fungus, presumably for use as tinder, when he died high in the Alps more than 5,000 years ago on what is now the Italian-Austrian border. (He was also carrying Birch Polypore – see page 460.)

Tiger Sawgill

Lentinus tigrinus

Tiger Sawgill, *Lentinus tigrinus*.

Edible (good). Basic.

Cap 4-10cm, initially convex, soon funnel-shaped, smooth and silky, covered in radiating dark brown scales. **Stem** 3-5cm, quite tough, covered in small brown scales, especially towards the base. **Flesh** white, thin. **Gills** white then cream, decurrent, with notched edges. **Spore print** white. **Smell and taste** mild and pleasant. **Habitat** very specifically on waterlogged willow (usually dead) at the edge of freshwater lakes, sometimes even fruiting underwater. **Season** spring to autumn. **Distribution** frequent in southern Europe, becoming rarer further north, only present on the southern tip of Scandinavia. Uncommon in England, very rare in the rest of the British Isles, but can be locally abundant. Also present in North America, Africa and south-west Asia.

Similar species: Visually rather similar, but more robust, especially in the stem, the Scaly Sawgill or Train Wrecker (*Neolentinus lepidius*) is now rare but was once much more common. Its edibility is disputed, probably because it tends to grow on man-made structures tainted with poisonous wood-preserving chemicals. The name "Train Wrecker" refers to a tendency to grow on, and dangerously weaken, railway sleepers, and it was once well known in Europe for having the same effect on beams holding up passageways in mines. It is still occasionally a cause of wet rot in buildings.

Notes: The Tiger Sawgill is rare across most of its extensive range, probably because it is so fussy about habitat. If there was more unmanaged willow woodland around lakes with a variable water level, then there would be more Tiger Sawgills. I only know them from one location, but in that location they are the dominant species, so I don't feel particularly guilty about taking a few every now and then.

They are cultivated in the USA, where they are called "Little Shiitake" (Shiitake used to be in this genus).

Meripilaceae (Giant Polypore family)

The Meripilaceae are a small, recently circumscribed family (1982). The two species included here are the only members that are of any interest to foragers.

Giant Polypore

Meripilus giganteus

Giant Polypore, *Meripilus giganteus*.

Edible (good) when very young. Basic.

Fruit body up to 1m across, comprised of individual brackets up to 30cm across. **Upper surface** multicoloured greys, browns, yellows and reds, concentrically arranged, covered in fine brown scales, radially wrinkled. **Lower surface** white, then yellow, bruising black. **Flesh** cream, fibrous. **Smell** pleasant. **Taste** pleasant at first, then sour and bitter. **Habitat** on the stumps and lower trunk of deciduous trees, or sometimes arising from buried roots. **Season** summer to winter. **Distribution** widespread and common from the south of Spain to the south of Sweden, becoming rare or absent further north. Very common in the south of the British Isles, less so further north. Also present in temperate and subtropical zones of Asia and North America.

Similar species: No dangerous lookalikes. Bondartsev's Polypore (*Bondarzewia montana*) is a rare edible (but poor) European lookalike.

Notes: Giant Polypore very quickly becomes too bitter and tough to eat, especially considering how large it eventually gets. When very young (as illustrated here) it is surprisingly good, fried either in butter, or in olive oil with a dash of soy sauce. It can also be dried, powdered and used as a flavouring. A more mature specimen is shown in Chapter 1, page 15.

Hen of the Woods (Japanese: Maitake)

Grifola frondosa

Hen of the Woods, *Grifola frondosa*.

Edible (delicacy). Beginner.

Fruit body 15-50cm across, comprised of individual brackets or fronds 4-10cm across. **Upper surface** yellow and grey-brown, radially wrinkled, wavy and split at the margin. **Lower surface** white, then more yellow. **Flesh** white. **Smell and taste** pleasant when young, unpleasant when older, supposedly reminiscent of mice. **Habitat** on stumps and at the base of trunks of deciduous trees, especially oak and beech. **Season** late summer to autumn. **Distribution** widespread and frequent from southern Spain to England and southern Scandinavia, where its range ends abruptly. Rare in Scotland. Also present in Asia and eastern North America.

Similar species: No poisonous lookalikes and very difficult to mix up with anything at all, except maybe Cauliflower Fungus (next page).

Notes: Best grilled or sautéd. It can also be dried, powdered and used as a flavouring. Cultivated commercially in Japan as food, this species is also claimed to have multiple medicinal uses, and a chemical derived from it is under trial as a cancer treatment. Red listed in Denmark, Norway and Sweden.

Sparassidaceae (Cauliflower Fungus family)

Sparassis is a small genus of distinctive brain-shaped fungi, several of which are edible and have recently been successfully cultivated. There are currently thought to be two main European species, but it is a taxonomically difficult area (although this is not a problem for foragers, because there are no poisonous members).

Cauliflower Fungus

Sparassis crispa

Cauliflower Fungus, *Sparassis crispa*.

Cauliflower fungi always appear at the base of conifers, and nearly always pine.

Edible (delicacy). Beginner.

Fruit body 20-40cm in diameter and up to 30cm high, surface of the fronds white-cream, becoming more yellow-brown with age. **Smell** pleasant, distinctive but hard to describe. **Taste** slightly bitter when raw. **Habitat** at the base of conifers, usually pine. **Season** late summer to autumn. **Distribution** frequent in Europe. Also present in Asia and eastern North America. Possibly a species complex.

