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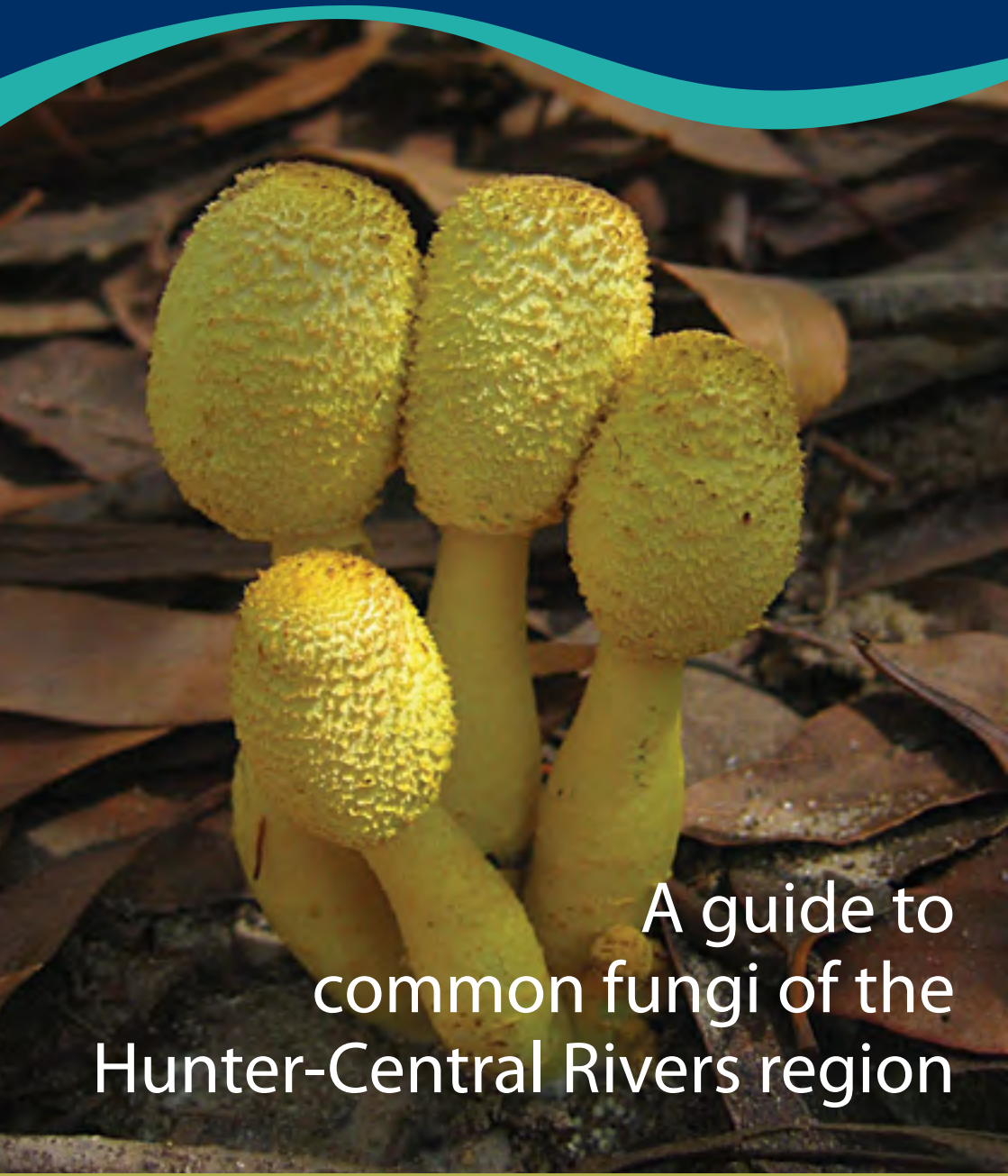

A guide to common fungi of the Hunter-Central Rivers region

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What are fungi?

The term 'fungi' is used to describe a diverse range of organisms that belong to three different kingdoms. The most commonly encountered fungi belong to kingdom Eumycota and are considered 'true' fungi. Fungi can also be used to describe other fungi-like organisms such as slime moulds and water moulds which belong to other kingdoms.

Although fungi often grow from the ground, they are not plants. Unlike plants, which can make their own energy from the sun via photosynthesis, fungi rely on other organisms to meet their nutritional needs. Another significant difference is that fungi have chitin (the substance insects and crustaceans use to make their exoskeletons) in their cell walls rather than cellulose.

Fungi are the invisible framework of all ecosystems (both terrestrial and aquatic). They play a critical role in decomposition and nutrient cycling, help to create and stabilise soils, form relationships with plant roots which are highly beneficial for the survival of plants, and provide habitat and a food resource for a multitude of other organisms. Without fungi, plant-based habitats would not exist.

Diversity of fungi

Fungi contribute significantly to global biodiversity. They are the second-most diverse group of organisms in the world (after arthropods). Despite their diversity and abundance fungi are amongst the most poorly studied organisms. This is most likely because they are relatively small in size, have cryptic life cycles and need specialist skills to properly identify them.

It is estimated that NSW has approximately 36,000 different species of fungi. Of these, 30,000 are microscopic and can't be seen by the naked eye. Of the estimated 6,000 species of macrofungi (those species which produce large visible fruit bodies) found in NSW less than half have been formally described and named.

Conservation of fungi

As less than 50 per cent of the fungi in NSW have names, it's reasonable to conclude that even less is known about their distribution and conservation status. Because fungi are usually found in close proximity to plants it is presumed that the protection of plant-based ecosystems will protect fungi too. Unfortunately, the reserve system in NSW does not include representatives of every vegetation type and so, potentially, there are fungi species that are, in some cases, at risk of extinction before they are even known to science.

Lane Cove Bushland Park in Sydney is the only protected area in NSW designated solely for the protection of fungi. The Hygrocybeae community present there is listed as an Endangered Ecological Community under the NSW *Threatened Species Conservation Act 1995*.

Structure of fungi

The main body of a fungus is often not visible without magnification. It consists of long filamentous threads known as **hyphae** which grow outwards in a radiating fashion as they search for food resources. Groups of hyphae make up **mycelium**. Mycelium can often be seen growing amongst leaf litter, on the undersides of logs or at the base of the fungus.

Mycelium (the 'body' of a fungus) growing on the underside of a log.

The part we recognise as the fungus is actually the reproductive structure or **fruiting body**. Fungal fruit bodies are extremely diverse in form, colour and texture; however, they have all evolved to maximise the dispersal of the spores that they generate.

Life cycles of fungi

Fungi can reproduce sexually and asexually. The end product of both types of reproduction is the formation of spores.

The life cycle of a fungus starts when a spore germinates and forms a hypha. Sexual reproduction occurs when two compatible hyphae come into contact and exchange genetic material. A specialised spore-bearing structure (fruit body) is produced and the spores are released when they mature. Sexual reproduction usually occurs at a time that is optimal for the germination of the spores.

Some fungi are also able to produce asexual spores (these contain only the genetic material of the individual that created them). Asexual spores are produced at times when conditions are highly favourable, allowing the fungus to capitalise on a food resource or alternatively to survive periods of adverse conditions.

Each fruit body contains millions of microscopic spores. For the most part they are passively dispersed into the air; however, some species are able to actively discharge their spores, while others rely on water or insect or animal vectors for dispersal. Such large volumes are required to ensure enough spores land on a suitable substrate to ensure the species' survival.

Macrofungi are split into two main groups based on the way they produce their spores. **Basidiomycetes** produce spores on four-pronged **basidia** (singular, **basidium**) whilst **Ascomycete** spores are generated inside sac-like **asci** (singular, **ascus**). These structures are microscopic; however, both groups form a range of distinctive fruit bodies that are (with a little practice) easily differentiated without a microscope.

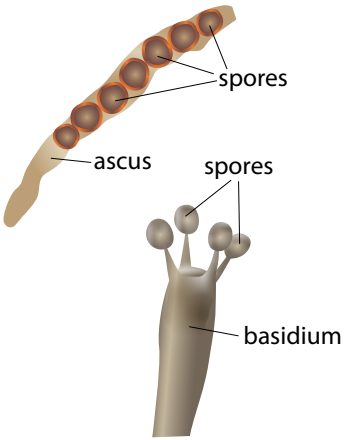


Figure 1a: Diagram showing the form of a basidium and ascus

Nutritional needs

Fungi obtain the nutrients they require for growth by either decomposing the remains of other organisms (**saprotrophic** fungi), feeding on living host tissue (**parasitic** fungi) or by forming symbiotic relationships with plants, algae, bacteria or insects. A symbiotic relationship is one where two or more different organisms live together with both partners usually benefiting from the arrangement.

To utilise the nutrients contained in organic matter, saprotrophic fungi must first break them down into a usable form. They do this by exuding enzymes which break the substrate into tiny particles (carbohydrates) that can be absorbed through the cell walls of their hyphae. Parasitic fungi obtain their nutrients in a similar fashion; however, they prey on living tissue rather than organic waste.

Mycorrhizal fungi (those that form a symbiotic relationship with plants) employ a different strategy to acquire energy. They entwine their hyphae with plant roots to form a structure known as a mycorrhiza (which literally translates as 'fungus root').

Mycorrhiza form extensive networks in the soil and provide the host plant with enhanced nutrient uptake (particularly phosphorus), increased drought tolerance, and disease resistance. In return, the plant supplies the fungus with photosynthetically derived energy in the form of carbohydrates. Some mycorrhizal fungi also have a weak ability to decompose organisms if required.

Lichens are part fungus and part algae or bacteria and play an important role in soil health.

Lichens are a different type of symbiotic relationship where the fungus provides a structure to house certain types of algae or bacteria. The algae or bacteria generate energy from the sun which they share with the fungus.

Ecological role of fungi

Saprotrophs

Saprotrophic fungi break down organic matter and help to recycle nutrients in ecosystems.

Fungi are often the primary decomposers in forest ecosystems and are responsible for the decay of organic waste and the recycling of the nutrients it contains. Organic matter is degraded with varying degrees of difficulty. Soft plant parts containing cellulose are the easiest to break down while woody debris is the hardest. Wood contains lignin – one of the most complex carbohydrates found in nature – and requires powerful enzymes to decay. Fungi are some of the few organisms that have the capacity to degrade lignin, which is why they are so important in the decomposition cycle.

Saprotrophic fungi tend to specialise in particular food resources; for example, fresh or old leaves, or hard or soft wood. Some are highly specific and will only degrade leaves of particular trees while others are generalists. When food resources are rich, the fungus capitalises and grows extensively as competition for resources is surprisingly fierce.

Fungi and soil

Fungi that live in soil significantly contribute to soil fertility and stability, carbon sequestration and pollution abatement. Decomposer fungi recycle nutrients within the soil profile ensuring plants have access to the minerals and nutrients they require for growth, especially carbon. They also create structure in soils by secreting a specialised glue (glomalin), which aggregates soil particles and sequesters carbon in the process. Their role in the formation of soil structure is pivotal as good soil structure is fundamental for the healthy growth of plants.

Lichens also play an important role in soil health. They are able to colonise infertile, bare and rocky areas which they break down to form soil. In arid areas lichens – along with cyanobacteria and mosses – form highly specialised communities referred to as 'biological soil crusts'. These crusts bind soil particles and create organic matter in areas where vegetation is sparse. Soil crusts help to prevent erosion by minimising rain splash and slowing the flow of surface run-off. These ecosystems are highly fragile and can take hundreds of years (if ever) to recover from major disturbances such as trampling from grazing or damage from off-road vehicles.

Mycorrhiza

Approximately 80–90 per cent of terrestrial plant species form mycorrhizal partnerships with fungi. There are several different kinds of mycorrhizal associations – the two major types are endomycorrhiza (also known as arbuscular mycorrhiza, or AM) and ectomycorrhiza (ECM). ECM fungi produce large visible fruit bodies and can be specific about their hosts. It is estimated that Australia has around 6,000 species of ECM fungi. AM fungi are microscopic and as they are less specific about host preference they are less diverse (only a few hundred species).

Australian plants rely heavily on ECM for the provision of phosphorous as the bulk of phosphorous present in our soils is in a form that is unavailable for uptake by plants. The loss of photosynthetic product from plants needed to maintain these relationships is minimal compared to the benefits gained from the fungus.

COMMON PLANT GENERA IN THE REGION THAT FORM ECM RELATIONSHIPS

Eucalyptus	*Tristania*
Angophora	*Tristaniopsis*
Leptospermum	*Baeckea*
Melaleuca	*Jacksonia*
Nothofagus	*Cryptandra*
Allocasuarina	*Pomederris*
Casuarina	*Daviesia*
Hardenbergia	*Backhousia*
Acacia	*Syzigium*
Lophostemon	*Corymbia*
Kunzea	*Callistemon*

Plants which are mycorrhizal can have more than one type of mycorrhizal relationship (that is, both AM and ECM) and multiple fungal partners at any given time. Each fungal partner may also form mycorrhiza with several different plants. The result is a very complex interwoven web that connects multiple plant species to multiple fungi species. This network allows energy to be transferred from one plant to another and has significant implications for understanding the dynamics of plant succession and forest ecology.

Because Australia has a diverse range of Myrtaceous trees (such as eucalypts), we also have a very high diversity of ECM fungi. A large proportion of Australian ECM fungi produce underground truffle-like fruit bodies. Australian ECM truffles are considered mega-diverse: it is estimated that there are over 2,000 species belonging to 90 genera. Around 35 per cent of the genera and 95 per cent of these species are likely to be found only in Australia.

Truffles are produced by ectomycorrhizal fungi and are a sought-after food source for a variety of native animals.

Mycophagy (the eating of fungi)

Ectomycorrhiza fungi not only interact with plants but also with animals in the form of mycophagous (fungus-eating) mammals. Mycophagous mammals like to eat the truffle-like fruit bodies of ECM fungi and are an essential link between forest trees and their ECM partners. Truffles are mostly comprised of indigestible spores which, after being eaten, are dispersed away from the parent source via the mammal's scats. Using the mammal as a spore-dispersal agent allows the fungus to colonise trees at distances it would never have been able to traverse on its own.

EXAMPLES OF MYCOPHAGOUS MAMMALS OF THE HUNTER-CENTRAL RIVERS REGION:

Rufous Bettong (*Aepyprymnus rufescens*)
Long-nosed Potoroo (*Potorous tridactylus*)
Bush Rat (*Rattus fuscipes*)
Long-nosed Bandicoot (*Perameles nasuta*)
Northern Brown Bandicoot (*Isodon macrourus*)
Swamp Wallaby (*Wallabia bicolor*)
New Holland Mouse (*Pseudomys novaehollandiae*)

Some mycophagous animals (such as potoroos) have developed a relationship with certain dung beetles. The dung beetles cling to the animal's tail region and drop off when scats are deposited. The scats are then buried by the beetles taking the spores even closer to potential host tree's roots. The relationship between ECM fungi and animals is significant when you consider the bulk of a potoroo's diets is fungal – up to 90 per cent in the case of the the endangered long-footed potoroo (*Potorous longipes*).

The dispersal of fungal spores by mammals helps to determine forest composition and is particularly important in successional environments such as regenerating burnt areas. Analyses of scats show that some of these mammals are able to find up to 50 different species of truffle in just a few hectares.

Fungal hyphae and fruit bodies are also an essential component of soil food webs. A single mushroom can be host to a myriad of invertebrates and their larvae.

Parasitic fungi, such as *Phellinus* sp., are important for hollow formation in mature trees.

Parasites

Parasitic fungi are an important element of a healthy ecosystem. Parasitic fungi facilitate succession in forests by the creation of gaps in the canopy. They also assist with the formation of hollows in mature trees by rotting out the heartwood. Hollows are essential habitat for a range of birds and animals and the loss of hollow-bearing trees is listed as one of 35 key threatening processes under the *NSW Threatened Species Conservation Act 1995*.

Insect mutualism

Some invertebrate species form mutual relationships with fungi. Ambrosia beetles deliberately infect trees with the spores of the fungi they like to eat, tunneling into the wood to deposit the spores in a location favourable to the fungus. As fungus grows it decomposes the wood and the beetle consumes the nutrient-laden fungus. It is thought that the fungi involved in these relationships are completely dependent on the beetle for survival. There are also species of fungi that form similar symbiotic relationships with certain ant and termite species.

Where and when can fungi be found?

There are fungi in virtually every habitat you can think of: rivers, lakes, estuaries, oceans, alpine areas, arid areas, forests, woodlands, grasslands, coastal heath and artificially created habitats such as lawns and gardens. Wherever there is organic matter fungi won't be far away.

Each habitat has its own unique assemblage of fungi adapted to the conditions present. Some fungi have a wide distribution range whilst others are highly specialised and restricted to areas where a particular tree species exists.

FUNGI SEASON

In the Hunter-Central Rivers region fungi can be found all year round in varying quantities.

The fungi season begins as the weather starts to cool down with the late summer rain in February and extends to the end of July.

The peak of the season occurs after heavy rainfall in autumn.

As the body of the fungus usually isn't visible, it's often not until the fungus fruits that we know it is there. The production of fruit bodies is triggered by a specific set of environmental conditions which can differ from species to species. These are usually related to soil temperature and moisture levels. Not all fungi fruit every year (some only fruit after fire) or in the same place year after year.

Fruit bodies can be produced very quickly in response to the right environmental conditions. The spores that they generate mature rapidly to take advantage of the good growing conditions so most fruit bodies aren't designed to last long (anywhere from less than a day to a few weeks). However, there are fungi that produce fruit bodies that can last for many years, like some bracket fungi. Because many fungi have such an ephemeral nature and specialised ecological requirements it can take over seven years or longer of sampling to discover just how many fungi are present in a given area.

PLACES TO START LOOKING FOR FUNGI

- Parks or gardens, compost heaps
- Your local bushland reserve
- Remnant vegetation on your own property
- Cow or horse paddocks
- National parks
- State forests

SURE-FIND FUNGI HABITAT

- Areas mulched with woodchips
- Around or under decomposing logs
- Amongst leaf litter
- Moist areas such as creek banks
- Cow or horse dung

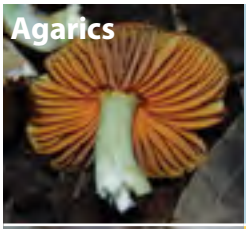
Most fungi fruit after rain and produce fruit bodies that are very susceptible to drying out. Wet forests produce ideal conditions for fungi – you only have to visit a rainforest in autumn to see the diversity and abundance of fungi fruit bodies present in these areas. Dry forests may seem to have a scarce range of fungi in comparison but that is only because a large proportion of the macrofungi that are found in these environments have evolved into a subterranean form (truffles, or crusts and skin) in response to lower moisture levels.

Characteristics important for identification

Form

The fruit bodies of fungi come in a vast array of shapes, colours, sizes and textures. Because they are so incredibly diverse, they are often artificially grouped on the basis of shape (form) to aid identification. Many fungi guide books group fungi in this way to make referencing easier.

Fruit body forms



Have a cap with gills. A stem may be present or absent. Most agarics are mushroom shaped. Agarics without stems are often referred to as 'fans'.

Are mushroom shaped; they have a cap and stem but pores instead of gills. Many boletes change colour when bruised. This can be an important characteristic for identification.

Have hard and woody or leathery textures and pores on their under surface. Can also be known as bracket fungi or shelf fungi.

Are generally globose in form. Earthstars have star-shaped rays. Some are stalked. All have dry powdery spores that are formed inside a sac-like structure.

Come in a diverse range of forms. All have a jelly-like consistency. Spores are produced over the entire surface.

Share the common trait of forming spores in a slimy foul-smelling substance. All emerge from egg-like structures that are often buried under leaf litter or wood chips.

Can be a simple unbranched club shape or highly branched to resemble coral. Spores are produced over the entire outer surface of the fruit body

Can be simple flat discs, obvious cups, stalked and cupped, or stalked with inverted cups (pins). Spores are produced on the smooth interior of the cup. This group consists mostly of ascomycetes.

Come in a diverse range of forms. All produce spores on spines instead of gills or pores.

Are generally globose in form. All have their spores enclosed within the fruit body. Can be found on the soil surface amonst leaf litter or underground.

Agarics

As there are literally thousands of different fungi species that are mushroom-shaped in form, a range of additional features are required to help distinguish individual species including:

- the shape of the cap
- the cap texture
- whether the margins are inrolled or whether they are striate (grooved)
- the way the gills attach to the stem and their spacing
- the shape of the stem and whether there is any evidence of a partial veil (ring on stem or web-like **cortina**) or universal veil remnants on the cap or a cup (**volva**) or ridges at the base of the stem
- the colour of spores.

Mycologists (people who study fungi) use a standard set of terms when describing these features.