Similar species: It has a close edible relative *S. spathulata*, which is associated with deciduous rather than coniferous trees. It could also just about be mixed up with some of the larger coral fungi, but none of these are seriously toxic (though some are bitter).

Notes: Requires careful cleaning, because everything that crawls or slithers in the forest likes to make a home in it. The best method is to

immerse the whole thing in water and carefully pick bits out, cleaning it as you go. It must then be left to thoroughly dry, or you'll end up with too much water when you try to cook it. Once clean and dry, it's great just pan-fried in butter until crispy and served on toast, or used to make a cream sauce with onions. British chef Hugh Fearnley-Whittingstall recommends "Cauliflower Fungus Cheese" in John Wright's *Mushrooms* book (see Resources). And Richard Mabey, author of *Food for Free* (see Resources), suggests using it in place of meat in a casserole, or deep-frying in batter. It can also be roasted whole – although only if you are planning to feed quite a few people (and they aren't squeamish).

Auriculales

Auriculariaceae (Ear family)

This is a family of unusual jelly-like fungi that grow on dead wood. One non-European member of the family is commercially and culturally important in China, as both a cooking ingredient and a health food. Cloud Ear (*Auricularia polytricha*) is an essential ingredient in hot and sour soup, where it takes up the flavour of the other things it is cooked with, and provides an interesting texture. It is sold in dried form in Asian supermarkets. As for the health benefits, there is scientific interest in this species, but some of the claims of Traditional Chinese Medicine about these species border on supernatural.

The European equivalent has the same food uses, and a controversial traditional name. It grows on elder trees and Judas Iscariot supposedly hung himself from an elder tree. The ancient name for this fungus was Judas' Ear, which became Jew's Ear. This has been deemed politically incorrect, and the recommended name for it is now Jelly Ear. Both species are also sometimes called Wood Ear.

Jelly Ear or Jew's Ear

Auricularia auricula-judae

Jelly Ear or Jew's Ear, *Auricularia auricula-judae.*

Edible (good). Basic.

Fruit body 2-8cm, ear-shaped, smooth or wrinkled, purple-brown. **Flesh** rubbery. **Spore print** white. **Smell and taste** indistinguishable. **Habitat** wood, usually dead, usually elder. **Season** all year. **Distribution** common from southern Spain to the southern tip of Sweden. Very common in the British Isles, particularly in the south. Also present in the temperate and subtropical zones of Asia, Africa, Australia, and North and South America.

Similar species: None in Europe, but the Asian species Cloud Ear (*A. polytricha*) is almost identical.

Notes: If you aren't making hot and sour soup or stew, then you need to take care when cooking this fungus, because if you just stick it in a pan and try to fry it then it is likely to explode and end up plastered all over your kitchen walls. You can hold it down with a spatula, in which case it comes out a bit like "crispy seaweed", and you can also cut it into thin strips before frying, which are less likely to explode. It is used in stir-fries and wontons, but the best recipe I know for this species is Jew's Ear rolls, from Roger Phillips' book *Wild Food* (see Resources). This involves frying the sliced ears in butter with garlic, herbs and seasoning, and then making "Swiss rolls" with the resulting mixture using de-crusted pre-sliced white bread. The rolls are held in place with cocktail sticks, drizzled with more butter, and then put in an oven to crisp. Delicious!

Jelly Tooth

Pseudohydnum gelatinosum

Jelly Tooth, *Pseudohydnum gelatinosum.*

Edible. Basic.

Fruit body 2-20cm, irregular, bracket-like or tongue-shaped, gelatinous, translucent. **Upper surface** finely downy. **Lower surface** covered with small spines. **Flesh** rubbery, jelly. **Spore print** white. **Smell and taste** indistinguishable. **Habitat** conifer stumps. **Season** all year. **Distribution** widespread in Europe but only occasional in temperate areas. Present worldwide, apart from Africa.

Similar species: None.

Notes: This species has confounded the taxonomists, and we still aren't quite sure where it belongs. It is undeniably beautiful – a grey-white, translucent, toothed, tongue-like structure that appears on moss-covered stumps. It doesn't taste of much, but it can be candied to make an interesting sweet treat. It can also be thinly sliced and used in the same way as Jelly Ear (previous entry).

Salmon Salad

Guepinia helvelloides (syn. *Phlogiotis helvelloides*)

Salmon Salad, *Guepinia helvelloides* (syn. *Phlogiotis helvelloides*).

Edible. Basic.

Fruit body 3-15cm, translucent, gelatinous, funnel-shaped pink blob. **Habitat** on soil or conifer debris. **Season** midsummer to autumn. **Distribution** widespread but uncommon in Europe. Rare in most of the British Isles, slightly more common in south Wales and adjacent parts of England, and possibly spreading. Also present everywhere but Africa, Australia and New Zealand.

Similar species: Rather distinctive, no close lookalikes.

Notes: Best when young, this species is usually eaten raw, but can also be pickled or candied.

Phylum: Ascomycota

Hypocreales

Hypocreaceae

Hypomyces is a genus of moulds that specialize in attacking various types of mushroom. The North American species *H. lactifluorum* attacks members of the Russulaceae, turning them pink, and the results, which are known as “Lobster Mushrooms”, are considerably more highly prized than the uninfected versions.

The Bolete Eater or Bolete Mould

Hypomyces chrysospermus

The Bolete Eater or Bolete Mould, *Hypomyces chrysospermus*.

Inedible, possibly poisonous.

Description a thin white dusting that becomes increasingly yellow and powdery, causing its hosts to mutate into bloated forms and eventually turn into a squidgy mush. **Habitat** boletes and other members of the Boletales. **Season** summer and autumn. **Distribution** common in Europe. Also present in Asia, North America and Australia.

Notes: Unfortunately, unlike its American relative, boletes infected with this species do not end up in restaurants. However, they can be trimmed and eaten with no ill effects. The main purpose of including it here is because if you aren't aware of it, then you may end up struggling to identify some very odd-shaped boletes, or completely white things that look a bit like mushrooms. In some years, in some places, nearly all the boletes fall victim to *H. chrysospermus*.

Xylariales

Xylariaceae (Candle-snuff Fungus family)

There are no edible members of this family, but one common and distinctive species makes good tinder. The type species of the type genus (*Xylaria hypoxylon*) is a very common woodland fungus that looks like miniature antlers, and which gives off a puff of spores when touched, reminiscent of a candle being snuffed out.

King Alfred's Cakes or Cramp Balls

Daldinia concentrica

King Alfred's Cakes or Cramp Balls, *Daldinia concentrica.*

Inedible but used as tinder.

Fruit body 2-8cm, roughly hemispherical, hard, black, shiny, slightly nobbly. Concentrically zoned internally. **Habitat** dead wood, usually ash. **Season** all year. **Distribution** widespread and common in Europe, apart from the coldest northern areas. Also present in north and west Africa, North America and Chile.

Similar species: Very easily recognized.

Notes: Sought by bushcrafters for use as tinder. The blackest, driest specimens are best for this purpose. The name "Cramp Balls" derives from a traditional belief, originating in south-east England, that carrying them in your pocket protects you from cramp.

Pezizales

Pezizaceae (Cup family)

This family includes the Desert Truffles (*Terfezia arenaria*, *T. claveryi* and *T. leptoderma*), and as their name suggests, they are subterranean species native to the hotter parts of southern Europe, as well as the desert regions of northern Africa, the Middle East, and further afield. They are prized edibles, but not as good as the true truffles. The Pezizaceae also contain a large number of European cup fungi, most of which are of little foraging interest. One of them – Cellar Cup (*Peziza cerea*) – is almost always found in man-made environments, from damp masonry to mortar in pavements. It isn't edible.

Bay Cup

Peziza badia

Bay Cup, *Peziza badia*.

Edible. Intermediate.

Fruit body 3-8cm, cup-shaped, brown, inner surface darker than spore-bearing outer surface. **Habitat** on soil, usually in woodland, often by paths. **Season** autumn. **Distribution** widespread and common in Europe. Also present in the temperate and subtropical zone of Asia, and the whole of North and South America.

Similar species: There are quite a few cup fungi you might mistake for this species, although none are quite as dark. No similar species is seriously toxic, but quite a few are officially of unknown edibility and probably aren't consumed very often.

Notes: Must be thoroughly cooked. Not a delicacy, but not as bad as some sources report.

Sarcoscyphaceae (Scarlet Elfcup family)

The Sarcoscyphaceae are a small family of cup fungi. Only two close relatives are of any interest.

Scarlet Elfcup / Ruby Elfcup

Sarcoscypha austriaca / S. coccinea

Scarlet Elfcup, *Sarcoscypha austriaca*.

Edibility disputed. Basic.

Fruit body roughly cup-shaped. **Inner surface** bright red, smooth. **Outer surface** lighter and finely hairy. **Habitat** on the dead wood of deciduous trees. **Season** midwinter to early spring. **Distribution** occasional in Europe. Also present in Asia and western North America. Introduced in Australia.

Similar species: These two species are almost indistinguishable without microscopy, but their bright red colour serves to distinguish them from anything else. No poisonous lookalikes.

Notes: Different sources describe these species as edible (raw) and good, edible but not worthwhile, edible only when cooked, and mildly toxic even cooked. I've eaten them once, wasn't particularly impressed, but wasn't ill either.

Pyronemataceae (Fire Fungus family)

The Pyronemataceae are a large family of fungi. They come in a wide variety of blob or cup-shaped forms, many are very small and lots of them are brightly coloured – usually orange or yellow. Only one of them is of interest to foragers, although another member is quite well known – the Common Eyelash (*Scutellinia scutellata*) looks a bit like a miniature version of Orange Peel Fungus, with black eyelash-like hairs around the edges.

Orange Peel Fungus

Aleuria aurantia

Orange Peel Fungus, *Aleuria aurantia.*

Edible (good). Basic.

Fruit body 1-10cm, initially cup-shaped, soon becoming flatter, wavy, split, lobed and otherwise irregular. **Inner surface** bright orange, smooth. **Outer surface** paler and covered in white down. **Habitat** usually bare soil, often in disturbed areas, sometimes grass. **Season** autumn. **Distribution** widespread and common in Europe. Also present everywhere but Saharan and sub-Saharan Africa.

Similar species: There are quite a few orange-yellow cup fungi that could be mistaken for this species, although they are generally smaller and none of them are quite such a vivid orange. Some of these in the genera *Otidea* or *Caloscypha* are of unknown or dubious edibility, but there are no known seriously poisonous lookalikes.