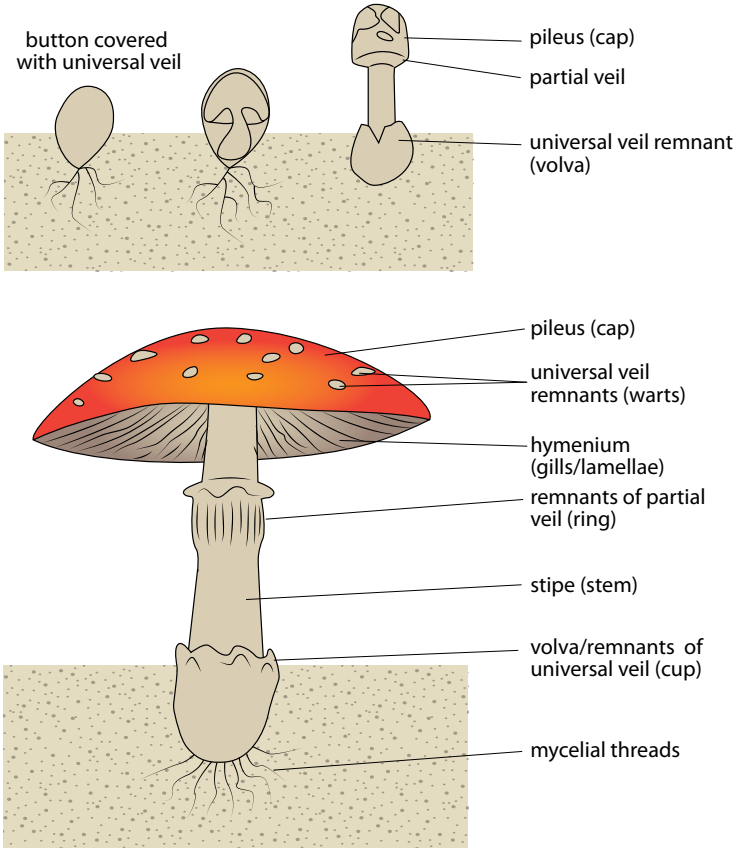


Figure 1b: The structure of a mushroom

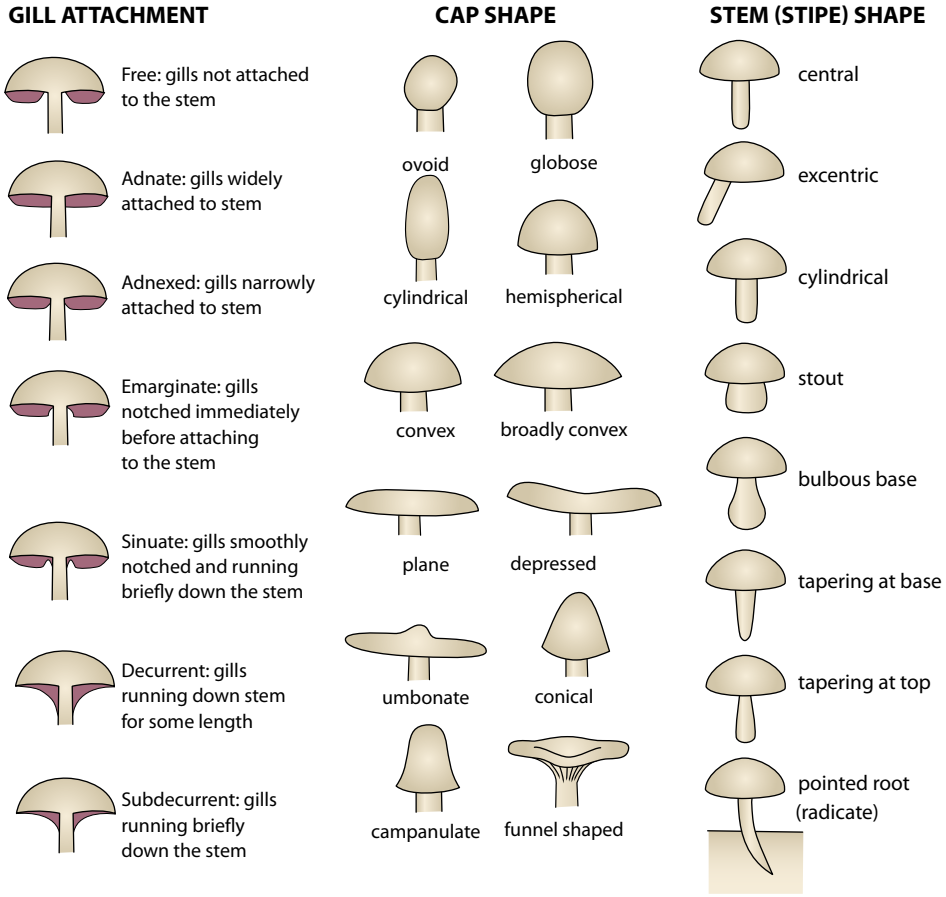


Figure 1c: Morphological terms

Veil (universal and partial) remnants

Whether or not a mushroom has partial or universal remnants can be an important diagnostic characteristic for certain groups of fungi. Evidence that a universal veil was present during fruit body development can take the form of remnants on the surface of the cap or cap margin (such as **warts** or **scales**) or a cup-shaped volva surrounding the base of the stem.

Partial veils rupture as the cap expands to leave a ring around the stem.

CLOCKWISE FROM TOP LEFT: **Universal veil remnants of *Amanita* sp.; Partial veil on *Armillaria* sp.; Ring on *Agrocybe parastica*; volva at base of *Amanita* sp.**

Cortina

A cortina is a web-like partial veil that can leave remnants (or fine web-like remnants) around the stem. Spores are often caught in this, causing it to colour. This can be a helpful way to discover the colour of the spores.

Example of cortinal remnants on Cortinariaceae.

Spores

Whilst some fungi species are readily identified on the basis of their macroscopic characteristics (form, colouration, texture), others require analysis of their microscopic structures. Spores are a very useful identification tool as different groups of fungi have different spore characteristics. Spore colour en masse can help identify which genus a fungus belongs to. The colour of the gills or pores can give a hint as to what the spore colour might be but the best way to be sure is to make a spore print. This technique works best with Basidiomycetes (agarics in particular) as Ascomycetes often have colourless spores.

HOW TO MAKE A SPORE PRINT

Spore prints are easily made by removing the stem and placing the cap (or a piece of the cap) with the gills or pores facing down on a piece of white paper with a cup or container placed over the top to create a humid environment. Leave overnight and, if the fungus is mature, its spores should drop onto the paper. Spore prints can be preserved by spraying artist's fixative over the top.

SPORE PRINT COLOUR OF SOME COMMON FUNGI GENERA

SPORE PRINT COLOUR	COMMON GENERA
White	*Amanita, Anthracophyllum, Armillaria, Auricularia, Cantharellus, Clavulinopsis, Collybia, Cymatoderma, Cyptotrama, Filoboletus, Formitopsis, Hexagonia, Hydnum, Hygrocybe, Laccaria, Lactarius, Laetiporus, Lepiota, Leucocoprinus, Lichenomphalia, Macrolepiota, Marasmius, Microporus, Mycena, Omphalotus, Panellus, Panus, Piptoporus, Podoscypha, Polyporus, Psuedohydnum, Pycnoporus, Russula, Schizophyllum,Stereum, Trametes, Tremella, Tricholomopsis, Xerula*
Pink	*Lepista, Pluteus, Entoloma*
Brown	*Agaricus, Amauroderma, Aseroe, Boletellus, Calvatia, Coltricia, Conocybe, Cortinarius, Dermocybe, Fistulina, Ganoderma, Geastrum, Gymnopilus, Ileodictyon, Inocybe, Lycoperdon, Mutinus, Myriostoma, Phallus, Phlebopus, Scleroderma, Strobilomyces, Tylopilus*
Black	*Coprinellus, Leratiomyces, Parasola, Panaeolina, Panaeolus, Psilocybe*
Green	*Chlorophyllum*

Field notes

Recording notes on the fungi you find will help you make an accurate identification and generates useful local data relating to habitat preferences, timing of fruit body production, and distribution. As there are lots of different characteristics and information to record it is worthwhile setting up a data sheet which you can use to quickly record your information.

Taking photos of the fungi you find in the field to accompany your field notes is highly recommended. As fungi are often found in dark areas a tripod may sometimes be necessary if your camera flash is too bright. A little practice may be required to get good photos but it is definitely worth the effort.

Essential things to record

- **Date** – some fungi only fruit at a certain time of year; recording the date can help narrow the field and also generates a useful timeline for future sightings.
- **Location** – be specific so the same spot can be found later by someone else. Don't rely on memory! If you have a GPS, write the coordinates down.
- **Habitat** – describe the vegetation community you found it in and any plant species close by (if you know them) e.g. 'wet sclerophyll forest – adjacent to *Eucalyptus saligna*'.
- **Substrate** - note what the fungus is growing on. Knowing the substrate helps determine whether it is saprotrophic (decomposer), mycorrhizal or parasitic.
- **Habit** – refers to the number and density of the fruit bodies present; for example, single or scattered or three per square metre.

For Agarics and Boletes the following characteristics should also be recorded

- **Cap** - colour, shape, size, texture, any margin characteristics, presence or absence of veil remnants.
- **Gills** – colour, the way they are attached to the stem (using a hand lens can help determine this), spacing, shape of gill margins.
- **Pores** – colour, the way they attach to the stem, shape, size, whether there is a bruising reaction and the colour it turns, whether the tubes are a different colour from the pores.
- **Stem** – colour, shape, size, whether it is central or not, texture, description of any veil remnants (ring / cortina / volva), presence or absence of mycelium at the base.
- **Spore print colour** (from spore deposits on caps / stems or by making a spore print).
- **Any other distinguishing features** – distinct smell, growing in a 'fairy ring' etc.

For all other types of fruit bodies a general description of features observed should be recorded, such as:

- form
- colour
- size
- texture
- smell
- the way it is attached to substrate
- any other interesting characteristics.

Collecting fungi

Whilst it is best to leave a fungus where you see it and just take a photo, some specimens may need to be picked (collected) so that they can be identified. **Please note** that a licence is required for the collection of fungi in national parks and state forests.

If you are going to collect fungi, only collect what you need. Make sure you choose a healthy looking specimen. There is no point picking a fungus that looks as though it's passed its use by date. If possible collect a range of different-aged fruit bodies (i.e. immature to mature).

When removing a fungus from its substrate be careful not to damage any features that may be important for identification. Fungi growing in soil can be dug up with a trowel to reduce the incidence of damage to a volva (if present) or the stem. Fungi on wood can be prised off with a knife.

Health and Safety

Always wash your hands after handling fungi. Whilst most species of fungi are not poisonous there are some that are.

Never eat a fungus you collect unless you are **absolutely** sure of its edibility. Be careful of urban myths – some poisonous mushrooms can look like edible ones.

Avoid breathing in spores (such as the clouds of spores released by puffballs) as they can be allergenic.

Wash collecting tools / boxes after each use and between sites to prevent the inadvertent spread of pathogens from one remnant to the next.

It's good practice to try to minimise the amount of soil disturbance that occurs when removing the fruit body to reduce the damage to the mycelium. Ensure any logs or bits of wood that have been turned over are returned to their original position.

Fungi dry out very quickly and damage easily once they have been picked. Flat rectangular fishing tackle boxes make great collecting containers. Large specimens can be wrapped in aluminium foil or baking paper and placed in a basket or carry bag for protection. Keep samples separate from each other to prevent cross-contamination of spores.

If you are unable to identify the fungi samples you have collected straight away, their longevity can be prolonged by refrigeration.

Preserving fungi

You may need to preserve some of the fungi you have collected as evidence of their presence in an area or for study at a later date. Drying is the best way to preserve fungi long term. Drying does not cause damage to the microscopic structures and specimens can be rehydrated if further study is required.

Dried specimens often lose their form and colour so it is important to record these aspects prior to drying. Food dehydrators are perfect for drying specimens and air drying can be effective if undertaken in a dry environment. Large specimens may need to be cut in half to facilitate drying. Once dry, samples can be stored in snap-lock bags in an airtight container with a desiccant. Make sure samples are well dried or they can go mouldy, rendering them useless. Adding a label to the bag with a collection number, date and the location found will ensure samples don't get mixed up.

How to use this book

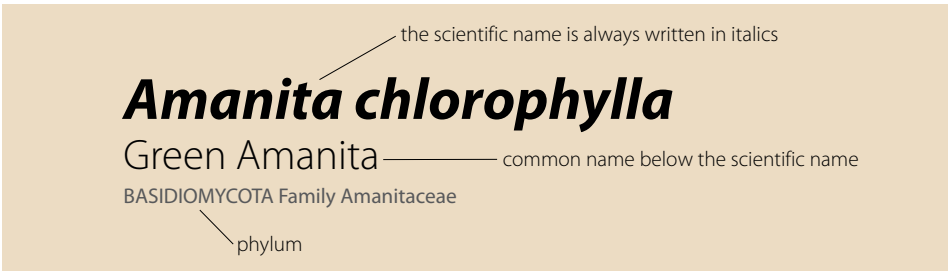
Groupings

To help with identification, the fungi in this book are grouped according to form as described on page nine and in alphabetical order.

Understanding scientific names

Scientific names can seem quite daunting at first; however, they are very important to properly distinguish one species of organism from another. Every species described by a taxonomist is given a scientific name that consists of two parts. The first part indicates the genus (the group the species belongs to) and the second is the individual species' name. Together they form a unique identifier. Scientific names (derived from Latin and Greek) are universal. Their use (rather than common names) allows a species name to remain the same no matter what language is spoken. This is particularly helpful when one species is found in many different countries. Although common names are often easier to remember they tend to vary between regions, which can lead to confusion and misidentifications.

Learning common names is a great starting point for people new to fungi but if you are interested in learning which species of fungi are related to which, learning the scientific name will help immensely. The fungi featured in this book are listed by their scientific name and, where possible, any common names that apply.



Using the traditional form of biological classification, related **species** are grouped into **genera (genus** (s)), related genera into **families**, related families into **orders,** then **classes, subphyla**, **phyla** and finally **kingdoms**. Using the Green Amanita as an example, the hierarchy would be as follows:

1. **Kingdom:** Fungi
2. **Phylum:** Basidiomycota
3. **Subphylum:** Agaricomycotina
4. **Class:** Agaricomycetes
5. **Order:** Agaricales
6. **Family:** Amanitaceae
7. **Genus:** Amanita
8. **Species:** *Amanita chlorophylla*

To reduce the amount of complex taxonomic information in this publication only the family, phylum, genus and species are listed.

Fungimap: putting Australian fungi on the map

Fungimap is dedicated to improving knowledge and conservation of Australian macrofungi. One of the main activities of Fungimap is the mapping of over 100 recognisable target species. A number of the target species are found in the Hunter-Central Rivers region and are included in this publication. If you come across any of the target species, please send your record to **http://fungimap.org.au**. Act locally and contribute nationally to help map the distribution of these species and help the future conservation of fungi.

Fungi's role in sustainable land management

Hunter Local Land Services recognises the essential role fungi play in natural systems, from agricultural lands to conservation areas.

A resilient natural system is one that can retain its function and structure despite experiencing shocks, such as drought, flood, human activity, and changes in climate.

Furthering our knowledge on the variety and distribution of fungi in the Hunter-Central Rivers region can help us better understand how these fascinating organisms give our natural systems the strength and resilience they require for the longer term.

Agarics

Agarics are mostly mushroom-shaped fungi (with a cap, stem and gills). Some species lack a stem and are attached directly to a substrate. Agarics are generally soft and fleshy.

Roridomyces austroridus

Leptonia sp.

Amanita chlorophylla

Green Amanita

BASIDIOMYCOTA Family Amanitaceae

CAP	Dull pale cream to grey-green, convex, becoming flat with age, veil remnants leaving soft, flat patches on the cap surface and a ragged edge around the margin. Up to 12 cm.
GILLS	Light grey-green, margin very pale, free, crowded.
STEM	Pale grey-green, central, solid, cylindrical with a bulbous base, finely hairy, 12 cm x 2 cm. Has a pale grey-green membranous, flared and finely grooved (striate) ring that is very fragile and falls away easily. May have volval remnants in the form of zones or a ridge at the top of the bulbous base.
SPORES	Very pale cream grey-green print, elongate, 10 x 6 µm.
HABITAT	Forests with *Allocasuarina torulosa* or *A. littoralis.*
SUBSTRATE	Sandy soils with abundant litter. MYCORRHIZAL.
HABIT	Solitary to scattered.
SEASON	Summer to autumn.
COMMENTS	Uncommon. Native. Closely related to *Amanita austroviridis.* Very distinctive fungus due to its green gills and large, solid growth habit. **FUNGIMAP TARGET SPECIES**

Amanita muscaria

Fly Agaric

BASIDIOMYCOTA Family Amanitaceae

CAP	Yellow-orange to scarlet with white to cream warts, globular initially, expanding and flattening out with age, may be sticky. Up to 25 cm.
GILLS	White, free, close, with several tiers of short gills (lamellulae).
STEM	White, central, solid with a bulbous base, smooth to lightly textured, 20 cm+ long. Has a large ring which is white to cream, membranous, slightly striate, and pendulous. The volva takes the form of a series of warty rings around the bulbous base.
SPORES	White print, smooth, ellipsoid to ovoid, 10 x 7 µm.
HABITAT	Adjacent to exotic trees, particularly pine, birch and beech trees and more recently near native species such as *Nothofagus* sp.
SUBSTRATE	In soil and litter. MYCORRHIZAL.
HABIT	Solitary or in groups.
SEASON	Summer to autumn.
COMMENTS	Common in specific habitats. Exotic and poisonous. Easily recognised though occasionally there are no warts on the cap. May be confused with *Amanita xanthocephala,* though this species is much smaller in stature and lacks white warts on it cap. There is concern that this species is displacing native fungi by invading native vegetation. **FUNGIMAP TARGET SPECIES**

Amanita ochrophylla (group)

BASIDIOMYCOTA Family Amanitaceae

CAP	Pale creamy-brown apricot, with large lightly coloured flat scales or chunky warts often lost with age, globular when young, flattening out at maturity. Up to 24 cm.
GILLS	Dull creamy-yellow becoming browner with age, free, crowded, two tiers of short gills (lamellulae).
STEM	Colour similar to cap, central, solid, smooth to slightly textured with a large bulbous base. Up to 15 cm x 2 cm. Double ring often seen, one attached just below the gills (membranous, striate) and a smaller, thicker, non-striate, one lower down the stem.
SPORES	White print, 10 x 6.5 µm, smooth, ellipsoid to elongate.
HABITAT	Woodlands and open forests.
SUBSTRATE	Soil and leaf litter. MYCORRHIZAL.
HABIT	Often found in groups, though can be solitary.
COMMENTS	Common. Native. Easy to identify with its double ring, bulbous base and dull, pale apricot-buff colour. In this group there are not only similar-looking species but variation within a species due to growing conditions. For example, *Amanita ochraceobulbosa* is almost identical to *A. ochrophylloides,* the difference being that it has large warts on the cap surface and only has a single ring lower on the stem. These different species can be confusing so they are often referred to as the *Amanita ochrophylla* group.

Amanita xanthocephala

Vermilion Grisette / Pretty Grisette

BASIDIOMYCOTA Family Amanitaceae

CAP	Yellow to orange through to red with cream to yellow or orange patches of universal veil remnants that wash off easily with rain; convex when immature, expanding to flat with age; margin striate and usually lighter in colour. Up to 6 cm.
GILLS	White to pale yellow, free, moderately close.
STEM	Lightly coloured to lemon or orange tinted, central, solid, slightly swollen base. No ring present. Volva consists of a shallow lightly coloured cup at the base of the stem with an intensely yellow-orange ring on the edge. This ring easily crumbles and is often lost or damaged.
SPORES	White print, smooth, globose, 9 x 7 µm.
HABITAT	A variety of habitats including, forests, woodlands and heathlands.
SUBSTRATE	Soil and litter. MYCORRHIZAL.
HABIT	Usually one or two but can be found in groups.
COMMENTS	Common. Native. Is easily identifiable with its yellow volva edge, flat scales of veil remnants and lack of ring. It can be variable in size and colour and if the volva is lost, identification may be harder. Possibly confused with small yellow-orange specimens of *Amanita muscaria,* which tends to grow under exotic tree species. **FUNGIMAP TARGET SPECIES**

Anthracophyllum archeri

Orange Fan

BASIDIOMYCOTA Family Marasmiaceae

CAP	Dull orange to bright red, fading with maturity, shallow, convex fan-shaped bracket; smooth, lobed, slightly wrinkled. Up to 4 cm.
GILLS	Dark red tan, radiate out from cap's point of attachment, thick, widely spaced, shallow (may look more like wrinkles than gills).
STEM	Absent or, if present, only 1 mm long, more easily seen in immature specimens.
SPORES	White print, ellipsoid, smooth, hyaline, 9.5 x 5 µm.
HABITAT	Mostly found in moist vegetation communities but has also been recorded from drier woodlands and forests.
SUBSTRATE	Small dead twigs, vines and branches. SAPROTROPHIC.
HABIT	Usually found in dense clusters that overlap each other, can also be solitary or widely scattered.
SEASON	All year round if conditions are suitable.
COMMENTS	Native. Is easily recognised by its colour, small fan shape and widely spaced gills. Colour can vary from darker red-brown to paler tan depending on how wet or dry the habitat is. **FUNGIMAP TARGET SPECIES**

Armillaria luteobubalina

Honey Fungus

BASIDIOMYCOTA Family Agaricaceae

CAP	Yellow to brownish yellow, may also be creamish or with green tints, covered with fine brown wart-like scales that can wear off with age, convex to broadly umbonate, becoming plane to upturned with maturity, incurved margins when young. Up to 10 cm.
GILLS	White becoming cream and marked with rusty brown or yellow spots on the gill margin, sinuate, close.
STEM	Central, tough, tapering slightly towards the base, persistent, thick, lightly coloured ring present high on stem (even if damaged a solid ridge will remain), pale above the ring, and dirty yellow below, browner towards the base. Up to 6–20 cm x 2 cm.
SPORE	White print, smooth, ellipsoidal, 9–6 µm.
HABITAT	Various habitats from forests, woodlands through to swamps, orchards, parks and gardens.
SUBSTRATE	Wood of dead and living trees and shrubs, including roots. PARASITIC & SAPROTROPHIC.
HABIT	Usually in dense clusters.
SEASON	Autumn to spring.
COMMENTS	Native. A very destructive pathogen that has been responsible for the loss of many park and garden trees. **FUNGIMAP TARGET SPECIES**

Chlorophyllum molybdites

Green-gilled Parasol / False Parasol

BASIDIOMYCOTA Family Agaricaceae

CAP	Pale off-white with obvious brown scales in concentric rings becoming more concentrated towards the centre, which is often solid brown, globular when immature expanding to become convex to plane with a raised point (umbel) at maturity.
GILLS	White when immature, quickly becoming dull grey-green to green as spores mature, free.
STEM	Dull white becoming pale grey-brown, smooth, central, cylindrical with swollen base, hollow. Has a thick white, double-moveable ring high on the stem. Up to 28 cm x 2.5 cm.
SPORE	Olive-green print, smooth, broadly elliptical, truncated at one end by germ pore, thick walled, 10 x 8 µm.
HABITAT	Grassy areas, including lawns, usually where there has been some kind of disturbance.
SUBSTRATE	Soil. SAPROTROPHIC.
HABIT	Can be solitary, but is usually gregarious.
SEASON	Summer to autumn.
COMMENTS	Common. Cosmopolitan. Poisonous. Easily recognised by its size, scaly cap with darker centre, light grey-green gills and spores as it matures. Stains red when damaged. Not to be confused with *Macrolepiota dolichaula* which has whitish gills and spores at maturity.

Conocybe apala

Milky Cone Cap

BASIDIOMYCOTA Family Bolbitiaceae

CAP	Lightly coloured to pale tan, conical becoming campanulate, translucent striate margin almost to the centre (more obvious when wet), smooth, dull, thin, fleshed. Up to 1–2.5 cm.
GILLS	Cream-coloured when immature, becoming light tan with maturity, ascending, narrowly adnate.
STEM	Light-coloured, cylindrical, smooth, hollow and brittle with a slightly swollen base. Up to 6 cm x 0.3 cm.
SPORES	Rust brown print, smooth, elliptical, thick-walled with germ pore, 14 x 8 µm.
HABITAT	Lawns, paddocks, parks and roadsides.
SUBSTRATE	On nutrient-rich soils. SAPROTROPHIC.
HABIT	Solitary to gregarious.
SEASON	Late summer to autumn.
COMMENTS	Cosmopolitan. Widespread. Easily seen on lawns and grassy areas after rain or heavy dew in the early mornings. Decays quickly after the sun comes out. Identified by its light-coloured cap, light tan gills and delicate white stem. Used to be known as *Conocybe lactea*. Other *Conocybe* species could be confused but easily identified to genus.

Coprinellus disseminatus

Fairy Bonnets / Ink Caps

BASIDIOMYCOTA Family Psathyrellaceae

CAP	White to cream coloured when immature, becoming pale grey then darker as spores mature; slight ochre tints in centre, parabolic when immature, expanding to near campanulate with age, translucent striate to the apex. Up to 1–1.5 cm.
GILLS	Lightly coloured when immature changing to grey-brown then black-brown when mature, broadly adnate.
STEM	Light coloured, shiny, cylindrical, slender, hollow.
SPORES	Spore print black, smooth, thickish walled, elliptical with germ pore, 9 x 5 µm.
HABITAT	Often around old stumps and bases of dead trees and buried roots.
SUBSTRATE	Wood and adjacent humus-rich soil from rotting wood. SAPROTROPHIC.
HABIT	Densely gregarious to caespitose, can form very large troops, occasionally observed in ones and twos.
SEASON	Spring to autumn.
COMMENTS	Cosmopolitan. Widespread. Easily recognised by its small, striate bell-shaped caps and its occurrence in distinctive large troops. Used to be known as *Coprinus disseminatus*. Could be confused with other *Coprinellus* species; however, this one tends to be noticeably smaller and is not one that autodigests (deliquescent).

Coprinellus micaceus / truncorum

Glistening Ink Cap

BASIDIOMYCOTA Family Psathyrellaceae

CAP	Lightly coloured, darker tan in centre, small, white mica-like scales or tiny warts on surface, hemispherical when immature, maturing to parabolic and campanulate with the margin undulating and splitting, grooved (striate) almost to the centre. Up to 1–2 mm tall x 1–3 mm wide.
GILLS	White when immature, then lilac-grey to black as spores mature.
STEM	White, yellowing with age, cylindrical, hollow, fragile. From 3–10 mm x 2–4 mm.
SPORES	Black, mitre-like (mitriform), truncated from germ pore, 8 x 4 µm.
HABITAT	Various, from gardens to bush area.
SUBSTRATE	Rotting wood and stumps. SAPROTROPHIC.
HABIT	Gregarious.
SEASON	Spring to autumn.
COMMENTS	Cosmopolitan. Widespread. Attractive species when fresh with distinctive white flecks of scales sprinkled over its cap – these wash off with rain. Autodigests slowly. *Coprinellus micaceus* and *C. truncorum* are almost identical. A microscope is needed to confirm identity.

Cortinarius archeri

Archer's Cortinar / Emperor Cortinar

BASIDIOMYCOTA Family Cortinariaceae

CAP	Intense purple initially becoming purple-brown and even brown as spores settle on the cap, convex to broadly convex flattening with age, initially glutinous (slimy), though in dry weather this can disappear quickly, dries to a satiny lustre. Up to 10 cm.
GILLS	Lilac-purple / brown that becomes browner as spores mature, slightly sinuate to adnate, moderately close.
STEM	Lilac at cap junction, deep purple towards base, stout, often with swollen base, has a ring in the form of web-like threads (cortina) which is often rusty-brown with spores. Up to 9 cm x 2 cm.
SPORE	Brown, almond-shaped, finely ornamented and thick walled, 13 x 7.5 µm.
HABITAT	Various forest types, particularly where there are eucalypt species.
SUBSTRATE	Soil. MYCORRHIZAL.
HABIT	Solitary, gregarious to caespitose.
SEASON	Summer to winter.
COMMENTS	Common. Native. Easily recognised by its colour, size and glutinous or shiny cap. Even if the cap is dry. You can put a damp finger to it and feel the slight stickiness. May be confused with other *Cortinarius* species such as *C. subarcheri and C. microarcheri,* both of which are of finer stature.

Cortinarius rotundisporus

Elegant Blue Webcap

BASIDIOMYCOTA Family Cortinariaceae

CAP	Pale metal-blue, darker when immature with honey-coloured broad, central umbo, convex but flattening with age. Slimy (viscid) at first becoming dry and satiny. Up to 7 cm.
GILLS	Pale dusty lavender becoming rusty-lavender with maturing spores, adnate to sinuate, close.
STEM	Pale lilac-blue at top, central, slender, swollen base, superior (high on the stem) ring in the form of a cortina (fine web-like threads). Up to 12 cm x 2 cm.
SPORES	Rusty-brown print, broadly elliptical to subglobose, thick-walled and finely warty, 8.5 x 6.5 µm.
HABITAT	Various forest types.
SUBSTRATE	Soil. MYCORRHIZAL.
HABIT	Solitary or small groups.
SEASON	Autumn to winter.
COMMENTS	Common. Native. Easily recognised by its colour and tall stature. Could be confused with *Cortinarius* (*Rozites*) *metallicus;* however, this species has white spots of veil remnants on its cap and is associated with *Nothofagus cunninghamii* in Tasmania. **FUNGIMAP TARGET SPECIES**

Cortinarius sinapicolor

Slimy Yellow Cortinar

BASIDIOMYCOTA Family Cortinariaceae

CAP	Bright, golden yellow turning a browny yellow with maturity, very slimy (viscid), broadly convex flattening with age, undulating margin, small umbo. Up to 7 cm.
GILLS	Initially yellow then changing to brown and bright brown as spores mature, adnate to sinuately adnexed, close.
STEM	Top section yellow and the remainder is a rusty yellow and slimy, has a pale yellow cortina, which becomes rusty with spores, tapering towards cap with a swollen base. Up to 6 cm x 0.5 cm.
SPORES	Rusty-brown print, elliptical, flattened in profile, finely warty, 8 x 5 µm.
HABITAT	Various forest types.
SUBSTRATE	Soil. MYCORRHIZAL.
HABIT	Solitary to gregarious.
SEASON	Autumn to winter.
COMMENTS	Moderately common. Native. Noticeable peppery odour. This distinctly yellow and slimy fungus is easily recognised.

Cyptotrama asprata

Gold Tufts / Golden-scruffy Collybia

BASIDIOMYCOTA Family Physalacriaceae

CAP	A circular spiky orange-yellow ball when immature, becoming convex then flattening, the tufts of fibrils that look like spikes lose colour from bright yellow to very pale cream and then erode away, inrolled margin initially. Up to 5 cm.
GILLS	White, adnate, moderately widely spaced.
STEM	Yellowish, lighter near cap, covered with loose yellowish particles, central, cylindrical, fine cobwebby veil protects immature gills but disappears quickly. Up to 5 cm x 0.5 cm.
SPORES	White print, smooth, subglobose, 8 x 6 µm.
HABITAT	Moist vegetation communities.
SUBSTRATE	On fallen dead wood of various sizes. SAPROTROPHIC.
HABIT	Solitary or groups.
SEASON	Summer through to winter.
COMMENTS	Cosmopolitan. Common – can be very abundant at times. Often called *Cyptotrama aspratum* – *Cyptotrama* is feminine in Latin so the correct ending should be 'ta' not 'tum'. **FUNGIMAP TARGET SPECIES**

Filoboletus manipularis

BASIDIOMYCOTA Family Mycenaceae

CAP	Off-white with slightly brown centre, convex to conically campanulate, umbonate, smooth, appearing slightly bumpy over the underlying pores, flesh soft, thin and translucent, margin initially curved. Up to 3 cm.
PORES	Lightly coloured, adnate to subdecurrent, slightly angular, almost radially arranged.
STEM	Lightly coloured, finely dusty (pruinose), central, slender, cylindrical, semi-translucent, hollow, brittle. Up to 8 x 0.3 cm.
SPORES	White print, smooth, broadly elliptical, thin-walled, 6 x 4.5 µm.
HABITAT	Moist forests, usually tropical or subtropical, though is found in warm temperate forests.
SUBSTRATE	Rotting wood. SAPROTROPHIC.
HABIT	Gregarious to densely caespitose.
SEASON	Summer to winter.
COMMENTS	Common. Cosmopolitan. Easily recognised by its form, colouring and pores. It has been recorded as being luminous in some regions. Interestingly, this species is related to *Mycena* even though it is pored.

Gliophorus chromolimoneus

BASIDIOMYCOTA Family Hygrophoraceae

CAP	Bright yellow, convex becoming plane with depressed centre, smooth, sticky or slimy with a very finely scalloped margin. Up to 2 cm.
GILLS	Paler yellow than cap and becoming lighter as spores mature, decurrent, distant, moderately thick.
STEM	Bright yellow, cylindrical or tapering to base, hollow, smooth. Up to 3 cm x 0.3 cm.
SPORES	White print, smooth oblong to ellipsoidal, 8 x 5 µm.
HABITAT	Moist vegetation communities.
SUBSTRATE	Soil amongst litter and moss. SAPROTROPHIC.
HABIT	Solitary, but normally in groups.
SEASON	Autumn to winter.
COMMENTS	Common. Cosmopolitan. An easily distinguishable bright yellow sticky (or if dried, shiny) fungus. Was previously known as *Hygrocybe chromolimonea*.

Gymnopilus junonius

Spectacular Rustgill

BASIDIOMYCOTA Family Strophariaceae

CAP	Golden cinnamon, convex, becoming irregularly flattened with age, dry, covered with fine fibres becoming more scaly with age, inrolled margins. Up to 15 cm.
GILLS	Pale yellow, becoming rusty brown as spores mature, adnate to sinuate, crowded, thin.
STEM	Golden towards cap, cinnamon at base, central, tall, thick and solid with a swollen base, smooth, longitudinally fibrous, has a high membranous ring that becomes rusty brown with spores. Up to 12 cm x 2 cm.
SPORES	Rusty-brown print, broadly elliptical, coarsely warty, 9 x 6 µm.
HABITAT	Various vegetation communities and gardens.
SUBSTRATE	At the base of living and dead trees and stumps. SAPROTROPHIC.
HABIT	Gregarious to caespitose, forming large overlapping colonies.
SEASON	Summer to winter.
COMMENTS	Common. Cosmopolitan. The large and robust stature, colour, finely fibrous / scaly cap, and gregarious growth habit, make it easy to identify. The spores can often be seen coating lower caps in the cluster and also the soil below. In the past, was often identified as *G. pampeanus*. **FUNGIMAP TARGET SPECIES**

Gymnopus eucalyptorum

BASIDIOMYCOTA Family Tricholomataceae

CAP	Dull creamish-buff to cinnamon buff in the centre, broadly convex to plane with age, smooth, margins slightly upturned. Up to 3.5 cm diameter.
GILLS	Cream, adnexed, narrow, crowded, short gills (lamellulae) along margin.
STEM	Central, narrow, smooth, pale brown to reddish brown.
SPORES	Spore print white, smooth, ellipsoid, 7 x 4 µm.
HABITAT	Moist vegetation communities.
SUBSTRATE	Old wood often covered by moss and fibrous bark. SAPROTROPHIC.
HABIT	Gregarious.
SEASON	Autumn to winter
COMMENTS	Relatively common. Native. Many *Collybia* species are now in the genus *Gymnopus*. The mossy, fibrous bark substrate and gregarious nature of this species with the cream colouration in the cap and gills make it easy to identify.

Humidicutis lewellinae

Mauve Waxy-gills / Mauve Splitting Cap

BASIDIOMYCOTA Family Hygrophoraceae

CAP	Lilac to mauve, conical often with low umbo (raised knob), becoming flatter with age, smooth, margin splits radially along the centre of the gills dividing them in two. Up to 6 cm.
GILLS	Pale lilac, adnexed to free, thick, waxy, distant.
STEM	Pale lilac, cylindrical, can taper to a yellowish base, smooth, hollow. Up to 7 cm long x 0.7 cm.
SPORES	White print, smooth, ovoid to almond-shaped, 9 x 5.5 µm.
HABITAT	Moist vegetation communities.
SUBSTRATE	Soil amongst moss and leaf litter. SAPROTROPHIC.
HABIT	Solitary, but often in groups.
SEASON	Autumn to spring.
COMMENTS	Common. Cosmopolitan. It is thought that *Humidicutis mavis* may be eventually shown to be a white version of *H. lewelliniae*. Both species have the distinctive characteristic of the cap splitting along the centre of the gills. May be confused with *Hygrocybe cheelii*, which can be distinguished by its decurrent gills. **FUNGIMAP TARGET SPECIES**

Hygrophorus involutus

BASIDIOMYCOTA Family Hygrophoraceae

CAP	Pale cream to pale apricot, broadly convex, glutinous if moist, margins noticeably curved under and often with small droplets of water. Up to 3.5 cm.
GILLS	Lightly coloured to pale lemon-apricot, adnate, close.
STEM	Same colours as cap, central, slender, tapering slightly downwards, smooth with noticeable surface-water droplets just below the cap, which may extend all the way to the base. Up to 4 cm.
SPORES	White print, smooth, ellipsoidal, 6.5 x 3 µm.
HABITAT	Moist forests.
SUBSTRATE	Soil and humus. SAPROTROPHIC.
HABIT	Solitary or in groups.
SEASON	Autumn to winter.
COMMENTS	Common. Cosmopolitan. A distinctive pale-coloured *Hygrophoraceae* species (most are brightly coloured). The cap margin curving towards the gills, its glutinous feel and surface water droplets (on stem and along cap margin) make this species easy to recognise.

Lactarius clarkeae

Suede Milk Cap

BASIDIOMYCOTA Family Russulaceae

CAP	Yellow-tan to orange brown, convex when immature, becoming centrally depressed with age, often irregularly shaped or flared, incurved margins when young, finely felty giving a matt appearance. If damaged, white fluid weeps from the break on any part of the fruit body. Up to 1 cm.
GILLS	Creamy white, adnate to subdecurrent, thick, subdistant.
STEM	Similar colour to cap but paler, central, stout, may taper towards base, smooth, solid (until insects eat out the centre). Up to 4 cm x 1.5 cm.
SPORES	White print, covered in warts and fine ridges, subglobose, 9 x 7 µm.
HABITAT	In various vegetation communities.
SUBSTRATE	Soil amongst litter. MYCORRHIZAL.
HABIT	Solitary to scattered.
SEASON	Autumn to winter.
COMMENTS	Relatively common. Native. A striking looking fungus that is easily recognised. Could possibly be confused with *Russula flocktoniae*, though easily distinguished when the fungus is damaged. *Russula* do not weep exudate when damaged whereas *Lactaria* do.

Lactarius deliciosus

Saffron Milk Cap

BASIDIOMYCOTA Family Russulaceae

CAP	Pink-orange to pale apricot, often with concentric zones of colour, convex with incurved margins initially then maturing to a strongly indented wide vase shape. Any part of the fruit body may colour a deep blue-green with age or damage and will weep orange-coloured juice (exudate) if damaged. The flesh is a bright saffron colour when cut. Up to 16 cm.
GILLS	Pale orange to apricot, adnate to subdecurrent, close.
STEM	Blotched orange on light background, cylindrical, solid, smooth. Up to 6 cm x 2 cm.
SPORES	Pale yellow / white print, warty with ridges, ellipsoidal, 8 x 7 µm.
HABITAT	Under pine trees.
SUBSTRATE	Soil. MYCORRHIZAL.
HABIT	Solitary or in groups.
SEASON	Autumn to winter.
COMMENTS	Common in pine plantations. Exotic. Was introduced into Australia to help with the growth of exotic pines in plantations. Prior to the introduction of mycorrhizal fungi that were associated with the pines in their countries of origin the trees did not flourish. A very distinctive *Lactarius* because of its colour, orange exudate (which gives it its common name) and blue-green bruising.

Lactarius eucalypti

Terracotta Mushroom

BASIDIOMYCOTA Family Russulaceae

CAP	Red / pink brown, convex with incurved margin when immature, becoming depressed in the centre with age. As with all species in this family it will weep juice (exudate) from all parts of the fruit body if damaged when fresh (white exudate for this species). Up to 4.5 cm.
GILLS	Pale cream initially then darker with age, adnate to subdecurrent, close.
STEM	Similar colour to cap but a little paler, central, cylindrical, smooth, to 7 cm tall.
SPORES	White print, ellipsoidal, covered with fine raised ridges, 8 x 6.5 µm.
HABITAT	Various vegetation communities.
SUBSTRATE	Soil. MYCORRHIZAL.
HABIT	Solitary or scattered.
SEASON	Autumn to winter.
COMMENTS	Common. Native. At times very abundant. Easily recognised species by its colouration, white exudate and having a relatively narrow cap compared to the height of its stem. *L. clarkeae* is much more orange and is larger in form.

Lactarius wirrabara

BASIDIOMYCOTA Family Russulaceae

CAP	Pale to dark brown, convex, becoming centrally depressed and slightly irregular with age, finely velvety to give a matt appearance. Up to 8 cm.
GILLS	White to cream, staining light pink, adnate to subdecurrent, distant, exudes white latex when damaged, which turns brown.
STEM	Pale to dark brown, central, cylindrical, stoutish, matt texture, becoming hollow. Up to 5 cm x 1.5 cm.
SPORES	White print, subglobose, covered with fine ridges, 8.5 x 8 µm.
HABITAT	Moist forests and eucalypt communities.
SUBSTRATE	Soil. MYCORRHIZAL.
HABIT	Solitary.
SEASON	Autumn to winter.
COMMENTS	Common. Native. An easily recognised dark brown *Lactarius* species. *Wirrabara* is an Indigenous Australian word which relates to the fungus's preferred habitat of moist forests and eucalypt communities.

Lepista nuda

Wood Blewit

BASIDIOMYCOTA Family Tricholomataceae

CAP	Transitions in colour from lilac to lilac-brown with maturity, convex, becoming flattened to undulate, smooth to fibrillose (fine fibres), dry, shiny, inrolled margin when young becoming wavy and upturned with maturity. Up to 7 cm.
GILLS	Lilac to lilac-brown, sinuately adnexed, moderately close to crowded.
STEM	Violet when young, fading to a whitish colour, central, cylindrical and sometimes bulbous, longitudinal fibres. Up to 5–10 cm x 1–3 cm.
SPORES	Pale pink spore print, ellipsoid, finely ornamented, 7 x 5 µm.
HABITAT	Eucalypt forests and amongst exotic trees and pines and gardens.
SUBSTRATE	Soil or leaf litter. SAPROTROPHIC.
HABIT	Occurs singly or in clusters.
SEASON	Autumn to winter.
COMMENTS	Common. Cosmopolitan. Possibly exotic. May be confused with lilac *Cortinarius* species (though these have brown spores) or *Leucopaxillus lilacinus* (Purple Turnover) which have white spores. **FUNGIMAP TARGET SPECIES**

Leratiomyces ceres

Red Woodchips Fungus

BASIDIOMYCOTA Family Strophariaceae

CAP	Red-brown to bright red orange, usually with distinctive white flecks around the edge of the cap when immature and forming a ring of dots just in from the margin when more mature, though these are easily rubbed off; convex, with slight umbo, becoming flat with age, quite slimy if moist, drying to a satiny appearance. Up to 5 cm.
GILLS	Initially a pale creamy off-white that mottles purple brown as spores mature, sinuate – adnexed, crowded.
STEM	Similar colour to cap or paler, often covered with fine light scales particularly on the lower half, central, slender with a somewhat swollen base. Up to 8 cm x 0.5 cm.
SPORES	Purple-brown print, ellipsoidal with germ pore, smooth, 12 x 7 µm.
HABITAT	Variety of vegetation communities, disturbed areas such as gardens, lawns, roadside verges.
SUBSTRATE	Organically rich soils. SAPROTROPHIC.
HABIT	Solitary, scattered groups to dense colonies.
SEASON	Autumn to winter.
COMMENTS	Common. Cosmopolitan. Distinctive species due to its bright red / orange brown cap with white flecks, glutinous surface (when wet) and purple-brown mottled gills. Was formerly known as *Hypholoma aurantiacum*.

Leucocoprinus birnbaumii

Yellow House Plant Mushroom / Flowerpot Parasol

BASIDIOMYCOTA Family Agaricaceae

CAP	Distinctive bright sulphur yellow colour, conical becoming campanulate, umbonate and finally plane with an inverted centre, covered in pointed powdery scales which flatten with maturity, striate margins, thin fleshed. Up to 7 cm.
GILLS	Yellow to pale yellow, free, close.
STEM	Bright sulfur yellow, central, cylindrical, tapering towards cap, bulbous at base, finely scaly, has a membranous yellow ring (annulus) that breaks down quickly and may be absent from older specimens. Up to 8 cm x 0.5 cm.
SPORES	White print, oval, smooth, thick walled with germ pore, 10 x 8 µm.
SUBSTRATE	Soil. SAPROTROPHIC.
HABITAT	A variety of habitats but is most often observed fruiting in potting mix or amongst mulch.
HABIT	Solitary to small clusters – often gregarious.
SEASON	Whenever conditions are suitable for growth.
COMMENTS	Common. Cosmopolitan. Easily recognised by its bright yellow colouring and form and preference for potting mix. Poisonous.

Leucocoprinus fragilissimus

Yellow Parasol

BASIDIOMYCOTA Family Agaricaceae

CAP	Pale surface covered with minute yellow squamules along the radial ridges with darker yellow central disc, convex, becoming plane, very thinly fleshed (almost translucent, particularly at margins), delicate, margins grooved (striate), covered with fine powdery scales. Up to 4 cm.
GILLS	White, free, close with several tiers of shorter gills (lamellulae).
STEM	Yellow, central, cylindrical, slightly wider at base, hollow, covered in very fine hairs / scales, has a small membranous yellow ring midway up stem. Up to 8 cm x 0.3 cm.
SPORES	White print, elliptical, smooth, with germ pore, 11 x 7 µm.
HABITAT	Variety of forest types, occasionally in disturbed areas.
SUBSTRATE	Leaf litter. SAPROTROPHIC.
HABIT	Solitary or scattered in small troops.
SEASON	Summer to autumn.
COMMENTS	Common. Cosmopolitan. Easily identified by its fine delicate form and pale yellow colouring. Fruit bodies are extremely fragile, often collapsing if not handled with care.

Lichenomphalia chromacea

Yellow Navel

BASIDIOMYCOTA Family Hygrophoraceae

CAP	Bright yellow to dull yellow orange, convex with depressed centre (umbilicate) to almost funnel-shaped; smooth, matt, margin is wavy, translucent grooved (striate) and generally incurved. Up to 3 cm.
GILLS	Bright yellow, decurrent, very occasionally adnate, often forked (anastomosing), thick, moderately close to distant spacing.
STEM	Yellow, slender, cylindrical, sometimes flattened, smooth, finely striate, tough. Up to 3 cm x 0.3 cm.
SPORES	White print, ellipsoid, 8 x 4 µm.
HABITAT	Most habitats, often in disturbed areas such as bank cuttings.
SUBSTRATE	Bare ground or amongst moss – always associated with a green alga or mosses. SYMBIOTIC.
HABIT	Small clusters to gregarious.
SEASON	Autumn to early summer.
COMMENTS	Very common. Native. This species grows symbiotically with a green alga (*Coccomyxa*) in a similar way to that of a lichen. The lichenised part of the association is often inconspicuous consisting of near-microscopic scattered green balls. Was previously known as *Omphalina chromacea* and *Phytoconis chromacea*. Could possibly be confused with other small similarly coloured mushrooms such as *Rickenella fibula* (Orange Moss Cap). *R. fibula* has a much longer and slender stem and its cap is more convex. **FUNGIMAP TARGET SPECIES**

Macrolepiota clelandii

Parasol Mushroom

BASIDIOMYCOTA Family Agaricaceae

CAP	Dirty white to cream with concentric rings of small chocolate-brown scales which become denser towards the centre, convex to plane, eventually umbonate (umbo is solidly brown), margins often have veil remnants and are slightly inturned. Up to 12 cm.
GILLS	Free, whitish (can discolour with age), crowded.
STEM	Pale brown, slender, cylindrical, slightly bulbous at the base, hollow, has a prominent white moveable ring midway up the stem. Up to 20 cm x 0.5 cm.
SPORES	White print, ellipsoid with a germ pore, smooth, 12 x 8 µm.
HABITAT	Eucalypt forest / rainforest / transition or regenerating areas.
SUBSTRATE	In soil amongst leaf litter. SAPROTROPHIC.
HABIT	Solitary or small clusters.
SEASON	Autumn to winter. Occasionally in summer if conditions are right.
COMMENTS	Common. Native. Could be confused with other *Macrolepiota* species. *M. dolichaula* has a white cap with white scales; *M. procera* has fibril-like rather than plate-like scales. Should be easy to identify to genus.