Notes: Delicately flavoured, and best used in any dish where the colour can be shown off. This species can be dried, eaten raw or cooked.

Hare’s Ear

Otidea onotica

Hare’s Ear, *Otidea onotica*.

Edible (good). Basic.

Fruit body 2-8cm tall, pale yellow-brown with pink-red staining, shaped like a hare’s ear, with a split down the shorter side. **Habitat** in woodland, often by the side of paths, usually in clusters. **Season** summer to autumn. **Distribution** widespread and common in Europe. Also present in Asia and North America.

Similar species: Could be confused with quite a few cup fungi of unknown edibility, some of which are reported to be mildly toxic by some sources. However, nearly all of these are “goblet”-shaped, rather than being upright and asymmetrical. Its nearest lookalike is Tan Ear (*O. alutacea*), which is generally listed as “inedible” where any information is provided. There are no reports of it being toxic either, and I have eaten it with no ill effects. In terms of taste, it is very similar to Hare’s Ear. Tan Ear is slightly darker, less upright, and lacks the red-pink staining. It also has a very rare relative *O. cantharella*, which is a much brighter yellow and also lacks the red-pink tinges.

Notes: Can be used in salads (cooked, then cooled), or fried for a few minutes in equal amounts of butter and olive oil, until just the right mixture of chewy and crispy, with a delicate “umami” (MSG) taste. It is possibly slightly toxic raw, and doesn’t agree with everybody so go easy on it the first time you try it.

Discinaceae (False Morel family)

False Morel

Gyromitra esculenta

Deadly poisonous.

False Morel, *Gyromitra esculenta*.

Cap 3-15cm across, a highly irregular, yellow-brown brain-like blob. **Stem** short, stout, consisting of hollow chambers. **Habitat** coniferous woodland, usually pine on sandy, acidic soil. **Season** spring. **Distribution** widespread and frequent in Europe. Prefers mountainous areas of the British Isles. Also present in Asia, north Africa, and North and South America.

Similar species: In addition to the true morels and other *Gyromitra* species, some of the toxic *Helvella* species could be mistaken for a False Morel.

Notes: Contains gyromitrin, which is metabolized into monomethylhydrazine (MMH) after consumption. MMH is used as a high-energy fuel by the military, and causes a long list of unpleasant short-term symptoms, including headaches, nausea, eye and respiratory irritation as well as long-term damage to multiple internal organs. It is also suspected of being carcinogenic. Regardless of the well-understood dangers, this species is still widely consumed in eastern Europe and Scandinavia. It is parboiled first, which reduces the concentration of the toxins, but doesn't eliminate them completely. The toxicity is also, apparently, cumulative, so that people who have eaten it for years without problems can suddenly become very ill and drop dead. It is very dangerous raw, a fatal dose for an adult human being as little as 500g, but even "properly prepared" it is responsible for a significant number of poisonings every year. Its sale is now illegal in several European countries. The same advice on toxicity applies to all other *Gyromitra* species: do not eat.

Helvellaceae (Elfin Saddle family)

White Saddle

Helvella crispa

Poisonous.

White Saddle, *Helvella crispa.*

Cap irregularly folded and lobed blob of variable size and shape, grey-white. **Stem** 5-12cm, very thick, deeply furrowed, hollow. **Habitat** woodland, usually by the side of paths. **Season** summer to autumn. **Distribution** widespread and common in Europe, apart from the far north. Rare in Scotland but common in the rest of the British Isles. Also present in Asia, eastern North America, northern South America, north Africa and New Zealand.

Similar species: Could only be mistaken for other *Helvella* species, or perhaps the skeletal structure of an old Common Stinkhorn (see page 450).

Notes: Previously considered edible, this species is now known to contain MMH (see notes for False Morel, previous page). While unlikely to do you any harm if eaten (cooked) in small quantities, it is of little culinary interest anyway. The same applies to all the other *Helvella* species that were once considered edible.

Morchellaceae (Morel family)

The morels are descended from simple cup fungi – their honeycomb structure is formed from the equivalent of multiple cups fused together. Most of them fruit in the spring, and they have a particular liking for old fire sites. Some of them rank among the most highly prized fungi in the world. In addition to the species included here, the Semi-free Morel (*Mitrophora semilibera*) is of disputed edibility, eaten by some people but known to cause stomach upsets in many others and not worth eating anyway. It is also now known to be a "cryptic" species complex – there are multiple species that cannot interbreed, regardless of being almost indistinguishable. They are distinguishable from other types of morel by their comparatively long stems and small "caps", which are only half attached to the stem. Bleach Cup (*Disciotis venosa*) is a spring-fruiting species resembling the cup fungi of the Pezizaceae and Pyronemataceae, and said to be a good edible. Unfortunately, it is almost impossible to reliably distinguish it from species of suspect edibility without microscopy.

All the morels are poisonous raw, and should be cooked *for at least 10 minutes* before consumption.

Common or Yellow Morel, *Morchella esculenta*.

Common or Yellow Morel

Morchella esculenta

Common or Yellow Morel, *Morchella esculenta*.

Poisonous->edible (delicacy). Intermediate.

Fruit body 5-25cm high, spherical/conical yellow-brown honeycomb structure composed of multiple angular pits, fused all the way down to the **stem**, which is short, furrowed, brittle and swollen at the base. **Habitat** variable: open woodland, scrub, grassland, waste ground and increasingly in gardens. **Season** spring. **Distribution** widespread and frequent in Europe, apart from the far north. Frequent in England, much rarer elsewhere in the British Isles. Also present in temperate and subtropical zones of Asia, north Africa, North America and Brazil.

Similar species: This species is highly variable, and has several recognized subspecies. Take care not to confuse it with the potentially deadly False Morel (see page 489) – False Morel "caps" are wrinkled and convoluted blobs, without a honeycomb structure. It could

obviously be confused with the other true morels too. People also regularly mistake an old Common Stinkhorn (see page 450) for a morel (the old Common Stinkhorn is not poisonous, but is about as edible as expanded polystyrene). The edible White Morel (*M. deliciosa*) is a very similar but rare European species, widely distributed but not found in the British Isles.

Notes: This is one of the most sought-after wild fungi in the world, but it must be cooked. Raw specimens contain the gastrointestinal irritant hydrazine, which breaks down on heating. To be absolutely safe, parboil and discard the water, then fry.

Black Morel

Morchella elata

Black Morel, *Morchella elata.*

Poisonous->edible (delicacy). Intermediate.

Fruit body 5-15cm high, similar to Common Morel but smaller, much more conical and narrow, and black. **Stem** longer than a Common Morel, and hollow. **Habitat** variable: coniferous woodland, woodchip, burned ground, gardens. **Season** spring. Increasingly rare in its natural habitat but becoming more common in man-made environments, especially on bark/woodchip mulches. **Distribution** widespread but only occasional and this species is taxonomically confused anyway, due to the variability of the fruit bodies and the probability of it being a species complex. It is unclear how many species there are, or what their true distributions are.

Similar species: See notes for Common Morel (previous page). It could also be confused with the much smaller Semi-free Morel (*Morchella semilibera*), which has a cap that is half attached to the stem (ie half the cap is not attached to stem). Semi-free Morels are considered edible by some, but known to cause stomach upsets in many people, and best avoided.

Notes: Only slightly less prized than the Common Morel. Poisonous raw**.**

Early False Morel

Verpa bohemica (syn. *Ptychoverpa bohemica*)

Poisonous. ⚠

Early False Morel, *Verpa bohemica* (syn. *Ptychoverpa bohemica*).

Cap 2-5cm, irregular brain-like blob. The cap hangs free, as if balanced on the top of the stem. **Stem** 1-2.5cm, becoming hollow. **Habitat** woodland. **Season** late winter to spring. **Distribution** widespread and occasional in Europe, but not found in the British Isles. Present in North America.

Similar species: Most likely to be confused with the Semi-free Morel (*Morchella semilibera*) and the Thimble Morel (next page), or possibly a False Morel (see page 489).

Notes: There is confusion about the edibility of the *Verpa* species. Although regularly eaten, consumption is known to cause similar symptoms to the *Gyromitra* species in some cases, and it is not clear whether or not they contain gyromitrin. Put it this way: I wouldn't eat either of them.

Thimble Morel

Verpa conica

Poisonous.

Thimble Morel, *Verpa conica*.

Cap 4-9cm, smooth, bell-shaped or conical. The cap hangs free, as if balanced on the top of the stem. **Stem** 5-11cm. **Habitat** with hawthorn on calcareous soil. **Season** late spring. **Distribution** widespread and occasional in Europe. Uncommon in England, very rare in the rest of the British Isles. Also present in Asia and northern North America.

Similar species and notes: As for Early False Morel (previous page).

Tuberaceae (Truffle family)

Truffles are the descendants of morel-like fungi that became ever more compact until the honeycomb structure had solidified into a single lump, although traces of the honeycomb are still visible as lines inside the truffle. Their subterranean habit is probably an adaptation to dry climates, and indeed fungi of this sort are particularly diverse and common in desert regions. There are many different groups of subterranean truffle-like fungi, but the name "truffle" is generally only applied to members of the genus *Tuber*, which contains all the most highly prized species. Plenty of the others – the "false truffles" – are edible, but they generally don't taste of much.

The best truffles are the most highly prized wild fungi of all. The three species included here are the most important, on both a European and global level. They've been prized since antiquity as status symbols (because only the rich could afford to buy them) and as aphrodisiacs. They contain chemicals that mimic mammal pheromones, including one – androstenone – that naturally occurs in human male sweat and female urine. They are famously irresistible to sows, although these days most truffle hunters use easier-to-control dogs to locate them.

Truffles are almost, but not quite, impossible to find without the use of a trained truffle hound. Sometimes they break the surface, or have been unearthed by an animal that was subsequently frightened away before eating it. Sometimes half-eaten specimens can be found, and some people say that you can locate them by looking for certain species of fly (*Suilla* species, whose grubs feed on truffles) hovering above them.

The details of hunting for truffles, identifying them, and their culinary use are beyond the scope of this book. Also, because of the near impossibility of finding truffles without a trained dog, as well as the understandable reluctance of people to divulge this sort of knowledge, reliable information on distribution and frequency can be hard to come by.

Note that truffles do not keep well. They start to lose their odour and flavour after about four days, so should be used promptly.

Hunting for truffles

I was fortunate enough to be taken truffling by Sussex-based professional truffle hunter and truffle-hound trainer Melissa Waddingham as part of my research for this book. Among the things I learned that day are that truffles smell so strong that even a human nose can detect not only an in-situ truffle, but the lingering scent in a place where a truffle recently was, but is no longer. I also discovered that it's not just pigs that have to be watched carefully to stop them snaffling the truffles – dogs are rather fond of them too.