Macrolepiota dolichaula

BASIDIOMYCOTA Family Agaricaceae

CAP	White to cream with uplifted scales (becoming larger and more cottony near centre), ovoid at first becoming umbonate, margins often have veil remnants. Up to 17 cm.
GILLS	Free but close to stem, white to cream, crowded.
STEM	White, slender, cylindrical, slightly bulbous at base, hollow, slightly mealy texture, has a white moveable ring positioned high on stem. Up to 25 cm x 1.5 cm.
SPORES	White print, ellipsoid with a small germ pore, smooth.
HABITAT	Grassy areas, common in paddocks.
SUBSTRATE	Soil. SAPROTROPHIC.
HABIT	Solitary or in large troops.
SEASON	Summer to autumn.
COMMENTS	Common. Cosmopolitan. Very easily recognised due to its large size and bright white colouring. Could possibly be confused with *M. clelandii* due to their similar stature; however, *M. dolichaula* is uniformly white whilst *M. clelandii* has chocolate-brown scales.

Marasmius crinis-equi

Horsehair Fungus

BASIDIOMYCOTA Family Marasmiaceae

CAP	Whitish to light fawn to brown, convex to hemispherical, centre is depressed with a tiny dark umbo, is thin-fleshed with up to eight deep furrows or pleats (plicate), smooth. Up to 5 mm.
GILLS	Pallid white, adnate attached to a collar, distant.
STEM	Dark brown to black (lighter near cap), smooth and horsehair-like, 1 mm wide, up to 10 cm long, emerges from basal mycelium or tough, black hairlike threads (rhizomorphs) which are present amongst the substrate.
SPORES	White print, teardrop-shaped, smooth, thin-walled, 9 x 6 µm.
HABITAT	A variety of forest types, wherever suitable conditions prevail.
SUBSTRATE	Leaf litter. SAPROTROPHIC.
HABIT	Small clusters to gregarious.
SEASON	Autumn to winter.
COMMENTS	Common. Cosmopolitan. Despite being very small and easily overlooked, this species is easily recognisable because of its tough dark stem and its dark rhizomorphs found tangled amongst the leaf litter. Can rehydrate after dry periods. This species causes disease (Horse Hair Blight) on tea plants. The rhizomorphs produce a substance that defoliates tea leaves from twigs.

Marasmius elegans

Velvet Parachute

BASIDIOMYCOTA Family Marasmiaceae

CAP	Apricot orange to orange-brown, convex, initially becoming umbonate to plane, margins are generally decurved but can become uplifted with age, smooth-looking but very finely hairy (giving a matt appearance), dry. Up to 3.5 cm.
GILLS	White to cream, adnate to adnexed, close to moderately close spacing.
STEM	Light-coloured near cap becoming dark brown at base, central, slender, cylindrical, slightly swollen at base, smooth, shiny, emerges from basal mycelium and is quite cartilaginous (tough). Up to 6 cm x 0.2 cm.
SPORES	White print, teardrop-shaped, smooth, thin-walled, 9 x 6 µm.
HABITAT	Most eucalypt forest types and rainforests.
SUBSTRATE	Leaf litter. SAPROTROPHIC.
HABIT	Small clusters to gregarious.
SEASON	Autumn to winter.
COMMENTS	Common. Native. Widespread. Easily recognised by its dull velvety orange cap, tough two-toned stem and basal mycelium. In older literature is referred to as *Collybia elegans*. **FUNGIMAP TARGET SPECIES**

Mycena cystidiosa

BASIDIOMYCOTA Family Mycenaceae

CAP	Whitish to pale fawn or greyish (can become dark brown in centre, initially rounded), conical, becoming conical to convex or campanulate, smooth-looking but covered in very fine fibrils to give a matt or frosted appearance, translucent grooved (striate) and slightly scalloped (sulcate) margins. Up to 3 cm.
GILLS	White, becoming brownish with age towards the stem, adnate to adnexed, close to distant spacing, one series of shorter gills (lamellulae).
STEM	Lightly coloured initially, becoming brown, paler towards cap, slender, cylindrical, smooth polished appearance. Up to 20 cm x 0.3 cm.
SPORES	White print, ellipsoid, smooth, thin walled, 7 x 5 µm.
HABITAT	Wet sclerophyll / rainforest.
SUBSTRATE	Leaf litter. SAPROTROPHIC.
HABIT	Often gregarious.
SEASON	Autumn to winter.
COMMENTS	Common. Native. Characterised from other brown *Mycenas* by its long stem and masses of aerial grey / whitish hair-like rhizomorphs amongst the leaf litter, some of which have undeveloped caps at the tips.

Mycena kuurkacea

Bleeding Mycena

BASIDIOMYCOTA Family Mycenaceae

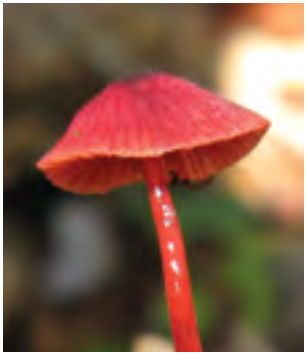
CAP	Dark pinkish red in centre and striations, salmon brown towards margin, convex to campanulate, smooth, margin is translucent striate, sometimes scalloped, decurved. Up to 2 cm.
GILLS	Pinkish brown with a prominent red margin, adnate (sometimes with a small decurrent tooth), close to distant spacing.
STEM	Pinky red, slender, cylindrical, widest at base, smooth, polished appearance, exudes reddish-brown latex when broken. Has an abundance of strigose hairs at base. Up to 6 cm x 0.3 cm.
SPORES	White print, ellipsoid with a short projection at one end, smooth, 8 x 5 µm.
HABITAT	Eucalypt forest and rainforest, south-eastern Australia.
SUBSTRATE	Leaf litter and decaying wood of eucalypts. SAPROTROPHIC.
HABIT	Small clusters to large troops.
SEASON	Autumn to winter.
COMMENTS	Common. Native. Name is derived from an Aboriginal word for blood (*kuurk*) in reference to the colour of the latex it exudes when broken. Was previously known as *Mycena sanguinolenta*.

Mycena viscidocruenta

Ruby Bonnet

BASIDIOMYCOTA Family Mycenaceae

CAP	Bright red, often darkest in centre, sometimes orange towards the margin, convex to campanulate with a shallow central depression, slimy (viscid), translucent striate (grooved) margins. Up to 1.5 cm.
GILLS	Pink to red, margins slightly darker and minutely toothed, decurrent or adnate with decurrent tooth, subdistant spacing.
STEM	Bright red, coated in a thick layer of slime (glutinous) when fresh, slender, cylindrical, hollow, slightly wider at base. Up to 4 cm.
SPORES	White print, cylindrical to ellipsoid with a prominent short projection at one end, smooth, 8 x 4 µm.
HABITAT	Wide variety of habitats including eucalypt forest, heathland and rainforest.
SUBSTRATE	Leaf litter from native forests. SAPROTROPHIC.
HABIT	Solitary to gregarious.
SEASON	Late spring to summer, autumn to early winter.
COMMENTS	Very common. Native. Easily recognised by its bright-red colouring and glutinous stem. Red Hygrocybes, with which it may be confused, grow in soil rather than leaf litter and have a more robust form. This species dries out very quickly. **FUNGIMAP TARGET SPECIES**



Omphalotus nidiformis

Ghost Fungus

BASIDIOMYCOTA Family Marasmiaceae

CAP	Cream with brown, bronze or dark purplish-grey tints, irregularly shaped as often grows in densely packed clumps, sometimes fan or funnel-shaped, smooth, margins decurved when young, lobed and split radially, peeling cuticle. Up to 30 cm.
GILLS	White to cream, strongly decurrent, closely spaced, occasionally forked near stem.
STEM	Whitish to yellow, grey or brown, mostly excentric, sometimes lateral, smooth, solid, stout. Up to 7 cm x 2 cm.
SPORES	White spore print, ellipsoid, smooth, 8 x 6 µm.
HABITAT	A variety of forest types, gardens and disturbed areas.
SUBSTRATE	Decaying wood or living trees. SAPROTROPHIC OR PARASITIC.
HABIT	Often densely clumped (caespitose), gregarious.
SEASON	Autumn to winter, occasionally in summer if conditions are right.
COMMENTS	Common. Native. Poisonous. This species is strongly luminescent and is easily distinguished from similar looking *Pleurotus* (Oyster Mushroom) species by this trait. Causes white rot in living trees. **FUNGIMAP TARGET SPECIES**

Panaeolina foenisecii

Brown Mottlegill

BASIDIOMYCOTA Family Agaricaceae

CAP	Mid to dark brown, becoming lighter as it dries out, convex to slightly conical, smooth but may crack during dry weather. Up to 3 cm.
GILLS	Mottled light grey turning dark brown with maturity with distinct white edges, adnate, closely spaced.
STEM	Lighter brown than cap, speckled white near cap (pruinose), slender, cylindrical, hollow. Up to 5 cm x 1–3 mm.
SPORES	Purplish brown to dark brown spore print, brown under microscope, ellipsoid with distinct germ pore, ornamented with small warts (verrucose), 14 x 8 µm.
HABITAT	Lawns, pastures.
SUBSTRATE	Soil amongst short grass. SAPROTROPHIC.
HABIT	Small clusters to gregarious.
SEASON	Summer to autumn.
COMMENTS	Common. Cosmopolitan. An easily recognised species by its brown and often zoned colouring, mottled gills and preference for grassy areas. Once believed to be poisonous; however, chemical analysis has shown it does not contain the suspect toxins (but it is still inedible).

Panaeolus papilionaceus

Dung Mottlegill

BASIDIOMYCOTA Family Agaricaceae

CAP	Dark grey, (colour can change rapidly when collected to light grey or pinkish fawn-grey), initially parabolic or campanulate, becoming broadly conical or convex, has a smooth, dry surface that may crack in dry weather, often has traces of white veil remnants on margins. Up to 3 cm.
GILLS	Mottled grey, becoming black with maturity, distinct white margins, adnate, closely spaced.
STEM	Mainly brown, though speckled white (pruinose) near cap, slender, cylindrical, hollow, fragile. Up to 8 cm x 0.3 cm.
SPORES	Black print, bronze under microscope, oval (elliptical) to double convex lens-shaped (lenticular) with a prominent germ pore, 18 x 11 x 8 µm.
HABITAT	Pastures, gardens.
SUBSTRATE	Herbivore dung – in particular, horse dung. SAPROTROPHIC.
HABIT	Gregarious.
SEASON	All year round if suitable conditions prevail.
COMMENTS	Very common. Cosmopolitan. An easily recognised dung-loving (coprophilous) species. Is referred to as *Panaeolus sphinctrinus* is older literature.

Panus fasciatus

Hairy Trumpet

BASIDIOMYCOTA Family Polyporaceae

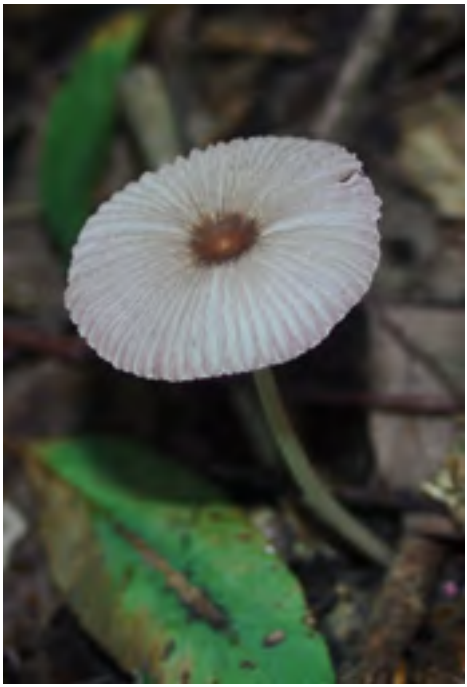
CAP	Lilac to violet when immature, turning golden brown or a faded brown, convex initially, becoming funnel-shaped, densely hairy, dry, tough, inrolled margins, can rehydrate after rain. Up to 6 cm.
GILLS	Brownish purple, strongly decurrent, sometimes forked, narrow, closely spaced.
STEM	Mostly brown, cylindrical, relatively solid and stout though can be slender, densely hairy. Up to 2.5 cm.
SPORES	White print, elongate ellipsoid, 7 x 4 µm.
HABITAT	A wide variety of habitats.
SUBSTRATE	Decaying wood. SAPROTROPHIC.
HABIT	Solitary to gregarious.
SEASON	Autumn to spring.
COMMENTS	Relatively common. Native. Easily recognised by its densely hairy cap and decurrent gills. Fresh lilac specimens can almost be unrecognisable if you are used to seeing them in their tough dried-out form. **FUNGIMAP TARGET SPECIES**

Parasola plicatilis

Parasol Ink Cap

BASIDIOMYCOTA Family Psathyrellaceae

CAP	Grey-brown, becoming greyer with age, red-brown centre, cylindrical when immature, becoming convex to plane when mature, uplifted margin at times, dull, strongly grooved (striate), slight depression in centre, unornamented. Up to 2 cm wide.
GILLS	Similar colour as the cap, becoming darker as spores mature, edges become black, adnate to a distinctive collar around the top of the stem, moderately distant.
STEM	Whitish but colouring slightly with age, slender, fragile, hollow, small swelling at base. Up to 6 cm.
SPORES	Red-brown, smooth, elliptical side on and triangular frontal view, excentric germ pore, 16 x 10 µm.
HABITAT	Grass areas, roadsides.
SUBSTRATE	Soil. SAPROTROPHIC.
HABIT	Solitary or groups.
SEASON	Summer to autumn.
COMMENTS	Common. Cosmopolitan. This fungus is distinguished by its unornamented (no veil) and non auto-digesting (deliquescing) cap and its habitat. Used to be known as *Coprinus plicatilis*.



Pluteus lutescens

BASIDIOMYCOTA Family Pluteaceae

CAP	Lime yellow to olive brown, convex to broadly convex or plane, occasionally umbonate, finely granular. Up to 4 cm.
GILLS	Whitish, becoming pink as spores mature, free, closely spaced.
STEM	Yellow, slender, cylindrical, finely granulose to smooth, fragile. Up to 3 cm x 0.3 cm.
SPORES	Pink spore print, subglobose, 6 x 5 µm.
HABITAT	Rainforest / wet sclerophyll forest.
SUBSTRATE	Decomposing wood. SAPROTROPHIC.
HABIT	Mostly solitary, but may be found in small clusters.
SEASON	Summer to winter.
COMMENTS	Common. Cosmopolitan. Easily distinguished from other *Pluteus* species by its yellow stem, unlike *Entolomataceae* species where the gills are not free.

Russula lenkunya

BASIDIOMYCOTA Family Russulaceae

CAP	Lilac to darker purple with brownish or cream patches, convex to plane with a central depression, matt, sometimes lightly spotted (pruinose) grooved (striate) margins, white flesh. Up to 10 cm.
GILLS	White, but may become discoloured with age, adnate.
STEM	Purplish or pinkish, central, cylindrical, may be quite stout, covered with fine fibrils or slightly striate or marked with very small spots (punctate), fragile. Up to 4 cm x 2 cm.
SPORES	Cream print, subglobose to ellipsoid, finely warted, 9 x 7.5 µm.
HABITAT	Eucalypt forests.
SUBSTRATE	Soil. MYCORRHIZAL.
HABIT	Solitary to scattered groups.
SEASON	Autumn to winter.
COMMENTS	Common. Native. Should be easily identified. Another local purple species, *Russula purpeo-flava*, is much darker purple / red in colour and has yellow gills. *Lenkunya* is an Aboriginal word meaning 'beautiful'.

Russula persanguinea

BASIDIOMYCOTA Family Russulaceae

CAP	Bright red to brick red, convex, often developing a central depression, may become upturned, slightly slimy (viscid) when wet, smooth, white-fleshed, margins may become grooved (striate with maturity). Up to 10 cm.
GILLS	White, becoming cream, adnexed, narrower towards stem, closely spaced.
STEM	White, central, cylindrical, occasionally stout, smooth to slightly rough or grooved (striate), solid to partially hollow, fragile. Up to 6 cm x 1.5 cm.
SPORES	White print, subglobose to slightly ellipsoidal, ornamented with distinct warts that form a network, 9.5 x 8 µm.
HABITAT	Eucalypt forests / wet sclerophyll / rainforest.
SUBSTRATE	Soil. MYCORRHIZAL.
HABIT	Single to scattered.
SEASON	Autumn to winter.
COMMENTS	Common. Native. The distinct red cap with white stem and gills makes this species easy to identify, to genus at least. *Russulas* tend to break very easily (like chalk) despite their robust appearance as they contain sphaerocysts (rounded cells).

Russula viridis

BASIDIOMYCOTA Family Russulaceae

CAP	Bright green in centre to a dull grey-green (like lichen) or even white, convex to plane with a depressed centre, white flesh, colours do not change on drying. Up to 7 cm.
GILLS	Cream, tapers off at the junction between the stem and the cap, close spacing, fragile.
STEM	White, central, cylindrical – slightly swollen at base (narrow at top), may be slightly wrinkled (rugose), breaking easily. Up to 5 cm.
SPORES	Cream print, subglobose to ellipsoid with a short projection at one end (apiculate), ornamented with scattered warts, 8.5 x 7 µm.
HABITAT	Eucalypt forests.
SUBSTRATE	Soil. MYCORRHIZAL.
HABIT	Solitary to scattered.
SEASON	Autumn to June.
COMMENTS	Common. Native. Easily recognised by the green colouration in the cap and its fragility despite being quite a robust fruit body. A similar green species exists – *Russula iteraka*; however, these fruit bodies dry a brownish-orange colour and tend to have gills that fork at the stem attachment.

Schizophyllum commune

Split Gill

BASIDIOMYCOTA Family Schizophyllaceae

CAP	Dirty grey pink, can become bleached white with age, fan-shaped with lobed margins, convex to plane, wrinkles fan out from centre of point of attachment, densely covered in short similarly coloured hairs which can become rough and sharp-pointed (strigose), dry, thin. Up to 4 cm.
GILLS	Pallid pink to grey, radial, narrow, splitting longitudinally and curling over to protect fertile surface in dry conditions.
STEM	None as such. Attached laterally to substrate.
SPORES	White to pale pink print, cylindrical, smooth, 6 x 3 µm.
HABITAT	Various habitat types, particularly disturbed areas and gardens.
SUBSTRATE	Decomposing wood – tree stumps, logs and fallen branches. SAPROTROPHIC.
HABIT	Gregarious, often in dense clusters.
SEASON	All year round.
COMMENTS	Very common. Cosmopolitan. Is the world's most common fungi – found everywhere except Antarctica. Easily recognised by its colour, form and splitting gills. Can rehydrate after rain. Is more closely related to polypotes than gilled fungi. Causes white rot in wood.

Xerula australis

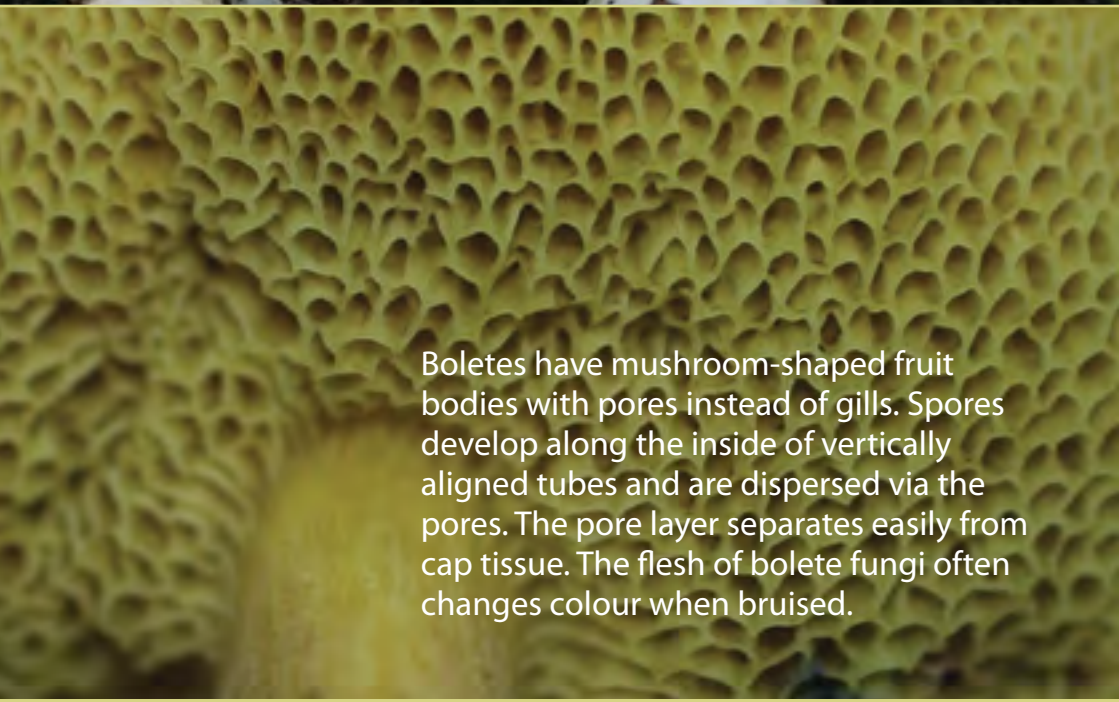
Rooting Shank

BASIDIOMYCOTA Family Physalacriaceae

CAP	Pallid fawn or grey to olive green, occasionally dark brown, broadly convex to plane, very slimy (viscid) when wet, margins may be slightly grooved (striate). Up to 10 cm.
GILLS	White, adnate, sometimes decurrent, moderately closely spaced, alternate gills can be shorter.
STEM	Creamy white towards cap, brown towards the base, central, slender, cylindrical, finely spotted (punctate) or slightly hairy, wider at base, has a tapering root-like structure (pseudorhiza) that extends into the soil to some buried wood. Up to 10 cm x 1 cm.
SPORES	White print, broadly ellipsoid, smooth, 17 x 12 µm.
HABITAT	A variety of forest types and disturbed areas such as parks and gardens.
SUBSTRATE	Buried wood. SAPROTROPHIC.
HABIT	Single to small clusters.
SEASON	Autumn to spring.
COMMENTS	Common. Native. Easily recognised by its slender, slimy stem and long tapering 'root'. There are a few other *Xerula* (or *Oudemansiella* as the genus was previously known) species that *X. australis* could be confused with including *Oudemansiella* (*Xerula radicata* and *X. radicata* var. *mundroola)*.

Boletes

Tylopilus sp.



Boletes have mushroom-shaped fruit bodies with pores instead of gills. Spores develop along the inside of vertically aligned tubes and are dispersed via the pores. The pore layer separates easily from cap tissue. The flesh of bolete fungi often changes colour when bruised.