Hunting truffles is very much a specialist activity, quite unlike any other sort of fungi foraging. This reflects the unusual life cycle of the

truffles themselves; they are one of very few fungi that actually want to be eaten, their spores designed to pass through the guts of animals to be deposited elsewhere, like the seeds of the many fruit that employ the same sort of distribution strategy. In the natural scheme of things, they'd therefore prefer to be eaten by something other than a human, but even this is changing, because their desirability means that intense, and partially successful, efforts have been made to cultivate them. And getting humans to cultivate you for food is the ultimate survival strategy in a world so dominated by human activity.

Beware commercial truffle oils

Many products sold as "truffle oil" are among the biggest rip-offs in the food industry and contain no actual truffle. The ingredients often include things like "truffle extract", "truffle aroma" or "truffle essence" which depending on local food labelling regulations often mean "artificial truffle flavouring". The flavouring usually used is an artificially produced aromatic chemical, 2,4-dithiapentane, that smells a bit like truffles. (Dithiapentane is made by treating formaldehyde with a thiol – the sulphur-based equivalent of an alcohol. The thiol in question is found in bad breath and flatulence, and smells of rotting cabbage.) Because the resulting "truffle oil" is sold at a high price, purchasers often wrongly conclude that that it is made with real truffles. Some dithiapentane-infused oils have traces of dried truffle shavings added, but dried truffles add little or nothing, so much of the flavour is still artificial.

You can make your own real truffle oil made by placing crushed fresh truffles in olive oil. It is best kept in the fridge but, like the truffles, it loses its flavour after a few days.

Summer or Burgundy Truffle

Tuber aestivum

Summer or Burgundy Truffle, *Tuber aestivum.*

Edible (delicacy).

Fruit body 3-9cm, brown-black, roughly spherical, covered in pyramidal warts. **Flesh** white, marbled with grey, becoming darker. **Smell** very strong and pleasant. **Taste** nutty. **Habitat** subterranean in woodland, usually with beech on chalky soil. **Season** traditionally collected in summer and autumn. **Distribution** widespread in Europe as far north as England and Denmark. Absent in Scotland, Sweden and Norway. Also present in North Africa and south-west Asia.

Notes: The only well-known truffle present in the British Isles.

Black, Winter or Perigord Truffle

Tuber melanosporum

Black, Winter or Perigord Truffle, *Tuber melanosporum.*

Edible (delicacy).

Fruit body slightly smaller than a Summer Truffle, but otherwise very similar. **Smell** strong, sweet, pleasant. **Taste** nutty. **Season** late summer to early winter, through to late winter in the far south. **Distribution** occasional in Europe as far north as Denmark, but absent further north. Also present in North America, South Africa and Australia.

Notes: Second only to the White Truffle in the truffle desirability league.

White Truffle

Tuber magnatum

White Truffle, *Tuber magnatum.*

Edible (delicacy).

Fruit body milky brown blob up to 12cm in diameter. **Flesh** pale cream with white marbling. **Smell and taste** strong and delicious. **Habitat** deciduous woodland. **Season** autumn. **Distribution** very small range. Restricted to the Piedmont region of north-west Italy, the Istria peninsula in Croatia, and a few other isolated locations in Switzerland, Slovenia and Serbia.

Notes: This is the most sought-after and expensive truffle of them all, only occurring in a handful of small and scattered locations across southern Europe, most famously the Piedmont region of north-west Italy. Their value is in the region of £20,000 per kilogram, and very large specimens, which can weigh upwards of 1.5kg, have been sold at auction for in excess of £165,000.

Glossary

adnate: type of gill attachment where the gills are broadly attached to the stem near the bottom of the gill, with most of the gill fused to the stem. See diagram in Chapter 2, page 25.

adnexed: type of gill attachment where the gills are narrowly attached near the very top of the stem. See diagram in Chapter 2, page 25.

amatoxin: deadly toxins present in some *Amanita* species.

annulus: see **ring** (1).

BAP: Biodiversity Action Plan.

BMS: British Mycological Society.

bracket fungi: a morphological term (ie regarding structure) that refers to fungi that produce stemless bracket, shelf or circular-shaped fruit bodies. “Conk” is a synonym, mainly used in American English.

club: simple club-shaped fruit body with no cap, gills or other complex structures.

cogwheel: a cog-like pattern on a partial veil, characteristic of some species of *Agaricus*.

conspecific: comprising a single species, rather than two or more.

cortina: a partial veil composed of web-like fibres.

crowded: gill distribution where the gills are tightly packed.

cuticle: the skin of a mushroom cap, which can sometimes be peeled off.

decurrent: type of gill attachment where the gills run down the stem. See diagram in Chapter 2, page 25.

decurrent tooth: a section of an adnate gill, very close to the stem, that sharply dips down the stem.

Defra: UK government Department for Environment, Food and Rural Affairs.

deliquesce: to (decompose by) turn(ing) into a liquid.

distant: gill distribution where the gills are few and far between.

double (ring): an ambiguous term with at least three different meanings. See Chapter 2, page 33.

emarginate: type of gill attachment where the gills are roughly the same height for most of their length, becoming much narrower before reaching the attachment point. See diagram in Chapter 2, page 25.

ephemeral (ring): a ring (annulus) that decomposes, detaches or otherwise disappears very soon/easily.

free (gills): gills that aren’t attached to the stem at all.

fruit bodies / fruiting bodies: temporary reproductive organs of fungi (eg mushrooms).

genus / genera: the lowest group level of the taxonomic hierarchy; the first half of a Latin name.

gills: spore-bearing structures beneath the cap of a fungus. True gills are individual structures, distinct from the under-surface of the cap; false gills are more like wrinkles in the surface.

gleba: the inside of spherical fruit body (eg puffballs).

halophilic: adapted to salty habitats.

hygrophanous: changes colour dependent on moisture content.

hyphae: individual filament of a fungal mycelium.

inferior (ring): a ring positioned near the base of the stem.

inrolled: cap margin curled downwards or under.

interveined (gills): gills that fork and join randomly.

lamellae: gills.

LBM: little brown mushroom. A small brown mushroom that a forager has little hope of identifying, because there are hundreds of similar species,

most of which can't be identified without microscopy.

median (ring): a ring positioned near the middle of a stem.

molecular phylogenetics: the analysis of molecular differences (mainly in DNA sequences) to determine the evolutionary relationships between organisms.

muscarine: a toxin first identified in the Fly Agaric (see page 417), but present in many other species of fungi and plants.

mycelium: a network of fine fibres in soil, wood or some other substrate that makes up the main body of all fungi.
mycophilia: love of fungi.

mycophobia: fear of fungi.

mycorrhizal: mycorrhizal fungi are those that form symbiotic relationships with plants.

mycotoxin: poisonous chemicals in fungi.

open woodland: areas where trees are widely spaced, with open ground between. For the purposes of this book, this also includes areas very close to lone trees.

persistent (ring): a ring (annulus) that does not detach or degrade, but stays in place for the life of a mushroom.

polypores: a bracket fungus with tubes and pores, rather than gills.

pores: the open ends of tubes.

Red Lists / Red Data Lists: country-specific lists of endangered species.

reticulations: lines.

ring (1): a flat circle of tissue around the stem of a mushroom.

ring (2): a circular arrangement of mushrooms or other fruit bodies, generated by a circular mycelium.

ring zone: the area on a webcap or other mushroom where the cortina or cortina-like partial veil was once attached, which collects spores, which can be seen.

saprophyte/saprobe: a fungus (or other organism) that feeds on organic material that is already dead.

scabers: brown, red or black scales on the stem of mushroom.

sheathing (ring): a ring (annulus) that clings to the stem, like a sheath.

soil inoculant: a product that contains beneficial microorganisms (eg mycorrhizal fungi). Introducing these into the soil during planting helps create a healthy environment for growth.

species complex: a group of very similar, very closely related species.

specific epithet: the second half of a Latin name, which identifies the individual species.

Spike: common name of fungi in the family Gomphidiaceae.

spike: form of fruit body otherwise known as a "club".

spores: the reproductive cells of fungi.

spp.: multiple species belonging to a particular genus.

striate/striations: (with) lines/grooves on the cap, stem or upper surface of a ring of a mushroom. (The term "striate" is also used elsewhere in nature, eg in geology and animal biology, to describe ridges/furrows/lines.)

substrate: the medium within which a mycelium is feeding.

superior (ring): a ring near the top of a stem.

symbiotic: a mutually beneficial relationship between organisms.

taxonomy: the process and result of classifying organisms into a hierarchy based on what is related to what.

trooping: mushrooms arranged in loose collections on the ground (eg Trooping Funnel) or logs (eg Funeral Bell). This contrasts with clusters/tufts on logs, and rings on the ground.

tubes: structures taking the place and role of gills in certain mushrooms (which are known as boletes).

umbo: a raised hump or "nipple" in the middle of a mushroom cap.

umbonate: fungi with umbo.

unimproved grassland: grassland where fertilizers and other agrochemicals have never been applied.

veil: a web of fibres or sheet of tissue that protects either the whole developing mushroom (universal veil) or just the immature gills (partial veil).

volva: a sac from which a mushroom emerges, the remnants of which often remains at the base of the stem.

warts: remnants of the universal veil remaining on the cap of a mature mushroom.

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Resources

Books

Field guides to British/European fungi

Buczacki, S. (2012). *Collins Fungi Guide*: *The most complete field guide to the mushrooms and toadstools of Britain & Ireland.* HarperCollins: London, UK.

Jordan, M. (2004). *The Encyclopedia of Fungi of Britain and Europe*. Frances Lincoln: London, UK.

Phillips, R. (2006). *Mushrooms*. Pan Macmillan: London, UK.

Sterry, P. and Hughes, B. (2009). *Collins Complete Guide to British Mushrooms and Toadstools.* HarperCollins: London, UK.

Other books on fungi

Bone, E. (2011). *Mycophilia: Revelations from the weird world of mushrooms*. Rodale: New York, USA.

Marley, G.A. (2010). *Chanterelle Dreams, Amanita Nightmares: The love, lore and mystique of mushrooms*. Chelsea Green: Vermont, USA.

Marren, P. (2012). *Mushrooms*. British Wildlife Publishing: Gillingham, Dorset, UK.

O'Reilly, P. (2011). *Fascinated by Fungi*: *Exploring the history, mystery, facts and fiction of the underworld kingdom of mushrooms.* First Nature: Llandysul, Wales, UK.