Austroboletus lacunosus

BASIDIOMYCOTA Family Boletaceae

CAP	Light tan, at first hemispherical becoming convex to flattened convex with maturity, spongy, slimy in wet conditions, minutely granulose and may be cracked in places. Up to 15 cm.
PORES	White initially, becoming a pale pinkish brown when mature, relatively large, irregularly angular, 12 mm deep. Fertile surface is often bulging in places with a deep circular depression adjacent to the stem.
STEM	Very pale close to the cap, pale brown to tan, generally cylindrical, tapering at the top, dry, covered in distinctive criss-crossing fibrous ridges that produce a kind of honeycomb effect (lacunose). Up to 15 cm x 1cm.
BRUISING	Pores may bruise brown if mature. White interior flesh does not display a bruising reaction.
SPORES	Pinkish brown to brown, ornamented with pits, warts or reticulations.
HABITAT	Eucalypt forest / rainforest. MYCORRHIZAL.
SUBSTRATE	Soil.
HABIT	Mostly solitary.
SEASON	Autumn.
COMMENTS	Relatively common. Found in Australia, New Zealand and New Caledonia. The epithet *lacunous* refers to the distinctive ridged and pitted nature of its stem. May be confused with *Austroboletus occidentalis*, which has a sticky cap. *A. lacunosus* has a dry cap surface. **FUNGIMAP TARGET SPECIES.**

Boletellus emodensis

BASIDIOMYCOTA Family Boletaceae

CAP	Dark pink to deep port-wine coloured, convex initially, becoming broad convex to plane, covered in large upturned pyramidal scales that may have brown tips, often with shaggy veil remnants hanging from the margin. Up to 10 cm.
PORES	Yellow initially, becoming duller with age and often bruising with blue-green patches.
STEM	Pink to pale brown with red tint over parts or at times the entire stem, central, cylindrical. Up to 15 cm x 2 cm.
BRUISING	Stains a dark ink blue almost instantly when damaged, particularly the pores and flesh.
SPORES	Spore print brown, with longitudinal striations (grooves), interlinked with fine cross-striations, spindle-shaped (fusiform), 19 x 8 µm.
HABITAT	Forests and woodlands, often growing directly out of stumps and tree bases.
SUBSTRATE	Dead wood. SAPROTROPHIC.
HABIT	Solitary to small groups.
SEASON	Summer to winter.
COMMENTS	Common. Native. Easily recognised bolete by its red / pink colouring and large upturned scales. It is frequently attacked by insects and microfungi that look like lightly coloured moulds.

Phlebopus marginatus

BASIDIOMYCOTA Family Boletinellaceae

CAP	Brown with traces of yellow-brown and green, convex to plane with a slight central depression, very finely hairy (tomentose) or coated with fine fibril-like scales, can crack with maturity, very thick-fleshed. Up to 80 cm.
PORES	Orange-yellow to dirty yellow-green, bruising dark brown with damage and age, relatively large, irregular shaped, adnexed.
STEM	Brown or brownish yellow with olive green tints, mostly central but sometimes off-centre, smooth, solid, stout, bulbous with a pointed root. Up to 20 cm in diameter and 20 cm long.
SPORES	Brown print, ellipsoid, smooth, quite thick walled, 8 x 6 µm.
HABITAT	Eucalypt woodland.
SUBSTRATE	Soil. MYCORRHIZAL.
HABIT	Solitary to gregarious, may form 'fairy rings'.
SEASON	Autumn to winter.
COMMENTS	Common. Cosmopolitan. This species is Australia's largest fungus. A specimen weighing 29 kg has been recorded from Victoria. Was previously known by the suitably large name *Phaegyroporus portentosus*. **FUNGIMAP TARGET SPECIES**

Strobilomyces sp.

BASIDIOMYCOTA Family Boletaceae

CAP	Light grey to charcoal, often with a lighter (almost white) margin, convex to plane, covered in fine flattened fibres or scales, dry, sometimes with ragged veil remnants around the margin. Up to 10 cm.
PORES	Dark grey / charcoal, large, polygonal, with a distinctive white band of colour around cap margin that is not visible from the upper surface, bruises black with damage.
STEM	Light grey, with fine dark spots (punctate), central, cylindrical, relatively slender, bruising black with handling. Up to 7 cm x 2 cm.
SPORES	Dark brown print, more or less spherical, ornamented with fine warts, 8 x 9 µm.
HABITAT	Rainforest.
SUBSTRATE	Soil – particularly amongst overhanging roots on bank cuttings. Possibly MYCORRHIZAL.
HABIT	Single or in small clusters.
SEASON	Autumn to winter.
COMMENTS	Relatively common. Easily overlooked in dark rainforest lighting with its dark grey cap as it blends in with the soil and leaf litter. *Strobilos* is Greek for 'pine cone' referring to the often densely scaly caps found in this genus. Flesh bruises red when damaged.

Leathers and polypores

Most leather and polypore fruit bodies have a cap that is attached directly to a woody substrate (no stem), though there are some species with stems. These fungi have tough woody or leathery textures and disperse spores from pores on the underside of the cap. These pores range in size, from very large to microscopic.

Laetiporus sulfureus

Amauroderma rude

Red-staining Stalked Polypore

BASIDIOMYCOTA Family Ganodermataceae

CAP	Expands out from a white-topped club. When mature, caps are irregular, flattened, convex or with a slightly depressed centre, concentrically zoned with varying shades of dull brown, suede-like surface, tough to woody. Up to 15 cm. It can enclose twigs / grass or grow onto stumps / logs.
PORES	White, decurrent, fine c. 3 per mm.
STEM	Cigar brown, suede surface, usually central but can be excentric, solid, woody and often contorted with bumps, cylindrical to compressed. Up to 16 cm x 2 cm.
BRUISING	Pores and internal flesh bruise a rich red blood-like colour when damaged if the specimen is fresh. This stain will then become black.
SPORES	Brownish yellow print, ovoid, finely dotted. 9 x 7 µm.
HABITAT	A variety of habitats, from woodlands to forests and disturbed areas.
SUBSTRATE	Rotting logs / stumps or buried wood. SAPROTROPHIC.
HABIT	Solitary or in groups.
SEASON	Autumn to winter.
COMMENTS	Common. Cosmopolitan. Is a distinctive woody-stalked polypore distinguished by its often contorted shape and red staining. Fruit bodies are long-lasting and can be found as a dry, dark, brown-black woody remnant. **FUNGIMAP TARGET SPECIES**

Coltricia cinnamomea

Fairy Stool / Tough Cinnamon Fungus

BASIDIOMYCOTA Family Polyporaceae

CAP	Tough to leathery-corky, concentrically zoned in various shades of brown, darkest in centre and usually light at margin, covered in short lustrous radial hairs, convex to plane with central depression.Up to 3 cm.
FERTILE SURFACE	Pores, rusty brown, shallow, 1–3 per mm, angular.
STEM	Central, tough.
SPORES	Yellow-brown, smooth, broadly ellipsoidal, 7 x 4.5 µm.
HABITAT	Various vegetation communities, seems to do well in drier types.
SUBSTRATE	Decaying wood below the soil surface. SAPROTROPHIC.
HABIT	Solitary or in groups.
SEASON	Most times of the year.
COMMENTS	Common. Native. Easily recognised with its zoned brown cap and silky fibrous surface.

Cymatoderma elegans

Leathery Goblet

BASIDIOMYCOTA Family Meruliaceae

FRUIT BODY	Funnel-shaped fungus with the upper surface zoned in various shades of light tan and brown, thick felt-like surface, wrinkled with wavy uneven ridges, thin and leathery. Usually to 12 cm wide x 15 cm tall, but can be much larger.
FERTILE SURFACE	Underside (smooth wrinkles and rounded ridges) lilac when immature, turning creamy white.
STEM	Pale lilac when immature, becoming various shades of brown as it ages, usually central but can be off-centre, finely felt-like, cylindrical, tapered or fluted, solid, tough, stout. Up to 5 cm x 1.2 cm.
SPORES	Spore print white, smooth, elliptical, 7 x 4 µm.
HABITAT	Moist vegetation communities.
SUBSTRATE	Well-rotted wood of various sizes. SAPROTROPHIC.
HABIT	Solitary or gregarious.
SEASON	All year if conditions suitable.
COMMENTS	Common. Cosmopolitan. Easily recognised fungus. The upper vase-shaped section often collects water and fine litter. Old dry specimens can last in the bush for very long periods of time. Variable in size and shape. **FUNGIMAP TARGET SPECIES**

Fistulina hepatica

Beef-steak Fungus

BASIDIOMYCOTA Family Fistulinaceae

CAP	Bright red-pink becoming browner with age, semicircular or tongue-like bracket, warty, radially wrinkled, thick, even margin, flesh pink when first cut, changing to red then port wine; zoned, can be slimy when wet. Up to 25 cm wide x 5 cm thick.
PORES	Round, bright pink, becoming brown as spores mature.
STEM	Same colour as cap surface, short, lateral if present, solid.
BRUISING	Bruises a darker shade of red.
SPORES	Spore print pale brown, smooth, oval in face view and asymmetric in profile, thin walled, 5.5 x 4 µm.
HABITAT	Various forest types.
SUBSTRATE	Living and dead trees, usually low on the trunk or exposed roots. WEAKLY PARASITIC THEN SAPROTROPHIC.
HABIT	Solitary to small groups.
SEASON	Summer to winter.
COMMENTS	Common. Cosmopolitan. It is thought that this species may be halfway between boletes and polypores as its tubes can be detached easily from each other without damage. Was a traditional food source for some Aboriginal people. **FUNGIMAP TARGET SPECIES**

Fomitopsis lilacinogilva

Lilac Shelf Fungus

BASIDIOMYCOTA Family Fomitopsidaceae

CAP	Dark red-brown, rounded growing edge light lilac to pinky mauve, zoned, variable to fan-shaped bracket, concentrically ridged, covered by coarse flattened hairs, flesh dull rusty to dark brown, adhering closely to substrate at times forming a crust or thick mat on the wood's surface, tough leathery to woody texture. Up to 25 cm wide.
PORES	Pink, mauve-pink to lilac, round to angular to slightly labyrinthiform.
STEM	Nil, but broadly laterally attached.
BRUISING	Pores bruising dark pinkish / maroon.
SPORES	White print, smooth, broadly elliptical, 7.5–2.5 µm.
HABITAT	Various habitats.
SUBSTRATE	Wood – dead stumps and logs, construction timber and charred wood. SAPROTROPHIC.
HABIT	Solitary or gregarious clusters of overlapping brackets.
SEASON	Actively growing in autumn to winter, but like many tough, woody brackets may be annual to perennial.
COMMENTS	Cosmopolitan. Widespread. Causes brown cubical rot. Easily identified but may be confused with *Fomitopsis feei*. *F. feei* has a cap surface that is slightly velvety as opposed to the coarse hairs of *F. lilacinogilva*, and a narrow attachment.

Ganoderma australe

Artist's Fungus

BASIDIOMYCOTA Family Ganodermataceae

CAP	Dull grey-brown or light to dark brown, generally semicircular, with woody or corky flesh, smooth, often concentrically grooved, hard upper surface with a blunt and at times slightly wavy margin, can grow around twigs and other litter as it grows out from its woody substrate, lateral, broadly attached to the substrate. Up to 30 cm wide x 10 cm thick.
PORES	White when new, very small, roundish, thick matrix between pores, the fertile layer is even. A new fertile layer is added each year resulting in a build up of layers in older specimens.
BRUISING	Pores bruise dark brown when damaged.
SPORES	Mid brown, finely textured, elliptical, truncated at one end, longitudinally grooved, 12 x 8 µm.
HABITAT	Various vegetation communities.
SUBSTRATE	Living and dead trees. PARASITIC THEN SAPROTROPHIC.
HABIT	Solitary to small groups.
SEASON	All year.
COMMENTS	Very common. Cosmopolitan. Causes white heart rot and may cause stem rot in live trees. As its pores mark so easily they can be drawn or written on, hence its common name. When the spores are being released the whole fungus and much of the adjacent habitat can be coloured mid brown. Could be confused with *Ganoderma applanatum*, which has different spores. Both are widespread and serious parasites.

Hexagonia tenuis

BASIDIOMYCOTA Family Polyporaceae

CAP	Has concentric zones of various shades of tan and brown with a lighter margin if actively growing, semicircular-shaped thin bracket, smooth, slightly undulating, leathery and flexible upper surface, if dry can be parchment-like. Up to 11 cm across x 0.4 cm thick.
PORES	Light grey-brown with pale growing edge, shallow, angular and large, 8–10 per cm.
STEM	Narrow lateral attachment.
SPORES	Spore print white, smooth, narrowly elliptical, 6 x 7 µm.
HABITAT	Various forest types.
SUBSTRATE	Dead branches and logs – often on dead branches still attached to trees, towards the canopy. SAPROTROPHIC.
HABIT	Solitary, but usually in small groups.
SEASON	Most of the year.
COMMENTS	Common. Cosmopolitan. Very distinctive thin flexible bracket with large shallow angular pores. *Hexagonia tenuis* generally has a sharper semicircular outline without the lobed bracket edges seen with some other *Hexagonia* species.

Laetiporus portentosus
White Punk

BASIDIOMYCOTA Family Fomitopsidaceae

FRUIT BODY	A large white to brownish-coloured hoof-shaped bracket fungus. Firm and fleshy texture when fresh. Mature fruit bodies often fall to the ground and are readily identified by their spongy insect-ravaged form. Up to 40 cm across.
PORES	Pale yellow at first then becoming dull white to brown with age.
STEM	Attached laterally, no stem as such.
SPORES	Spore print white, globose to subglobose, smooth, 8 µm.
HABITAT	Tends to grow on stringy-barked eucalypt trees.
SUBSTRATE	Living trees. PARASITE.
HABIT	Solitary and at times in groups.
SEASON	Summer to autumn.
COMMENTS	Common. Cosmopolitan. This fungus causes brown cubical heart rot in living trees. Slow-acting, as it can be seen reappearing on apparently healthy trees year after year, usually 5–15 m above the ground. Insect larvae feed ravenously on the interior flesh leaving the fungus riddled with holes and tunnels. Therefore, unlike many bracket polypores, it falls off the tree after reaching maturity. These remnants are what is often seen on the forest floor looking like a porous piece of styrofoam. Dry fruit bodies are combustible and were once used as tinder by Aboriginal people and early colonists.

Microporus affinis

Dark-footed Tinypore

BASIDIOMYCOTA Family Polyporaceae

FRUIT BODY	Thin-fleshed, shelf to fan-shaped bracket with short stem. Smooth-looking but slightly velvety on upper surface with a series of variously sized and coloured parallel grooves. Colour range can include bands of grey, magenta, orange, yellow, brown and black tones. Actively growing edge is usually paler. Characterised by saucer-shaped depression in the cap adjacent to stem attachment. Up to 10 cm wide.
FERTILE SURFACE	Underside of bracket, white to fawn and very finely pored.
STEM	Lateral and attached to substrate by a dark 'foot', velvety. Up to 3 cm.
SPORES	White print, slightly sausage-shaped (curved with rounded ends – suballantoid), smooth, 4 x 2 µm.
HABITAT	Rainforest / wet sclerophyll, northern Queensland to southern New South Wales.
SUBSTRATE	Rotting wood. SAPROTROPHIC.
HABIT	Solitary or in small troops.
SEASON	Nearly all year round if suitable conditions prevail.
COMMENTS	Common. Cosmopolitan. A very variable species in form and colour. Can be distinguished from other similarly shaped 'brown' polypores by its black foot that attaches the stem to the substrate and the saucer-shaped depression. **FUNGIMAP TARGET SPECIES**

Panellus pusillus

Ping-pong Bat / Little Ping-pong Bat

BASIDIOMYCOTA Family Mycenaceae

CAP	Off-white to pale brown with very fine short hairs, semicircular to kidney-shaped (reinform), thin, margin incurved, tough. Up to 1.5 cm.
PORES	Angular with shallow tubes, radially elongated, same colour as the cap and stem.
STEM	Lateral with small basal disc, lightly coloured, solid, tiny and sometimes hard to see. Up to 3 mm.
SPORES	Spore print white, smooth, ovoid to elliptical, thin-walled, 4.5 x 2.5 µm.
HABITAT	Wide variety of habitats.
SUBSTRATE	Dead wood. SAPROTROPHIC.
HABIT	Gregarious, from a few to large troops.
SEASON	Found all year round.
COMMENTS	Common. Cosmopolitan. Easily recognised little-pored bracket. Even though this species looks like a polypore it belongs to the gilled fungi (agarics). Often placed with polypores for ease of identification. Reported as being luminescent at times. Will grow in the same place for years. **FUNGIMAP TARGET SPECIES**

Piptoporus australiensis

Curry Punk

BASIDIOMYCOTA Family Polyporaceae

FRUIT BODY	At first bright orange-yellow fading to an orange-cream and finally white with maturity, bracket to irregularly fan-shaped, smooth, dry upper surface. Up to 40 cm in diameter, projecting to 20 cm and up to 10 cm thick.
FERTILE SURFACE	Consists of small bright-yellow or orange-coloured round to angular pores, may weep yellow-coloured juice when fresh and wet.
ATTACHMENT	Attached directly to substrate (no stem).
SPORES	White print, ellipsoid, smooth, 8 x 5 µm.
HABITAT	Eucalypt woodlands / forests.
SUBSTRATE	Decaying eucalypt wood, particularly when fire damaged. SAPROTROPHIC.
HABIT	Solitary or in small clusters.
SEASON	All year round.
COMMENTS	Relatively common. Native. Has a distinctive curry-like odour (even when old and dried out) which distinguishes it from all other bracket fungi. Can be used to make dye. **FUNGIMAP TARGET SPECIES**

Podoscypha petalodes

Wine Glass Fungus

BASIDIOMYCOTA Family Meruliaceae

FRUIT BODY	Pinkish brown to tan with lighter margins, funnel- to rosette-shaped with a short stalk, ruffled, leathery, smooth, often concentrically zoned, thin-fleshed, colonies can consist of individual fruit bodies which become fused to look as though it is a single entity. Up to 10 cm.
FERTILE SURFACE	Smooth underside of the fruit body, lighter pink brown than cap, can be finely ridged in folds.
STEM	Dark brown, generally short but may be elongated in some instances, very finely hairy. Up to 3 cm x 0.5 cm.
SPORES	White print, hyaline, ovoid to elliptical, thin walled, 4 x 3 µm.
HABITAT	Rainforests / wet sclerophyll.
SUBSTRATE	Grow on the ground from buried wood, sometimes at the base of trees. SAPROTROPHIC.
HABIT	Small clusters to gregarious.
SEASON	Summer to winter.
COMMENTS	Common. Cosmopolitan. Easily recognised by its wine glass / rosette shape and pale pink-brown colouring. *Cymatoderma elegans* (Goblet Fungus) is much more robust, has a velvety texture and is funnel shaped rather than a wrapped-around fan shape.

Polyporus arcularius

Spring Polypore / Fringed Polypore

BASIDIOMYCOTA Family Polyporaceae

CAP	Light tan to brown, convex to plane with a deep central depression, often covered with small darker-tan flattened scales in a concentric pattern, margin is lined with very fine hairs, leathery, thin-fleshed, dries very tough. Up to 5 cm.
PORES	Beige to light brown, large, coffin-shaped (polygonal) with ragged edges.
STEM	Brown, central, cylindrical, short, tough, smooth or slightly velvety. Up to 5 cm x 0.3 cm.
SPORES	White print, cylindrical, smooth, 8 x 3.5 µm.
HABITAT	Found in a wide variety of habitats, particularly drier vegetation communities, disturbed areas and gardens.
SUBSTRATE	Decomposing wood, branches. SAPROTROPHIC.
HABIT	Solitary or in small groups.
SEASON	Spring to autumn.
COMMENTS	Very common. Cosmopolitan. Easily distinguished by its large polygonal pores, fringed margin, concentric scales and leathery texture. Causes white rot. Is believed to contain antibacterial and antibiotic compounds.

Pycnoporus coccineus

Scarlet Bracket

BASIDIOMYCOTA Family Polyporaceae

FRUIT BODY	Bright orange to orange-red when fresh, fading to pale orange and even bleaching white if very old, fan-shaped, convex, dry, smooth, corky, hard.
FERTILE SURFACE	Bright red to orange pores, small, leaving a sterile band around margin.
STEM	None as such, attached laterally, occasionally with a narrow attachment.
SPORES	White print, ellipsoid, smooth, 4.5 x 2 µm.
HABITAT	A diverse range of habitats from wet to dry vegetation communities, disturbed areas and gardens.
SUBSTRATE	Dead wood (including fence posts). SAPROTROPHIC.
HABIT	Solitary to large colonies.
SEASON	All year round.
COMMENTS	Very common. Cosmopolitan. Easily identifiable to genus by its form and colour; however, could be confused with *P. sanguineus* which is very similar. This species was used for medicinal purposes by Aboriginal people. Causes white rot and contains strong organic matter-degrading enzymes that are used to treat industrial waste.

Stereum hirsutum (group)

Hairy Curtain Crust

BASIDIOMYCOTA Family Stereaceae

FRUIT BODY	Bracket-like, attached to substrate laterally to form long overlapping tiers, upper surface is concentrically zoned with yellow, orange and brown colours, leathery, tough, densely covered in short brownish hairs, margins lighter in colour and very wavy. Up to 15 cm across, projecting to 8 cm.
FERTILE SURFACE	Smooth orange to golden underside, may be slightly wrinkled.
STEM	None. Attached laterally to substrate.
SPORES	White print, ellipsoid, smooth, 6 x 3 µm.
HABITAT	Found in a variety of vegetation types.
SUBSTRATE	Decomposing wood. SAPROTROPHIC.
HABIT	Crowded overlapping colonies.
SEASON	Autumn to spring.
COMMENTS	Common. Cosmopolitan. Easily recognised to genus; however, there are two species of *Stereum* that share the same macroscopic characteristics. *S. complicatum* has different-shaped spores. *S. ostrea* (Golden Curtain Crust) is much larger and is different in form. May also be confused with the Rainbow Bracket (*Trametes versicolor*); however, this species has clearly visible pores on the under surface. There is evidence that fruit bodies of this species are often sterile.

Stereum ostrea

Golden Curtain Crust / Sunset Fungus

BASIDIOMYCOTA Family Stereaceae

FRUIT BODY	Bracket-like, upper surface is concentrically zoned with shades of orange, yellow and brown, darkest at base, fan- to funnel-shaped with lobed margins, thin and leathery, slightly hairy, attached directly to substrate. Up to 15 cm.
FERTILE SURFACE	Smooth yellow to orange underside, may be slightly wrinkled.
STEM	None. Attached directly to substrate.
SPORES	White print, narrowly ellipsoid, smooth, 6 x 2 µm.
HABITAT	Wet sclerophyll / rainforests.
SUBSTRATE	Decomposing wood, particularly fallen branches or trees. SAPROTROPHIC.
HABIT	Clusters of overlapping fruit bodies, can be very gregarious.
SEASON	All year round.
COMMENTS	Common. Cosmopolitan. Should be easily recognised by its colour, form and habit of forming dense colonies. Causes white rot. May be parasitised by species of Jelly Fungi.