Roberts, P. and Evans, S. (2011). *The Book of Fungi*: *A life-size guide to six hundred species from around the world*. Ivy Press: Lewes, Sussex, UK.

Stephenson, S.L. (2010). *The Kingdom Fungi*: *The biology of mushrooms, molds, and lichens.* Timber Press: Oregon, USA.

Wild mushroom cookery

Farges, A. (2000). *The Mushroom Lover's Mushroom Cookbook and Primer*. Workman: New York, USA.

Luard, E. (1986; revised 2007). *European Peasant Cookery*. Grub Street: London, UK.

Mabey, R. (2012). *Food for Free.* HarperCollins: London, UK.

Phillips, R. (1983; revised 2014). *Wild Food: A complete guide for foragers*. Pan Macmillan: London, UK.

Spoczynska, J. (1991). *The Wild Mushroom Cookbook*. Green Print: London, UK.

Wright, J. (2007). *Mushrooms: River Cottage handbook no. 1*. Bloomsbury: London, UK.

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Boa, E. (2004). "Wild Edible Fungi: A global overview of their use and importance to people". Non-wood Forest Products 17. FAO, Rome, Italy. Available at www.fao.org/3/a-y5489e.pdf

A valuable source of information about the edibility and other uses of fungi. Produced for the Food and Agriculture Organization of the United Nations (FAO), it is a collation of data from diverse countries where mushrooms have been traditionally eaten or used for other purposes, although the resulting data set is inconsistent in places.

UK

Fungi foraging

Geoff's Fungi and Foraging
www.geoffdann.co.uk
My own website, featuring a fungi / wild food blog, and details of foraging courses and events.

Fergus the Forager
http://fergustheforager.co.uk
Fergus is an experimental forager who writes a blog and runs whole-day "immersion courses" in foraging.

Wild Food & Mushroom Foraging Courses
foodforagingcourses.co.uk
An online directory of food foraging courses.

Wild Mushrooms Online
www.wildmushroomsonline.co.uk
A UK-based mushroom foraging website that includes a section where people post pictures of fungi they've found and would like help to identify.

Finding foraging locations

Explore woods – Woodland Trust
www.woodlandtrust.org.uk/visiting-woods/
Enables you to find publicly accessible woodland near you.

Forestry Commission
www.forestry.gov.uk/englandsforests
Search a forest by name or by using the interactive map. Includes detailed information about access.

Rights of Way Maps
www.rowmaps.com
Displays maps showing rights of way for the local authorities listed on the website.

Fungi conservation

The Fungus Conservation Trust
www.abfg.org
The FCT is the UK's main charity in mycological conservation. The website includes Red Lists of vulnerable fungi, information about local groups, an open forum, and a comprehensive database.

General bushcraft

Bushcraft UK
www.bushcraft.co.uk
Features news and articles, as well as information about cooking, crafts and skills, expeditions and courses.

Natural Bushcraft
www.naturalbushcraft.co.uk
Includes articles and videos about bushcraft skills, an events listing and a forum.

Europe

Amanitas
www.amanitaceae.org
Provides data on the taxonomy and morphology of the amanita family. Also has an e-journal with research results of Amanitaceae studies.

Boletes
boletales.com
Information about European boletes, including how they are collected and studied, associated literature and an overview of species.

Bolets
www.bolets.com
A website dedicated to the mushrooms of Catalonia, with species information, foraging write-ups, recipes and a forum.

First Nature
www.firstnature.com
A near-encyclopedic guide to British and European wildlife, with extensive information on fungi.

Funghi e Fiori in Italia
www.funghiitaliani.it
Fungi and flowers of Italy.

Fungipedia
www.fungipedia.org
Fungi foraging and events in Spain.

MycoKey
www.mycokey.com
A Danish-based website for European fungus identification.

Waldwissen
www.waldwissen.net
The 'forest habitat' section of this forestry ecology site contains articles about fungi as well as fungi distribution maps for Austria, France, Germany, Italy and Switzerland.

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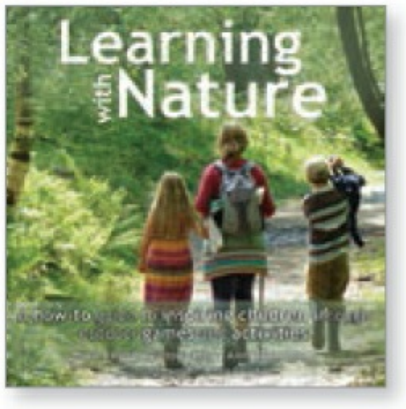

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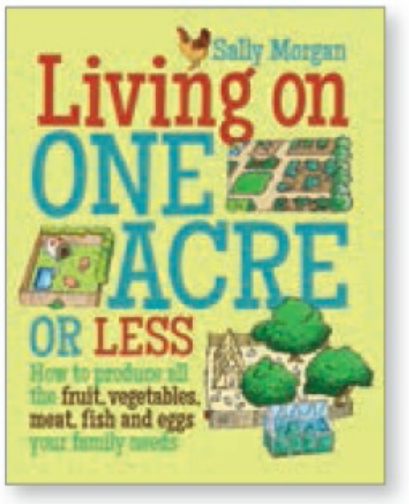

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Front cover photograph: Dark Honey Fungus fruiting on a stump in a conifer plantation.

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