Trametes versicolor

Rainbow Bracket

BASIDIOMYCOTA Family Polyporaceae

FRUIT BODY	Tough, irregularly fan-shaped bracket, very variable in colour, can have concentric zones of creams, browns, yellows or pale orange, margins are usually lobed or wavy, thin-fleshed and leathery, some zones are finely velvety with smooth zones in between. Up to 10 cm wide, projecting up to 5 cm.
FERTILE SURFACE	Small round to polygonal cream-coloured pores on the underside, has a sterile margin.
STEM	None as such, has a narrow lateral attachment to substrate.
SPORES	White print, ellipsoid, smooth, thin walled, 5 x 2 µm.
HABITAT	A variety of vegetation types, disturbed areas and gardens.
SUBSTRATE	Decomposing wood (fallen branches, tree stumps, logs and fence posts). SAPROTROPHIC.
HABIT	Gregarious – forms dense overlapping colonies.
SEASON	All year round when suitable conditions arise.
COMMENTS	Common. Cosmopolitan. Should be an easily recognised species despite its variability in colour. Could possibly be confused with some *Stereum* species; however, these do not have distinct pores on their undersides.

Tooth fungi

Phellodon niger

Tooth fungi have fertile surfaces with 'teeth' or spines and come in a variety of forms.

Hydnum repandum

Hedgehog Fungus / Hedgehog Tooth Fungus

BASIDIOMYCOTA Family Hydnaceae

CAP	Light brown to yellowish, irregularly convex often with a central depression, may be distorted, undulate margins. Up to 6 cm.
FERTILE SURFACE	Pale to light coloured apricot-orange downward-facing conical spines, crowded, short, spores line the spines the same way they would if they were gills.
STEM	Cream to white, thick, cylindrical, smooth, solid. Up to 5 cm x 1 cm.
SPORES	Spore print white, smooth, subglobose, 7 x 6 µm.
HABITAT	Various vegetation communities growing amongst litter.
SUBSTRATE	Soil. MYCORRHIZAL.
HABIT	Solitary to small groups.
SEASON	Summer to winter.
COMMENTS	Reasonably common. Cosmopolitan. Easily recognised, other toothed fungi with stems tend to have zoned caps of greys or browns. The genus *Hydnum* is closely related to chanterelles.

Coral fungi

The fruit body of coral fungi can be either a simple club or branched in a coral-like fashion. Spores are borne on the outer surfaces of the upper portion of the fruit body.

Ramaria capitata

Artomyces turgidus

Peppery Coral Fungus

BASIDIOMYCOTA Family Auriscalpiaceae

FRUIT BODY	Off white, cylindrical, has a distinctive branching pattern whereby new branches form from a flat circular pad that develops on the tips. This pad resembles a crown before the tips elongate into new branches. Up to 6 cm high.
FERTILE SURFACE	Smooth outer surface of branches.
SPORES	White print, ellipsoidal, minutely ornamented, 6 x 4.5 µm.
HABITAT	Wet forest types.
SUBSTRATE	Rotting rood. SAPROPHYTIC.
HABIT	Small clusters to very gregarious.
SEASON	Autumn.
COMMENTS	Relatively common. Cosmopolitan. Is readily identified by its unique form of branching. Was previously known as *Clavicorona piperata* because of its peppery taste.

Clavulinopsis amoena

BASIDIOMYCOTA Family Clavariaceae

FRUIT BODY	Bright yellow, simple unbranched club, cylindrical to slightly flattened or grooved, often twisted and misshapen. Up to 11 cm high.
FERTILE SURFACE	Smooth outer surface of clubs.
SPORES	White print, smooth, subglobose to ovate, 6.5 x 4.5 µm.
HABITAT	A wide variety of habitats, including eucalypt woodland, wet sclerophyll forest, rainforest and creek banks.
SUBSTRATE	Soil. MYCORRHIZAL.
HABIT	Solitary or in groups, may be quite gregarious.
SEASON	Autumn.
COMMENTS	Common. Widespread. Easily recognised yellow club fungus. This species was previously known as *Clavaria amoena*.

Clavulinopsis corallinorosacea

BASIDIOMYCOTA Family Clavariaceae

FRUIT BODY	Dull coral pink with a translucent red base (stem), simple unbranched slender club, cylindrical, sometimes flattened or grooved, narrower at base. Up to 7 cm high.
FERTILE SURFACE	Smooth outer surface of the dull pink portion of the fruit body.
SPORES	White print, ovoid to slightly pear-shaped, 6 x 3.5 µm.
HABITAT	Wet sclerophyll, rainforest and other moist areas, along creeks.
SUBSTRATE	Soil. MYCORRHIZAL.
HABIT	Solitary or in groups.
SEASON	Autumn.
COMMENTS	Common. Native. This species is easily distinguished by its two-tone pink / red colouration. Is often observed in large troops.

Clavulinopsis sulcata

Flame Fungus

BASIDIOMYCOTA Family Clavariaceae

FRUIT BODY	Light pink to bright orange-red, usually a simple unbranched club; however, may be sparsely branched at the tip, slender, cylindrical, often twisted, flattened and grooved, smooth. Up to 10 cm high.
FERTILE SURFACE	Smooth outer surface of the clubs.
SPORES	White print, subglobose, smooth, 8 x 4 µm.
HABITAT	Sheltered positions in a variety of forest types.
SUBSTRATE	Soil. MYCORRHIZAL.
HABIT	Small clusters to very gregarious. Often caespitose (several stems growing from the same joined base).
SEASON	Autumn.
COMMENTS	Widespread. Cosmopolitan. Easily identifiable by its bright red-orange colouration. It does not have the clearly demarked colour zonation at the base as does *C. corallinorosacea*. Was previously known as *Clavaria miniata*.

Ramaria anziana

BASIDIOMYCOTA Family Gomphaceae

FRUIT BODY	Pale apricot to salmon pink, openly branched but often densely packed coral fungus, has several main branches that arise at the same level, tips branch into several tips (apices), smooth, dry.
FERTILE SURFACE	Smooth outer surface of branches.
SPORES	Cylindrical, very slightly ornamented with warts and narrow ridges, 8 x 5 µm.
HABITAT	Eucalypt forest and rainforests.
SUBSTRATE	Soil. MYCORRHIZAL.
HABIT	Solitary or in groups.
SEASON	Autumn.
COMMENTS	Common. Native. Is easily confused with *Ramaria ochraceosalmonicolor* (now known as *R. capitata* var. *ochraceosalmonicolor*) as there has been confusion with the application of this name in several guidebooks. Both species are ochre / salmon colour; however, *R. anziana* is characterised by an open branching habit whilst *R. capitata* var. *ochraceosalmonicolor* is distinctly cauliflower-like in form.

Jelly fungi

Heterotextus miltinus

Jelly fungi have fruit bodies that are gelatinous in texture. Spores are produced on the outer surface of the fruit body.

Auricularia auricula-judae

Auricularia auricula-judae

Ear Fungus

BASIDIOMYCOTA Family Auriculariaceae

FRUIT BODY	Convex to ear-shaped, often convoluted; gelatinous, translucent. Upper surface dull brown-grey to pink / brown-grey, very minutely velvety. Soft, rubbery texture. Up to 8 cm x approx 3 mm thick. Attached laterally to substrate.
FERTILE SURFACE	Smooth, glossy and a paler slightly pinkish shade of the cap colour. Can have a whitish bloom from maturing spores.
SPORES	Spore print white, smooth, cylindrical curved, 14 x 6 µm.
HABITAT	In moist vegetation communities, open areas and gardens.
SUBSTRATE	On dead wood. SAPROTROPHIC, perhaps WEAKLY PARASITIC.
HABIT	Forms small to large groups and at times huge colonies.
SEASON	All year if conditions suitable.
COMMENTS	Native. Widespread. Becomes hard and shrinks when it dries out. Similar ear fungi, such as *Auricularia delicata*, have fertile surfaces that are dissected by ridges forming shallow irregular depressions. *A. cornea* has a grey-mauve fertile surface, a distinctly velvety cap surface and more-leathery texture.

Auricularia cornea

Wood Ear Fungus

BASIDIOMYCOTA Family Auriculariaceae

FRUIT BODY	Convex to ear-shaped bracket, upper surface dull dark brown-grey and is very densely velvety (fine short hairs can become a pale grey as the fungus dries out), rubbery when moist and hard and leathery when dry, attached laterally to substrate. Up to 8 cm wide x 1–3 mm thick.
FERTILE SURFACE	Smooth, dull grey-mauve often with a dusting of white spores.
SPORES	Spore print white, smooth, cylindrical curved, 14 x 6 µm.
HABITAT	In moist vegetation communities and sheltered gardens.
SUBSTRATE	On dead wood. SAPROTROPHIC.
HABIT	Forms small to large groups.
SEASON	All year if conditions suitable.
COMMENTS	Native. Widespread. Will remain on its woody substrate for an extended period of time (over 12 months). Can be confused with other species of *Auricularia*. *A. delicata* is distinguished by its fertile surface being dissected by ridges forming shallow irregular depressions. *A. auricula-judae* is more delicate and gelatinous with a more wrinkled pinkish (rather than mauve) fertile surface.

Calocera aff. *sinensis*

A Pretty Horn

BASIDIOMYCOTA Family Dacrymycetaceae

FRUIT BODY	Small, simple, blunt-ended spikes (the tip can occasionally be forked or slightly flattened), solid, gelatinous, clear yellow to orange-yellow, becoming more orange to orange-brown as it dries. Up to 1.5 cm high x 2 mm wide.
FERTILE SURFACE	The smooth outer surface of the spike.
SPORES	Colourless, smooth, curved cylindrical, 10 x 5 µm.
HABITAT	Moist vegetation communities.
SUBSTRATE	Wood. SAPROTROPHIC.
HABIT	Small colonies scattered across substrate or clustered together.
SEASON	Autumn to winter.
COMMENTS	Common. Native. There are a number of *Calocera* species but this is appears to be the most common. Could be confused with immature *Dacryopinax spathularia*, which is a stalked yellow jelly fungus that matures to a broader flattened or petal-shaped top and dries very hard to a dark orange-brown.

Dacryopinax spathularia

Spatula Jelly

BASIDIOMYCOTA Family Dacrymycetaceae

FRUIT BODY	Bright golden yellow, stalked, tough jelly club, usually with a flattened petal-like top, to 1.5 cm tall.
FERTILE SURFACE	Smooth surface of the flattened or petal-like section above the stem.
STEM	To 2 mm red-brown, narrow and tough.
SPORES	Colourless (hyaline), elliptic-cylindric, slightly curved, may have a cross-wall, 14 x 5 µm.
HABITAT	Moist areas.
SUBSTRATE	Dead wood of varying sizes. SAPROTROPHIC.
HABIT	Clustered troops.
SEASON	Whenever there is sufficient rain to revive them.
COMMENTS	Common. Cosmopolitan. This species, when dry, becomes very hard, dark red-brown and shrinks back into cracks in the woody substrate, rehydrating when there is enough moisture. Colonies may exist in the same location for several years. When immature may be mistaken for *Calocera* species.

Heterotextus miltinus

Golden Jelly Bell

BASIDIOMYCOTA Family Tremellaceae

FRUIT BODY	Golden yellow-orange, disc-shaped with a slightly concave outer surface, gelatinous. Up to 1.5 cm.
FERTILE SURFACE	Entire surface of fruit body.
STEM	Golden yellow-orange, stout, narrowing towards attachment point, gelatinous. Up to 1 cm.
SPORES	White print, curved with cross-walls, smooth, colourless. 15 x 5 µm.
HABITAT	Wet vegetation types (or moist shaded areas).
SUBSTRATE	Rotting wood. SAPROTROPHIC.
HABIT	Small clusters.
SEASON	Autumn.
COMMENTS	Relatively common. Cosmopolitan. Fruit bodies dry out quickly; however, can rehydrate when moist conditions return. Could be confused with *Heterotextus peziziformis*, which is supposedly smaller in form and differs microscopically. Mycologists are currently debating whether *H. pezizformis* is a legitimately different species.

Pseudohydnum gelatinosum

Toothed Jelly

BASIDIOMYCOTA Family Auriculariaceae

FRUIT BODY	Translucent grey to pale fawn, fan-shaped with a short stem to bracket-like, slightly convex to plane, upper surface can be roughened to smooth, undulating margins, jelly-like texture but not slimy. Up to 5 cm.
FERTILE SURFACE	Translucent white teeth or spines, gelatinous. Up to 0.5 cm.
STEM	Same colour as rest of fruit body, may be absent, lateral if present, gelatinous. Up to 2 cm long x 1.5 cm wide.
SPORES	White print, subglobose to globose, smooth, 6 x 5 µm.
HABITAT	Wet forests / rainforests.
SUBSTRATE	Very wet decomposing wood. SAPROTROPHIC.
HABIT	Solitary to large clusters.
SEASON	Autumn to early spring.
COMMENTS	Common. Cosmopolitan. Very easily recognised by its toothed and jelly-like form. **FUNGIMAP TARGET SPECIES**

Tremella foliacea

Brown Witches Butter

BASIDIOMYCOTA Family Tremellaceae

FRUIT BODY	Caramel to dark brown, forming a highly convoluted or irregularly lobed mass, gelatinous, slimy if wet. Up to 15 cm across x 3 cm high.
FERTILE SURFACE	Entire surface of fruit body.
STEM	None. Attached directly to substrate.
SPORES	White print, subglobose, smooth, 10 x 9 µm.
HABITAT	Wet vegetation types (or moist shaded areas).
SUBSTRATE	Decaying wood colonised by other fungi species such as *Stereum*. PARASITIC.
HABIT	Solitary to gregarious.
SEASON	Autumn to winter.
COMMENTS	Relatively common. Cosmopolitan. Easily recognisable by its brown colouration. Parasitises *Stereum* species as a food resource. *Tremella* means 'to tremble'.

Tremella fuciformis

White Brain

BASIDIOMYCOTA Family Tremellaceae

FRUIT BODY	Translucent white, forming a highly convoluted or irregularly lobed (brain-shaped) mass, gelatinous. Up to 10 cm across x 3 cm high.
FERTILE SURFACE	Entire surface of fruit body.
STEM	None. Attached directly to substrate.
SPORES	Colourless, globose, smooth, 8 x 8.5 µm.
HABITAT	Wet vegetation types (or moist shaded areas).
SUBSTRATE	Decomposing wood. SAPROTROPHIC.
HABIT	Solitary to small colonies.
SEASON	Autumn to spring.
COMMENTS	Common. Cosmopolitan. Could be confused with the Pine Tree Brain (*Tremella encephala*); however, this species only colonises wood of exotic pines, is more cream coloured and has a hard centre. **FUNGIMAP TARGET SPECIES**

Tremella mesenterica (group)

Yellow Brain

BASIDIOMYCOTA Family Tremellaceae

FRUIT BODY	Bright yellow to orange, forming a highly convoluted or irregularly lobed (brain-shaped) mass, gelatinous. Up to 10 cm across x 3 cm high.
FERTILE SURFACE	Entire surface of fruit body.
STEM	None. Attached directly to substrate.
SPORES	White print, ellipsoid, smooth, 12 x 9 µm.
HABITAT	Wet vegetation types (or moist shaded areas).
SUBSTRATE	Decomposing wood colonised by host fungi species. PARASITIC.
HABIT	Solitary to small colonies.
SEASON	Autumn to spring.
COMMENTS	Common. Cosmopolitan. The *Tremella mesenterica* group includes the very similar species *T. aurantia* which can only be distinguished using microscopic characteristics. They also parasitise different species of host fungi. *T. mesenterica* contains unique complex sugar molecules that are of medical interest. **FUNGIMAP TARGET SPECIES**

Puffballs and birds nest fungi

Geastrum triplex

Puffballs are generally round in form. Their dry and powdery spores are housed internally and require external force, like wind or rain, for dispersal.

Birds nest fungi produce small cone-shaped 'nests' that contain round flattened 'eggs' which contain the spores and need raindrops to disperse.

Cyathus stercoreus

Calostoma fuscum

Common Pretty Mouth

BASIDIOMYCOTA Family Geastraceae

FRUIT BODY	Stalked puffball. Consists of a globose spore-bearing structure supported by a tall tough stem. A bright red star decorates the apex. 'Ball structure' is 2–3 cm in diameter with a 1–2 cm wide and 10 cm long stem. The stem is very dark in colour, tough and rubbery in texture and is comprised of a mass of interwoven fibrils.
EXOPERIDIUM	Dark rust brown to black, ornamented with finely rough granules. This splits around the circumference and falls off as the fungus matures. Discarded 'caps' can be found in the leaf litter adjacent to the fruit body.
MESOPERIDIUM	Dark rust brown to black, ornamented with a bright red star (usually with five or more rays) which surrounds the opening (stoma). The star colour fades with age.
SPORES	White en masse, hyaline, elipsoidal, minutely pitted, 10–14 x 7–10 µm.
HABITAT	Rainforest, wet sclerophyll, eucalypt woodland and heath.
SUBSTRATE	Soil amongst leaf litter. MYCORRHIZAL.
HABIT	Occasionally solitary but mostly found in small clusters.
SEASON	Autumn.
COMMENTS	Relatively common; however, its dark colouration camouflages it well amongst leaf litter. *Calostoma* means 'pretty mouth'. There are at least three other species of *Calostoma* in Australia. *C. fuhreri* are only found in arid areas. *C. rodwayi* are only found in Nothofagus (Myrtle Beech) forests. *C. fuscum* is distinguished by its habitat and discarded 'cap'. **FUNGIMAP TARGET SPECIES**

Calvatia lilacina

BASIDIOMYCOTA Family Agaricaceae

FRUIT BODY	Cream to light brown, subglobose puffball, that tapers abruptly to a well developed persistent sterile base. Up to 15 cm.
FERTILE SURFACE	When immature is enclosed within the fruit body and is white and solid. As it matures this becomes a dense mass of greyish purple-brown fine threads before turning dry and dusty with maturing spores. Fruit body disintegrates from the top down releasing the spores, leaving a thick, soft papery saucer-shaped sterile base.
SPORES	Lilac brown, globose, short pedicel, finely warty, 4.5 x 3.5 µm.
HABITAT	Pastures, grassy areas, roadsides.
SUBSTRATE	Soil. SAPROTROPHIC.
HABIT	Solitary or groups.
SEASON	Autumn.
COMMENTS	Common. Native. Very distinctive large puffball with its purple-brown spores and persistent sterile base.

Cyathus stercoreus

Bird's Nest Fungus

BASIDIOMYCOTA Family Agaricaceae

FRUIT BODY	Densely red-brown hairy barrel-shaped when immature, the top of this ruptures exposing a white membrane, this also ruptures to reveal a smooth, slightly glossy grey-black cup containing egg-shaped packages. Up to 1 cm tall x 0.7 cm wide when mature.
FERTILE SURFACE	The shiny black egg-shaped packages (peridioles) contain spores, most of which are attached to the base of the cup by a fine thread (funiculus), 'eggs' have a 2 mm diameter.
SPORES	Colourless, smooth, subglobose, thick walled, 20–40 µm.
HABITAT	Where suitable substrate is found – often in paddocks / gardens.
SUBSTRATE	Well-rotted wood, herbivore dung, burnt areas, organically rich and manured soils. SAPROTROPHIC.
HABIT	Gregarious, often in large dense troops.
SEASON	Summer to autumn.
COMMENTS	Common. Cosmopolitan. The 'eggs' (peridioles) require rain for dispersal. They splash out onto the surrounding grass, which they attach to with the sticky, fine thread (funiculus) that attached them to the base of the cup, ready to be eaten by the next herbivore that comes along. Might be confused with *Cyathus striatus,* which has striations on the interior wall and light grey peridioles. *Nidula emodensis* are pale cream-brown with 0.5 mm red brown peridioles.

Geastrum pectinatum

Beaked Earth Star / Grooved Earth Star

BASIDIOMYCOTA Family Geastraceae

FRUIT BODY	Expands from an 'egg' that sits on top of the soil surface. Has two layers: the outer layer or 'rays' (exoperidium); and an endoperidium, the 'ball' that holds the spores. Up to 5 cm across x 4 cm tall when mature.
EXOPERIDIUM	Grey-cream when immature, separates into up to eight rays which bend downwards to raise the fungus above the litter to release its spores.
ENDOPERIDIUM	Mid to dark grey with grooved pore and distinct halo (peristome) around the ostiole (stoma), the base of this structure is finely grooved (pectinate) and sits on top of very distinct central stalk (1 cm tall).
SPORES	Dark brown, coarse, covered with blunt warts, globose, 4–6 µm.
HABITAT	Variety of vegetation communities and gardens.
SUBSTRATE	Humus, organically rich soil. SAPROTROPHIC.
HABIT	Solitary to small groups.
SEASON	Summer to autumn.
COMMENTS	Relatively common. Cosmopolitan. Easily recognised by the distinct stalk under the endoperidium, the pleated 'beak-like' opening at the top circled by a light coloured halo.

Geastrum triplex

Collared Earth Star

BASIDIOMYCOTA Family Geastraceae

FRUIT BODY	Expands from a light cinnamon, slightly pointy 'egg'. Has two layers: the outer layer, or 'rays' (exoperidium); and an endoperidium, the 'ball' that holds the spores. Up to 7 cm wide.
EXOPERIDIUM	The thick outer layer of the egg splits into about eight rays, which curl back to form a 'star' and reveal the endoperidium. When very mature the rays curl so far backwards they split horizontally to form a saucer or collar around the endoperidium.
ENDOPERIDIUM	Light brown, with a hint of red, papery thin dull circular ball containing spores. Has a small finely pleated raised pore (ostiole) through which the spores are released.
SPORES	Dark brown, globose, spiny, 5 µm diameter.
HABITAT	A variety of vegetation types.
SUBSTRATE	Humus, leaf-litter, rich organic soil, abandoned mounds of brush turkeys. SAPROTROPHIC.
HABIT	Gregarious.
SEASON	Summer to autumn.
COMMENTS	Common. Cosmopolitan. Widespread. One of the largest earth-stars. The large, sturdy build, cup-like remnants under the spore case (endoperidium), cinnamon / light to mid brown colours make this a very distinctive and easily recognised species.

Lycoperdon perlatum

Gem Studded Puffball / Devil's Snuffbox

BASIDIOMYCOTA Family Agaricaceae

FRUIT BODY	Medium-sized pear-shaped puffball with an elongated sterile base. Up to 6 cm. White with soft dark-coloured spines when immature. As the fruit body expands, the spines fall off and it becomes shiny.
GLEBA	The spores are enclosed in the rounded part of the puffball (endoperidium), which turns papery with maturity. These are released via a large central pore (ostiole) when the fruit body is compressed – via raindrops or other physical disturbance.
STEM	Similar colouring to endoperidium, widest at top, tapering towards ground.
SPORES	Brown en masse, globose, covered in tiny warts (verrucose), 3–4 µm.
HABITAT	Eucalypt forests to rainforests.
SUBSTRATE	Soil amongst leaf litter. SAPROTROPHIC.
HABIT	Often found in small clusters but may occur singularly.
SEASON	Autumn.
COMMENTS	Common. Cosmopolitan. Easily recognised to genus but may be confused with a similar species, *Lycoperdon pyriforme*, which grows on rotting wood rather than in soil. Spores can cause lung irritation if inhaled.

Lycoperdon subincarnatum

Ruddy Puffball

BASIDIOMYCOTA Family Agaricaceae

FRUIT BODY	Rounded puffball lacking a sterile base (attached directly to substrate via white mycelial threads). Grey-lilac when young becoming brownish, outer surface covered in fine spines forming pyramidal warts that disappear with maturity. From 1–3 cm.
GLEBA	The spores are enclosed within the fruit body (endoperidium), an irregularly shaped pore (ostiole) develops when spores are mature. Internal spore-bearing material is white and fleshy when young becoming purplish brown with maturity.
SPORES	Purplish brown print, globose, with sharply pointed spines (echinulate), 4–5 µm.
HABITAT	Wet forest types.
SUBSTRATE	Decomposing wood. SAPROTROPHIC.
HABIT	Solitary or in large troops.
SEASON	Autumn.
COMMENTS	Relatively common. Cosmopolitan. Easily distinguished by its rounded form, grey-purple colouring and lack of sterile base. The only other *Lycoperdon* species that grows on wood is *L. pyriforme* (Pear Shaped Puffball) which, as its common name suggests, is pear shaped and much larger. Previously known as *Morganella subincarnata*.

Myriostoma coliforme

Pepper Pot

BASIDIOMYCOTA Family Geastraceae

FRUIT BODY	Expands from a brownish 'egg' that sits amongst the leaf litter (up to 8 cm). Mature fruit body has two layers: the outer layer or 'rays' (exoperidium); and an endoperidium, the 'ball' that holds the spores. Up to 8 cm across x 6 cm tall when mature.
EXOPERIDIUM	Creamy biege, star-shaped, splitting into 5–12 rays which arch backwards with maturity to push the spore-bearing ball higher into the air, finely reticulated. Up to 8 cm across.
ENDOPERIDIUM	Metallic grey, ball-shaped with up to 20 pores (ostioles), smooth, papery, attached to exoperidium via numerous short stems (up to 0.4 cm high), up to 5 cm diameter.
SPORES	Brown spores en masse, globose, irregularly warty, 4–6 µm.
HABITAT	Non-native habitats – gardens and parks.
SUBSTRATE	Amongst mulch. SAPROTROPHIC.
HABIT	Solitary or in small clusters.
SEASON	Autumn.
COMMENTS	Rare in Australia. Cosmopolitan. Very easily recognised earthstar due to its large number of pores (giving it the appearance of a pepper pot). An introduced species that has a limited distribution in NSW. Has been observed in the Sydney Botanic Gardens and recently in Newcastle. Is listed as an endangered species in Europe and was thought to be extinct in Britain (last seen in 1880); however, was rediscovered in 2006.

Scleroderma cepa

Earthball / Stone Fungus

BASIDIOMYCOTA Family Sclerodermataceae

FRUIT BODY	Yellow brown, thick-skinned, rounded puffball supported by a short and thick stem-like base. Ruptures in the centre to release spores. Consists of an exoperidium (outer layer) and an endoperidium (interior).
EXOPERIDIUM	Yellow-brown, tough and leathery, smooth to cracked, breaks into several parts in the centre of fruit body, these lobes curve back with age to become star-shaped (stellate).
GLEBA	Interior of fruit body may be quite dark brown to black when immature, olivaceous and powdery when mature.
STEM	Yellow-brown, short, thick, comprised of a mass of mycelial threads.
SPORES	Olivaceous, globose, densely covered with spines, 24 µm.
HABITAT	Various habitats, including disturbed areas such as bank cuttings, lawns.
SUBSTRATE	Soil. MYCORRHIZAL.
HABIT	Solitary to small clusters.
SEASON	Autumn to winter.
COMMENTS	Common. Cosmopolitan. Its tough leathery nature, finely cracked surface pattern at maturity and star-shaped remnants when old make this species easily distinguished from other puffballs such as *Lycoperdon* species. It could, however, be confused with other similar looking *Scleroderma* species, which are characterised by smaller spores. *Scleroderma* translates as 'hard skin'.

Stinkhorns

Anthurus archeri

Stinkhorns come in a variety of forms; however, all emerge from an egg-like structure. Spores are borne in a foul-smelling and slimy substance. Flies and other insects are attracted to this and act as spore dispersal agents.

Phallus mutticolor

Aseroe rubra

Starfish Fungus or Anemone Stinkhorn

BASIDIOMYCOTA Family Phallaceae

FRUIT BODY	Star-shaped with a central disc, bright red, 4–9 radiating pairs of arms which taper towards tips and are often twisted. Up to 10–15 cm.
FERTILE SURFACE	Brown foul-smelling slime that coats the disc surrounding the central hole into the stem. Amount present depends on how much flies and other insects have already eaten.
STEM	Pink to whitish, spongy, hollow with a large central opening. 10 cm high x 3 cm wide.
EGG	Fruit body emerges from a lightly coloured, roundish gelatinous egg up to 3 cm in diameter. Has light-coloured thick strands (rhizomorphs) at base. The remnants of the 'egg' leave a cup-like structure (volva) at the base of the stem.
SPORES	Olive or olive-brown, smooth, cylindrical, 6 x 2 µm.
HABITAT	Often found in gardens and parks, or lawns and in the bush.
SUBSTRATE	Wood chip or rich organic soils. SAPROTROPHIC.
HABIT	Solitary or in groups, gregarious.
SEASON	From late spring to early winter.
COMMENTS	Common. Native. Very easily recognised. This was the first fungus recorded for Australia on 1 May 1792 from Recherche Bay in Tasmania, just south of Hobart, by Labillardière. **FUNGIMAP TARGET SPECIES**

Ileodictyon cibarium

Lattice or Basket Fungus

BASIDIOMYCOTA Family Phallaceae

FRUIT BODY	The immature fungus emerges from an egg-like structure (around 7 cm in diameter), often quite abruptly, to form a more or less circular lattice cage (up to 15 x 10 cm) that looks like the lines on a soccer ball. These lines or arms are drab off-white, tubular and finely transversely wrinkled.
FERTILE SURFACE	The dark olive, foetid-smelling, spore-bearing slime on the inside of the lattice.
SPORES	Dark olive en masse, smooth ellipsoidal, 5 x 2 µm.
HABITAT	Various forests and disturbed areas such as gardens.
SUBSTRATE	Mulch and organically rich soils. SAPROTROPHIC.
HABIT	Solitary to gregarious.
SEASON	Autumn to winter.
COMMENTS	Common. Cosmopolitan. This species has now become naturalised in overseas countries such as England. It is renowned for startling many gardeners with its sudden eruption from its 'egg'. It is very distinct and easily recognised to genus; however, there is another lattice or basket fungus which is very similar – *Ileodictyon gracile*. This species noticeably finer in form and is not wrinkled. **FUNGIMAP TARGET SPECIES**

Mutinus boninensis

BASIDIOMYCOTA Family Phallaceae

FRUIT BODY	Emerges from small sac-like 'eggs' which are attached to the substrate via white mycelial threads. The main structure (receptacle) is a simple spongy white hollow tube with a dark reddish brown tip. Up to 6 cm x 0.5 cm.
FERTILE SURFACE	The reddish brown tip of the receptacle contains foetid-smelling olive brown spore-bearing material (gleba).
STEM	White, spongy tube with volval remnants of the 'egg' at the base. Often collapsing with age.
SPORES	Olivaceous print.
HABITAT	A variety of eucalypt forests / rainforest – may also be found in garden mulch.
SUBSTRATE	Decomposing wood. SAPROTROPHIC.
HABIT	Solitary or in small clusters. Occasionally gregarious.
SEASON	Summer to winter.
COMMENTS	Relatively common. Cosmopolitan. Could be confused with a similar small *Mutinus* species, *M. borneensis*.

Phallus indusiatus *Phallus multicolor*

White Crinoline Fungus Variable Crinoline Fungus

BASIDIOMYCOTA Family Phallaceae

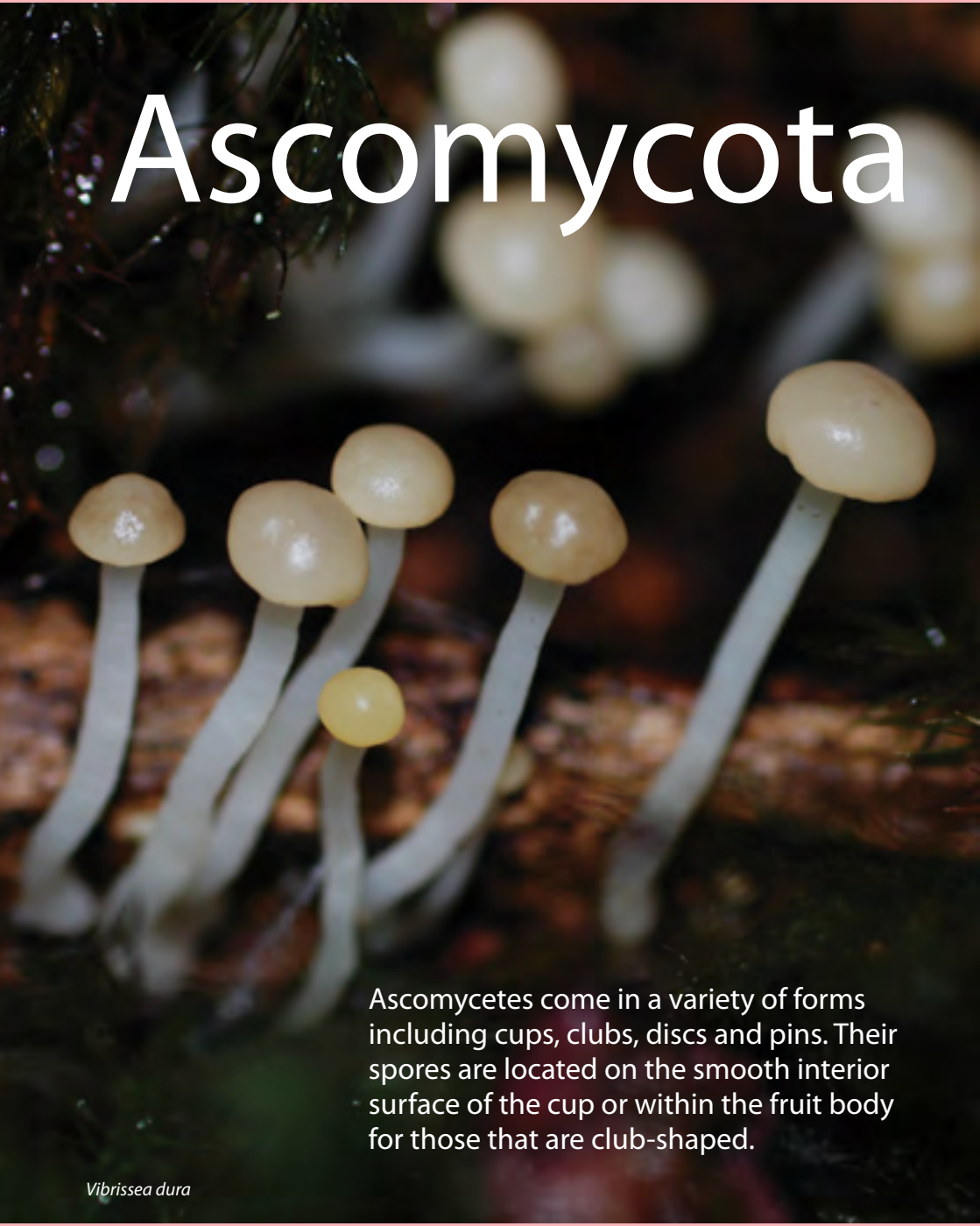
FRUIT BODY	Emerges from a pink-tinted 'egg' to form a tall, white spongy stem topped with a slimy foul-smelling 'head' with a central pore. A net-like structure or veil (indusium) expands from under the head. The colour of the head (pileus) differentiates the two species.
FERTILE SURFACE	Olive brown spore-bearing slime (gleba) which coats the wrinkled head. *Phallus indusiatus* is white under the spore-bearing material whilst *P. multicolor* may range between yellow, pink and orange. Up to 4 cm.
STEM	White, spongy, hollow, central with remnants of the egg it hatched from at its base (volva). 20 cm x 3 cm. Has a delicate net (indusium), that expands a third of the way down the stem, is white for *P. indusiatus* and may be pink to orange for *P. multicolor.*
SPORES	Olivaceous en masse, hyaline, cylindrical, smooth, 4 x 2 µm.
HABITAT	Wet sclerophyll and rainforests (often in gardens on mulch).
SUBSTRATE	Soil or leaf litter. SAPROTROPHIC.
HABIT	Solitary to gregarious.
SEASON	Summer to winter.
COMMENTS	Common. Cosmopolitan. Easily identified. *P. indusiatus* is believed to be less odorous than *P. multicolor*. **FUNGIMAP TARGET SPECIES**

Phallus rubicundus

BASIDIOMYCOTA Family Phallaceae

FRUIT BODY	Emerges from a whitish coloured 'egg' (up to 3 cm), quickly expanding to form a spongy scarlet stem with a brighter red 'head' which becomes covered in a foetid-smelling slime.
FERTILE SURFACE	Olive brown slime (spore-bearing gleba) which coats the head. The head has a central pore opening, is slightly ridged and can be up to 3 cm high.
STEM	Bright scarlet red to pink, central, spongy, hollow with the remains of the 'egg' as a volva. Up to 20 cm long x 3 cm wide.
SPORES	Olive brown en masse, hyaline under the microscope, cylindrical, smooth, 4 x 2 µm.
HABITAT	Variety of vegetation types but mostly in gardens.
SUBSTRATE	Soil, leaf litter, mulch. SAPROTROPHIC.
HABIT	Solitary to gregarious.
SEASON	Summer to winter.
COMMENTS	Common. Cosmopolitan. Easily distinguished from other *Phallus* species by its bright red colouring and lack of net (indusium).

Ascomycota



Ascomycetes come in a variety of forms including cups, clubs, discs and pins. Their spores are located on the smooth interior surface of the cup or within the fruit body for those that are club-shaped.

Vibrissea dura

Annulohypoxylon bovei

ASCOMYCOTA Family Xylariaceae

FRUIT BODY	Small, black, brittle crust. Resembles closely packed small angular black beads in a continuous sheet. Individual 'beads' have flattened tops, outlined by a faint line and a central, slightly raised pore (ostiole). Texture is hard and brittle.
FERTILE SURFACE	Fine tubes (asci) line the interior of the 'beads'. The asci hold the spores, which are released through the pore at the top.
SPORES	Black, smooth, elliptical with a groove and flattened on one side, 12 x 7 µm.
HABITAT	Various vegetation communities on fallen or standing dead timber.
SUBSTRATE	Old dead wood. SAPROTROPHIC.
HABIT	Gregarious, massed together to form a sheet.
SEASON	Found all year round.
COMMENTS	Common. Cosmopolitan. May look like fire damage on wood. It is thought that they may also be weakly parasitic and remain on the wood after the tree has died as a Saprotrophic fungus. Formerly known as *Hypoxylon bovei*.

Bisporella citrina

Lemon Disco

ASCOMYCOTA Family Helotiaceae

FRUIT BODY	Bright yellow disc, slightly lighter below, becoming more orange with age and drying, initially convex but flattening with age. Up to 3 mm.
FERTILE SURFACE	Smooth.
STEM	Very short or tapering to attachment to substrate.
SPORES	Colourless, smooth, elliptical, 12 x 4 µm.
HABITAT	Moist vegetation communities.
SUBSTRATE	Mainly on dead wood that has lost its bark. SAPROTROPHIC.
HABIT	Gregarious, often forming large colonies.
SEASON	Autumn.
COMMENTS	Common. Cosmopolitan. Easily recognised by its colour and large numbers, whereas other disc fungi of this size can be easily overlooked. Possibly could be confused with *Discinella terrestris* (Yellow Earth Buttons); however, that species produce larger discs which grow on soil rather than wood.

Chlorociboria aff. *aeruginascens* (group)

Green Stain

ASCOMYCOTA Family Helotiaceae

FRUIT BODY	Small disc, varying shades of blue-green throughout, slightly lighter underneath and when immature, goblet-shaped when immature, flattening with age to become circular or irregularly circular with slightly wavy margins. From 2 cm – 5 cm. Attached to substrate via a short (1 mm) central stem.
FERTILE SURFACE	Smooth surface of disc.
SPORES	Colourless, smooth spindle-shaped narrowing to blunt ends, 8 x 2 µm.
HABITAT	Moist vegetation communities.
SUBSTRATE	Barkless, older dead wood. SAPROTROPHIC.
HABIT	Scattered to gregarious.
SEASON	Autumn to winter or when conditions suitable.
COMMENTS	Common. Cosmopolitan. This fungus stains the wood it grows on a very dark almost black blue-green colour on the surface and a slightly lighter shade under the surface. This stained wood was much sought after in the past for use in Tunbridge Ware, decorative inlayed patterns on wooden items, from boxes to furniture. There are several *Chlorociboria* species that are easily confused with this species.

Cordyceps gunnii

Dark Vegetable Caterpillar

ASCOMYCOTA Family Cordycipitaceae

FRUIT BODY	Consists of an elongated sterile stalk and a fertile cylindrical head. The club emerges from the tail end of a caterpillar which has been mummified with lightly coloured fungal hyphae. From this point, to its rounded top, is about 15 cm tall. The caterpillar is always head down and more or less perpendicular to the soil surface.
FERTILE SURFACE	Dark olive-green in colour drying black, more or less smooth, spores are ejected from small pores (ostioles). Up to 8 cm.
STEM	Dull yellow, mostly below ground with only a few centimetres above ground where it is topped by the fertile section.
SPORES	Colourless, filamentous, breaking up into secondary cylindrical spores, smooth, c. 6 µm long.
HABITAT	Underground in various forest types.
SUBSTRATE	Caterpillar in soil. PARASITE.
HABIT	Solitary to scattered groups.
SEASON	Autumn to winter.
COMMENTS	Common. Native. This is an interesting fungus to find, though excavating it without damaging the caterpillar can require patience. **FUNGIMAP TARGET SPECIES**

Helvella chinensis

Stalked Hairy Cup

ASCOMYCOTA Family Helvellaceae

FRUIT BODY	Small stalked-cup fungus. Dirty brown-grey, outer surface of cup covered with short hairs. Up to 6 cm long x 2 cm wide.
FERTILE SURFACE	Smooth interior of cup, mid brown-grey with a slightly wavy edge. Up to 1 cm deep. May be inverted in some instances.
STEM	Dirty brown-grey, central, narrow and covered with short hairs. Up to 5 cm long.
SPORES	Colourless, smooth, broadly elliptical, 16 x 11 µm.
HABITAT	Various moist forests in leaf litter.
SUBSTRATE	Soil. SAPROTROPHIC.
HABIT	Solitary or small groups.
SEASON	Summer to autumn.
COMMENTS	Moderately common. Native. As this species blends in so well with the leaf litter it is usually overlooked. Often found on banks with moss in dark sheltered areas. Possibly confused with forest cups such as *Plectania campylospora*; however, this species is much larger, dark brown, has very short stems and grows on wood. **FUNGIMAP TARGET SPECIES**

Leotia lubrica

Jellybaby

ASCOMYCOTA Family Leotiaceae

FRUIT BODY	Consists of lobed and globular head and tall slimy stem. From 5–8 cm tall.
CAP	Yellow to olive green irregularly lobed head with inrolled margins, smooth, slimy and rubbery jelly-like texture. Up to 2.5 cm.
FERTILE SURFACE	Slimy outer surface of the head is the fertile spore-bearing surface.
STEM	Bright yellow to yellow-brown, same rubbery and slimy texture as cap, slightly scaly (punctate) in places, central, cylindrical. Up to 6 cm x 1 cm.
SPORES	Colourless, fusiform sometimes curved, smooth, 20 x 6 µm.
HABITAT	Wet sclerophyll / rainforest.
SUBSTRATE	Soil / amongst leaf litter. SAPROTROPHIC.
HABIT	Solitary or in small colonies.
SEASON	Autumn.
COMMENTS	Relatively common. Easily recognised cup fungi species. The cup is inverted in this case. *Vibrissea dura* (Brown-headed Pin) is similar in form; however, is much smaller with a brown cap and grows on wood. **FUNGIMAP TARGET SPECIES**

Microglossum viride

Green Earth Tongue

ASCOMYCOTA Family Geoglossaceae

FRUIT BODY	Emerald to olive green, smooth, irregularly lobed to cylindrically club-shaped. Up to 7 cm tall.
FERTILE SURFACE	Outer surface of upper portion of fruit body, dull green, shiny when wet, longitudinally furrowed, often twisted. Up to 7 mm wide.
STEM	Paler green, almost white at base, cylindrical, smooth to finely powdery, shiny, narrower and less furrowed than fertile portion. Up to 4 mm wide.
SPORES	Colourless (hyaline), cylindrical-fusiform, 16 x 6 µm.
HABITAT	Wet sclerophyll to rainforest.
SUBSTRATE	Soil amongst leaf litter. SAPROTROPHIC.
HABIT	Solitary or in small clusters.
SEASON	Autumn.
COMMENTS	Relatively common. Cosmopolitan. Often hard to see amongst leaf litter but easily recognised by its green colouring. Other earth tongues, such as *Trichoglossum hirsute,* are black with more defined club-shaped heads.

Plectania campylospora

Brown Forest Cup

ASCOMYCOTA Family Sarcosomataceae

FRUIT BODY	Dark brown to almost black, cup-shaped with a short stem to almost discoid, tough, rubbery. Outer surface is often darker than the interior and minutely roughened. Up to 8 cm wide and 6 cm tall.
FERTILE SURFACE	Interior of cup, lighter brown to black, smooth.
STEM	Dark brown to black, central, short, roughened texture. Up to 1 cm long.
SPORES	Hyaline, bean-shaped smooth, 25 x 12 µm.
HABITAT	Rainforests / wet sclerophyll.
SUBSTRATE	Decomposing wood. SAPROTROPHIC.
HABIT	Solitary, but often in small clusters.
SEASON	All year round.
COMMENTS	Common. Australasian. Easily identifiable. Other *Plectania* species do not have roughened exteriors. *Helvella chinensis* has a long slender stem, grows in soil amongst leaf litter and is grey rather than brown. **FUNGIMAP TARGET SPECIES**

Scutellinia aff. *scutellata*

Eyelash Fungus

ASCOMYCOTA Family Pyronemataceae

FRUIT BODY	Small burnt orange-red cup fungus with stiff dark hairs (resembling eyelashes) lining the margins (may need a hand lens to see these clearly), almost spherical when immature, expanding to form a shallow disc. Up to 1 cm.
FERTILE SURFACE	Smooth orange-red interior of cup.
STEM	None. Attached directly to substrate.
SPORES	White print, elliptical, very finely ornamented with warts, 18 x 12 µm.
HABITAT	Variety of habitats – mostly wetter forests and damp areas.
SUBSTRATE	Very wet decomposing wood. SAPROTROPHIC.
HABIT	Small clusters to gregarious.
SEASON	Late spring to winter.
COMMENTS	Common. Cosmopolitan. Found on most continents in the world. Although quite distinctive with its 'eyelashes', this species could be confused with other *Scutellinia* species (at least five have been documented as occurring in Australia) and other orange cup fungi such as *Cheilymenia*. Differentiation of *Scutellinia* species is based on microscopic characteristics. *Cheilymenia* prefer herbivore dung as a substrate.

Trichoglossum hirsutum

Hairy Earth Tongue

ASCOMYCOTA Family Geoglossaceae

FRUIT BODY	Black, club-shaped (clavate), finely velvety. Up to 7 cm tall.
FERTILE SURFACE	The outer surface of the rounded 'head' of the club, often irregularly lobed or grooved, finely velvety.
STEM	Central to excentric, cylindrical, slender, noticeably hairy. Up to 5 cm x 0.4 cm.
SPORES	Cylindrical, divided into around 16 sections (septate).
HABITAT	Wet forests.
SUBSTRATE	Soil amongst moss.
HABIT	Solitary to small clusters.
SEASON	Autumn to winter.
COMMENTS	Relatively common. Cosmopolitan. Often overlooked in dark forests due to its black colouring. Could be confused with species of *Geoglossum*; however, these tend to be less club-shaped (have smaller 'heads') and smooth fertile surfaces. A hand lens will readily distinguish these two species.

Xylaria hypoxylon

Candlestick / Candlesnuff Fungus

ASCOMYCOTA Family Xylariaceae

FRUIT BODY	Dark brown to black with smoky grey powdery tips when immature, fruit body consists of spindly elongated and irregularly bent clubs that are occasionally branched, hard woody texture. Up to 10 cm tall.
FERTILE SURFACE	The outer powdery surface of the smoky-coloured tips is comprised of conidia (asexual spores). When mature, the fruit bodies release sexual spores from tiny holes that dot the outer surface.
STEM	Dark brown black, tough and woodlike, covered in hairs. Up to 3 mm wide.
SPORES	Sexual spores: Black print, smooth, kidney-shaped 12 x 5 µm. Asexual spores: hyaline, ellisoidal and smooth.
HABITAT	Wet forest types.
SUBSTRATE	Rotting wood.
HABIT	Small to large clusters. May be gregarious.
SEASON	May be present all year round.
COMMENTS	Common. Cosmopolitan. Easily identified by its spindly form and grey tips. The epithet *hypoxylon* means 'below wood'.

Slime moulds

Slime moulds are fungi-like organisms but are not 'true fungi'. They belong to Kingdom Protoctista. Slime moulds have a plasmodial phase that can move, and reproduce via spores.

Ceratiomyxa fruticulosa

Icicle Fairy Fans

MYXOMYCOTA Family Ceratiomyxaceae

FRUIT BODY	Consists of a mass of tiny, delicate translucent white, simple and branched columns. These are 5 mm tall but have been recorded up to 1 cm.
FERTILE SURFACE	Spores form over the entire surface of the fruit body.
SPORES	Colourless to pale white, smooth, variable in shape and size. Usually ovoid or elliptical, though can be globose, 6–7 x 10–13 µm.
HABITAT	In protected positions in various habitat types.
SUBSTRATE	Rotting dead wood of varying sizes. SAPROTROPHIC.
HABIT	Gregarious mass.
SEASON	Spring to autumn or when conditions suitable.
COMMENTS	Cosmopolitan. Widespread. This slime mould consumes micro-organisms such as bacteria, microfungi and cyanobacteria that colonise the substrate. **FUNGIMAP TARGET SPECIES**

Fuligo septica

Dog Vomit Fungus / Flowers of Tan

MYXOMYCOTA Family Physaraceae

FRUIT BODY	Yellow to orange, sometimes white or pink, irregular, fragile, cushion-shaped mass, to 20 cm wide x 3 cm thick, though occasionally recorded as being much larger. May be very variable.
FERTILE SURFACE	Is in the interior, when immature is the same colour as the outside, then violet-black as spores mature.
SPORES	Dark violet, globose, minutely spiny, 6–9 µm.
HABITAT	Various habitats from garden beds to forests.
SUBSTRATE	Decaying wood, bark, litter, wood chip, garden mulch, soil and wet grass. SAPROTROPHIC.
HABIT	Gregarious mass.
SEASON	When suitable moist conditions prevail.
COMMENTS	Cosmopolitan. Widespread. One of the most common and easily recognised slime moulds. In 1727 Jean Marchant, a French botanist, first described this species, referring to it as 'flowers of tan'. This common name is linked to its prolific growth on the spent wattle bark used for tanning. *F. septica* is reported to tolerate extremely high levels of zinc due to its yellow pigment (fuligorumbin A.) which will change (chelate) metals to inactive forms. **FUNGIMAP TARGET SPECIES**

Stemonitis aff. *splendens*

Chocolate Tube Slime

MYXOMYCOTA Family Stemonitidaceae

FRUIT BODY	The fruit body is comprised of a mass of fine purplish to chocolate brown cylindrical tubes (up to 2 cm long) that are supported by shiny black hairlike stems (1–4 mm long). Fruit bodies are often clumped together when immature. As the fruit bodies mature the clumps separate to form light feathery tufts.
FERTILE SURFACE	The powdery chocolate brown tubes.
SPORES	Lilac brown print, finely ornamented, 7–9 µm.
HABITAT	Various habitats, from gardens to forests. Even fence posts.
SUBSTRATE	Rotting wood.
HABIT	Often forms dense colonies.
SEASON	All year round.
COMMENTS	Common. Cosmopolitan. Plasmodium phase is white or pale yellow and is rarely noticed. Fruit bodies of *Stemonitis* sp. look remarkably similar and may need closer examination of microscopic features to correctly identify to species level. **FUNGIMAP TARGET SPECIES**

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Glossary

adnate: of gills / pores (Fig. 1c) broadly attached by their full width to stem; cf. *adnexed, subdecurrent, decurrent*

adnexed: of gills / pores (Fig. 1c) narrowly attached to the top of the stem; cf. *free, adnate, subdecurrent, decurrent*

agaric: a general term used for fungi with a cap, gills and a stem

AM: arbuscular mycorrhiza

amoeboid: similar to an amoeba – move by creeping through extending temporary protrusions into which protoplasm flows, continually changing shape

amygdaliform: almond-shaped

anastomosing: of gills, interconnecting ridges / veins between gills, also referred to as *interveining*

annulus (pl. **annuli**)**:** the *ring* of tissue left on the stem after the expanding maturing cap breaks the *partial veil* attached to the stem and the cap edge; see *ring*

apiculate: having a short, sharply pointed tip

ascending gills: gills that, due to the shape of the cap, are nearly vertical, rather than horizontal to the stem

Ascomycetes: earlier name for *Ascomycota*

Ascomycota: current name for a group of fungi (a *phylum*) that produce spores (*ascospores***)** in tube-like structures called *asci*; see *ascus*

ascospores: the sexual spores of a fungus in the phylum *Ascomycota* produced in an *ascus*

ascus (pl. **asci**)**:** (Fig. 1a) a specialised tube-like cell in which spores (*ascospores*) of *Ascomycota* are formed, usually eight in number. The *ascus* is a definitive characteristic of the phylum *Ascomycota* group of fungi.

attachment: of cap / fungus, where the cap / fungus joins the stem or substrate, *central, excentric, lateral*

autodigests: the changing of a cap from solid to liquid as spores mature, as seen with many *Coprinus* spp.; see *deliquescent*

basidiocarps: fruiting body of a *Basidiomycota*

Basidiomycetes: earlier name for *Basidiomycota*

Basidiomycota: current name for a group of fungi (a *phylum*) with spores (*basidiospores*) produced externally on the tips of a club-like structures called a *basidia*; see *basidium*

Basidiospores: the sexual spores of a fungus in the phyllum *Basidiomycota* produced on a *basidium*

basidium (pl. **basidia**)**:** a specialised club-like cell with fine extensions (*sterigmata*) on top, which produce spores (*basidiospores*), one to four, usually four in number. The *basidium* is a definitive characteristic of the phylum *Basidiomycota*

beneficial association: of *host / fungus* interaction (see *host*) where the host is benefited by its relationship with the fungus; cf. *commensalistic association, pathogenic association*

boletes: a 'mushroom'-shaped fungus that has *pores* under the cap instead of *gills*. It has a soft, fleshy spongy texture unlike leathery / woody *polypores*

bracket: term used to describe bracket-shaped fungi generally applied to fungi that are leathery / woody in texture, with pores (see *polypores*), growing on wood

bruising: when a fungus changes colour when damaged

caespitose: *habit* of fungi growing in a dense groups, or 'tufts' like grass; cf. *gregarious, solitary*

campanulate: (Fig. 1c) of cap, bell-shaped

cap: (Fig. 1c) the top of a fungus under which the fertile (spore-bearing) surface is found; see *pileus*

cartilaginous: having a tough or fibrous texture, usually in reference to a mushroom stem

caulocystidium (pl. **caulocystidia**)**:** sterile cell on stem of fungus; see *cystidium*; cf. *cheilocystidium, pileocystdium, pleurocystidium*

central: of cap / fungus attachment to stem or substrate – in the centre of the cap / fungus, usually underneath. It can also refer to the *placement of the ring* on the centre of the stem; cf. *inferior, superior*

cheilocystidium (pl. **cheilocystidia**)**:** sterile cell on the edge of a gill; see *cystidium*; cf. *caulocystidium, pileocystdium, pleurocystidium*

chelate: an organic compound that bonds to metal atoms

chlorophyll: a green pigment in plants that absorbs light energy for photosynthesis to gain nutrients

from carbon dioxide and water

close: of gill / pores etc., spacing (Fig. 1b) between *crowded* and *distant*, hence numerous gills / pores

commensalistic association: of *host / fungus* interaction (see *host*), where the host is only slightly affected; cf. *beneficial association, pathogenic association*

concentric: arcs or circlular bands or zones of colour, texture or ridges

concolorous: of the same colour

conical (adv.**conically**)**:** of cap, shaped like a cone

convoluted: intricately folded and twisted as seen with some jelly fungi

convex: of cap, broadly rounded, like part of a circle (Fig. 1c)

coprophilous: living in, or growing on excrement

cortina: web-like *partial veil* that joins the cap edge to the stem in some fungi which only remain as *fibrils* on the stem

cosmopolitan: growing in many parts of the world; widely distributed

crenate: of cap / gill edge, round edged scalloped

crowded: of gill / pores etc., spacing, very close together; cf. *close, distant* (Fig. 1b)

cylindrical: tube-like with parallel sides and circular in cross-section

cystidium (pl. **cystidia**)**:** a sterile cell projecting from the surface of a fungus, can be distinctly shaped or coloured or encrusted; cf. *cauloystidium, cheilocystidium, pileocystdium, pleurocystidium*

decurrent: of gills / pores (Fig. 1b) attachment that is broad and runs down the stem; cf. *adnate, adnexed, free, subdecurrent*

deliquescent: of caps liquefying; see *autodigests*

depressed: of caps, indented, concave, in the centre (Fig. 1c)

distant: of gill / pores etc. spacing (Fig. 1a) widely spaced, hence few gills; see *close, crowded*

ECM: ectomycorrhiza

egg: immature stage of some fungi in which entire fungus is enclosed within a continuous layer of tissue

ellipsoid / ellipsoidal: of spores, elliptical, with both sides even and rounded ends

elongate: of spore shape, long / elongated

endoperidium the innermost layer of tissue covering spores (*spore sac*) in a multi-layered fungus; see *peridium*; cf. *exoperidium*

epigeous fungi: fungi that have their fruit body above ground; cf. *hypogeous fungi*

excentric: of cap / fungus attachment to stem or substrate – off-centre of the fungus, usually underneath; see *central, lateral*

exoperidium: the outer layer of tissue of a multi-layered fungus such as a puffball; see *peridium*; cf. *endoperidium*

exudates: the liquid that weeps from certain families of fungi when they are damaged, this may be clear, coloured or white

family: a group of closely related *genera* in which the name ends with *-aceae*

fan: term sometimes used for gilled fungi that are attached *laterally* (bracket-like)

fetid: see *foetid*

fertile surface: the spores producing surface of gills, pores, spines or smooth; see *sterile surface*

fibril (adj. **fibrillose**)**:** fine, visible, silky fibre, surface covered by closely adhering fine silky fibres

fimbriate: of gills, very fine-fringed or toothed gill edge

floccose: of surface, loose, soft cottony fibres / particles that are easily dislodged

foetid (or **fetid**)**:** unpleasant (foul) smelling as with stinkhorns, such as *Aseroe rubra*, spore mass

free: of gills (Fig. 1c) that do not attach to the stem

fruit body: the visible reproductive (spore-bearing) structure of a fungus, mushroom, puffball etc.

flurigorubin A: a polyene acyletramic acid pigment isolated from the slime mould *Fuligo septica*

funiculus: bundle of fibres that combine to make a thicker, stronger element

fungus (pl. **fungi**)**:** an organism that belongs to the Kingdom Fungi that is usually comprised of *hyphae*, has no *chlorophyll* for *photosynthesis*, reproduces by *spores*

fusiform: narrow at both ends, spindle-shaped

gelatinous: jelly-like

genus (pl. **genera**)**:** a group of closely related *species*

germ pore: modified end of some spores that is thin-walled

gill: the blade-like structures hanging under the mushroom's cap that bear *spores;* see *lamella*

gleba: spore-bearing material within puffballs and the slime of stinkhorns; see *spore mass*

globose: almost spherical in shape

glomalin: a protein produced by arbuscular mycorrhizal fungi that assists with the aggregation of solid particles

glutinous: of surface of fungus, covered with a slimy, slightly sticky, jelly-like substance; cf. *visid*
granular: (of a surface) finely gritty
gregarious habit: of fungi, when a number of fungi of the same species are growing within close proximity but not joined at the base; cf. *caespitose*
habit: the proximity of how *fruit bodies* grow; cf. *caespitose, clustered, gregarious, solitary*
habitat: the characteristics of where the fungus grows, including vegetation, soil, moisture, aspect etc.
host: a living organism that a parasitic fungus gains nutrient from; cf. *beneficial association, commensalistic association, pathogenic association*
hyaline: clear, colourless
hypha (pl. **hyphae**)**:** microscopic hair-like tissue of which fungi are comprised; see *mycelium, rhizomorph*
hypogeous fungi: fungi in which the fertile surface is enclosed and that develop their fruiting bodies fully or partially underground; cf. *epigeous fungi*
incurved: of cap margin, which curves in under the *cap* towards the *stem*; cf. *inrolled*
indusium: net-like skirt that hangs from below the fertile cap of some *stinkhorns*
inferior: usually of *placement of ring* on stem, near the stem base; cf. *central, superior*
inrolled: of cap margin, which strongly curves under the *cap* towards the *gills*; cf. *incurved*
interveining: see *anastomosing*
labyrinthiform: maze-like, irregular patterns or chambers
lacuna (pl. **lacunae**): space visible between cells, allowing free passage of light
lacunose: full of gaps or lacunae; see *lacuna*
lamella (pl. **lamellae**)**:** blade-like structure on the underside of a *cap* that bears *spores*; see *gills*
lamellula (pl. l**amellulae**)**:** short gills that are attached at the margin of the cap between the main gills (*lamellae*) they can be a various lengths, but not as long as the main *gills*; see *tiers*. Some fungi do not have any.
lateral: of cap / fungus attachment to stem or substrate – at the side of the fungus; see *central, excentric*
latex: exudate that weeps from damaged surfaces of some fungi, such as *Lactarius*; may be coloured or clear
lecythiform: usually of *cystidia* shape, which are broad-bodied with narrow necks and rounded head
lichen: a mutually beneficial relationship between a fungi and an algae or cynobacteria. Usually with an *Ascomycota* and less often with *Basidiomycota*; see *symbiosis*
luminescent: the emission of visible light by a substance that hasn't been heated
margin: of cap or gills, the edge or border of these structures
mitriform: of shape, usually spores, mitre-like
mycelium (pl. **mycelia**)**:** congregation of fine filamentous *hyphae* to form a more visible and robust vegetative structure
mycorrhiza (pl. **mycorrhizae**)**:** a mutually beneficial relationship between a fungus and a plant root; see *symbiosis*
mycorrhizal: of fungi having a mutually beneficial relationship with a host plant roots. Products from photosynthesis, sugars / carbohydrates are transferred to the fungus from the plant and water and nutrients from the soil via the fungus to the plant; see *symbiosis*
Myxomycota: see *slime mould*
olivaceous: of a dusky yellowish-green colour; olive green
ostiole: small opening of a spore-producing structure for spore dispersal; see *stoma*
parabolic: a cap with a round top and where the height is greater than the width
parasite: a fungus that gains its nutrients from another living organism resulting in anything from mild irritation to death of the *host*
partial veil: the tissue that covers the gills / pores of an immature *fruit body.* It joins the edge of the cap to the stem (Fig. 1b) and it breaks when the cap expands, leaving a ring (*annulus*)
pathogen: an organism that can result in a diseased and / or the death of the *host*
pathogenic association: of *host / fungus* interaction (see *host*), where the host is negatively affected by the fungus and becomes diseased and may die; cf. *beneficial association, commensalistic association*
pectinate: like the teeth of a comb
pedicel: a stalk
pileus: see *cap*
peridiole: an enclosed package of spores as seen; for example, in the spore containing 'egg' in a

bird's nest fungus

peridium: the layer (or layers) of tissue that enclose a *spore mass*; cf. *endoperidium, exoperidium*

peristome: the zone around an *ostiole / stoma* that is coloured or textured

photosynthesis: process by which green plants use sunlight to gain nutrients from carbon dioxide and water

phylum: a taxonomic rank between kingdom and class; e.g. *Ascomycota* and *Basidiomycota*

pileus: see *cap*

pileocystidium (pl. **pileocystidia**)**:** sterile cell on the surface of the cap; see *cystidium*; cf. *caulocystidium, cheilocystidium, pleurocystidium*

plano-covex: broadly convex (Fig 1b); cf. *convex*

plasmodium (pl. **plasmodia**)**:** the mobile, multinucleate mass of slimy protoplasm, that is the feeding stage of a *slime mould*; see *myxomycota*; cf. *sporangium*

pleurocystidium (pl. **pleurocystidia**)**:** sterile cell on the side of a gill; see *cystidium;* cf. *caulocystidium, cheilocystidium, pileocystdium*

plicate: folded multiple times lengthwise like a fan

polypores: bracket-like fungi with *pores* that are leathery / woody; cf. *bolete*

pore: the visible opening of tubes in *polypores* and *boletes.* At times tubes, particularly shallow ones, are referred to as pores. They can be variously shaped from round to angular; cf. *tube*

pruinose: covered by fine powdery particles

pseudorhiza: false root

punctate: small spots or depressions that give the appearance of dots

reinform: kidney-shaped

resupinate**:** adhering to substrate as a flat sheet or cushion

rhizomorph: a root or shoelace-like aggregation of *mycelium* which has internal conducting tissue

ring: remnant of *partial veil* left on the stem after the fungus has matured; see *annulus*

rugose: having a rough, wrinkled surface

saprotrophic: obtains nutrients from dead organic matter

scales: patches of veil remnants on the cap or stem surface

sessile: of cap / fruiting body, without a stem, attached directly to substrate

shelf: a bracket fungus; see *fan*

sinuate: of gills / pores attachment (Fig. 1c) with a curved (notched) indentation on gill / pores near the stem

slime mould: an organism that produces an *amoeboid* stage and a spore bearing stage, in its life cycle; cf. *plasmodium, sporangium*

solitary habit: of fungi growing as a single specimen; cf. *caespitose, gregarious*

sphaerocysts: globose cells in the tissue of species in the families such as Russulaceae

sporangium (pl. **sporangia**)**:** a spore-containing structure

spore: a microscopic reproductive unit of a fungus (like a seed for a plant)

spore mass: see *gleba*; a mass of tissue either powdery or slimy that contains spores

spore print: the pattern of spores deposited on a surface by a fruit body

spore sac: see *endoperidium*; a spore mass with its covering layer of tissue

squamule: a small scale

stem: see *stipe*; the structure that attaches the fungus to its substrate; see *central, excentric, lateral*

sterigma (pl. **sterigmata**)**:** the fine projections on top of a *basidium* to which *basidiospore*s of *Basidiomycota* are attached

sterile surface: the surfaces of a fungus that does not produce spores; see *fertile surface*

stipe: see *stem*

stoma (pl. **stomata**)**:** a pore or other small opening from which spores are released from a *basidiocarp* such as 'puffballs'; see *ostiole*

striate: of cap and other elements of fungus, pattern of lines

strigose: having stiff hairs that are pressed together

suballantoid: slightly sausage-shaped, from the term 'allantoid' meaning sausage-shaped

subdecurrent: of gills / pores, broadly attached to stem and only slightly starting to run down the stem; cf. *adnate, decurrent*

subglobose: almost round; see *globose*

substrate: the material on which the a fungus grows and from which it gains nourishment

sulcate: having deep, narrow sulci; see *sulcus*

sulcus (pl. **sulci**)**:** a groove or furrow

superior: usually of *placement of ring / annulus* on stem, near the top of the stem; cf. *central, inferior*

symbiosis (adj. **symbiotic**)**:** an interaction between two different organisms living in close association

tiers: of *lamellulae*, a series of rows of short gills,

from one to three or more.

tomentose: covered in hairs

translucent: semi-transparent, allowing the partial transmission of light

translucent-striate: of cap, the shadow of the gills is visible from the top of the cap as lines

truffle: fungi whose fruit bodies grow fully or partially underground and whose fertile surface is enclosed within a skin of sterile tissue

tube: usually a fine hollow cylinder which is lined with spore-producing tissue in *boletes* and *polypores* and may be a different colour to the pores at the end out of which the spores pass; cf. *pore*

umbo (adj. **umbonate**)**:** of cap, having a distinct raised rounded area in the centre of a cap – of various sizes (Fig. 1c)

universal veil: (Fig. 1b) the layer of tissue enclosing the whole of the some species of immature fungi during their developmental stage; cf. *partial veil, ring, veil, volva*

veil: the layer of tissue covering parts or the whole of a fungus during its development; cf. *partial veil, ring, universal veil, volva*

verrucose: covered in warts; warty

viscid: of surface of fungi, sticky or slimy; cf. *glutinous*

volva: remnants of the *universal veil* at the base of the stem which may be in the form of various shaped sac-like structures, swollen base or ridges (Fig. 1b); cf. *universal veil, veil*

warts: of cap, raised lumps of tissue remaining from the universal veil ornamenting the cap surface. Can be of various sizes.

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Fungi play an incredibly important role in all terrestrial and aquatic ecosystems. They aid decomposition and nutrient cycling, help to create and stabilise soils, form relationships with plant roots that are essential for the survival of plants, and provide habitat and a food resource for a multitude of other organisms. Without fungi, plant-based habitats would not exist.

Fungi contribute significantly to global biodiversity but, despite their diversity and abundance, they are among the most poorly studied organisms.

New South Wales has approximately 36,000 different species of fungi. Around 30,000 of these are microscopic but, of the estimated 6,000 species found in the state that produce visible fruit bodies, less than half have been formally described and named.

This is one of the things that makes fungi so exciting to enthusiasts and it's one of the reasons this guide has been developed.

A guide to the common fungi of the Hunter-Central Rivers region is designed to be used by people of all ages to identify fungi in the field. It also contains some great information on what fungi are, why they're so important, and where to find them.


Anthracophyllum archeri


Coltricia cinnamomea


Clavulinopsis corallinorosacea

NSW GOVERNMENT Local Land Services Hunter

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