Find our fungi!

Discovering fungi of the mallee and woodland plains through citizen science.

2nd edition

This booklet was compiled and designed by Murraylands and Riverland Landscape Board fungi enthusiasts Kim Arnott, Nicola Barnes, Renate Faast and Jasmin Packer.

Technical review of information on the target fungi species was generously provided by Thelma Bridle, Pam Catcheside, Jasmin Packer and Sapphire McMullan-Fisher.

Many people contributed images to this booklet, and have been acknowledged where appropriate.

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Contents

Why we need your help

Fungi are an essential part of our environment

Fungi are an integral part of the web of life. They form partnerships with over ninety per cent of our Australian plants, and help to deliver essential micronutrients which the plants need to thrive. Fungi help to build healthy soil and protect their host plants from disease. They even help trees 'talk' to each other!

Fungi are a major player in nutrient recycling. They play a critical role in decomposing organic matter, especially wood and leaves. Without fungi, all of our plants would be stunted, and all the wood that has ever fallen would be built up with nothing to help it rot!

Imagine you can look beneath the soil within a healthy bushland. You would see a massive network of interwoven fungal threads, plant roots and micro-organisms. Healthy soil is teeming with life! There are just as many species below the ground as above – and many are fungi.

Did you know?

Most living organisms rely on fungi for at least part of their life cycle... including us!

Off on a fungi hunt!
Image credit: Nicola Barnes

We need to know more

Fungi are vastly under-studied. There are over 50,000 species of fungi in Australia and yet only 24% of them have been described and named. We know even less about their distribution and the health of their populations.

Fungi are susceptible to many of the same threats that affect our native animals and plants – including bushland clearance, disturbance changes (fire and flood), weeds, and climate change.

We need your help to discover and find out more about our local fungi. Gaining insights into their distribution and their population trends will help us identify which are most threatened. We can then work out how to protect them and the species that rely on them.

How to get involved

You can help to discover and understand our local native fungi. We have chosen 20 of the most unique fungi in the Murraylands and Riverland region as 'target species' for this field guide. These are species that are easy to identify because they are distinctive and can be found in several places within our region.

Learning about these 20 species will help you to learn more about different types of fungi and the defining features which help to identify them. This will also help you to submit reliable records of these target species.

Your recorded observations can help scientists to learn more about the population trends and threats to our native fungi.

Finding fungi can be fun for all the family!
Image credit: Nicola Barnes

Did you know?

We have over 400 species of native fungi in our region.

Over 90% of our native plants depend on them. We can only protect these friendly fungi when we know where they occur, and whether they are threatened.

You can use this field guide to:

- get out in fungi season and hunt for fungi
- get to know different types of fungi and identify our 20 target species
- take high quality photos
- send your observations and photos to Fungimap – they will check, endorse, and upload them to Atlas of Living Australia
- return to the same bushland each year to discover how fungi change, and to send reliable, regular records to Fungimap
- connect with our citizen science community on our Murraylands and Riverland Landscape Board website and Facebook page.

Fungi groups

There are many different types of fungi. To help with identification, they have been split into different morphological groups ('fungi groups') based on their shape, size, colour and texture.

Eight common fungi groups found in the Murraylands and Riverland region include:

- birds nest (shallow cups with little 'eggs')
- boletes (mushrooms with pores)
- club and coral
- earth ball
- gill (mushrooms with gills; also called agarics)
- jelly
- puff ball
- tough pore.

Tip

Getting to know these groups is a great way to start identifying fungi.

Visit Fungimap to find out more about the different groups of Australian fungi.

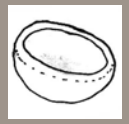
This field guide has 20 target species that each belong to one of the 5 groups below.

Club and coral
Coral or club-shaped with fleshy texture.

Gill
Fleshy cap with an underside of gills radiating from centre.

Puff ball
Powdery spores within a roundish sac with a central hole at the top.

Tough pore
Tough texture, with pores on the underside.



Discs/cups
Flat discs or shallow cups with spore sacs on its surface.

Where and when do fungi grow

Fungi are just about everywhere! They grow in most habitats around the world. The best time to see the fruiting bodies of fungi is autumn and winter, especially after good rain. Fungi tend to grow in wetter spots, and appear in the wettest times of the year (especially May–July).

The fungi in this field guide can be found from the mallee to the coast within our region. You are most likely to spot them in native forests and woodlands, as the greatest diversity of native fungi are found in places that are relatively undisturbed.

You may also find fungi in more disturbed and open areas like parks, plantations, and even in your garden.

Images to the right and below show typical habitats where fungi are found.

Image credits: Neale Dyster, except mallee woodlands, Nicola Barnes.

Below left: On logs (Pycnoporus coccineus group)
Below right: In leaf litter and soil

Above: Stringybark woodlands

Above: Mallee woodlands

What to record

Essential information

- photograph: record the image number(s)
- species name
- date seen
- location: GPS Lat/Long and description (see additional information on page 10)
- habitat: land type (e.g. bushland, creekline, garden) and vegetation community (e.g. *Eucalyptus obliqua* woodland).
- substrate: describe what it is growing on or in e.g. leaf litter, fallen log or base of living tree (and give name).
- other observations: any other interesting information that may help us to understand and protect our native fungi.

Did you know?

Can you imagine a world without trees?

Plants can only grow taller than two metres if they have a fungal partner to supply water and nutrients.

Useful things to take

- a camera (with a macro lens if possible) to help with identification and to remind you of the habitat where the fungus was found
- small mirror for looking at the gills, teeth or pores on the underside of a cap or bracket
- a hand lens or small magnifying glass x5 or x10 magnification
- this field guide.

Look up, you might find fungus there also!
Image credit: Rusty Ryder

Where to send records

Fungimap

Please send your records to Fungimap Inc. Fungimap is Australia's national organisation for fungi. The purpose and passion of Fungimap is to build knowledge and interest in Australia's beautiful and fascinating fungi. As a not-for-profit organisation, Fungimap is mostly funded and run by volunteers.

We need reliable, regular records of our target species to be sent to Fungimap. They will check them, confirm or update your species identification, and then upload your data to the Atlas of Living Australia (ala.org.au).

Your records will help the Murraylands and Riverland Landscape Board and Fungimap to develop a better understanding of these fungi, and their population trends. You will also be putting more dots on the Atlas of Living Australia maps.

Submit online

Upload your photos and information on the target fungi in this field guide via the Fungimap project on iNaturalist.

Tips for photographing fungi

You can increase the chance of Fungimap correctly identifying your fungi sample by submitting a range of images. We recommend including:

- **surfaces above** (e.g. cap with gloop or warts) and **below** (e.g. gills, pores or spines – a small mirror will help!)
- **side profile**
- **range of maturity** (e.g. just emerging, to mature with fully developed features)
- **size scale** (e.g. coin, ruler or finger)
- **substrate** (what they are growing on) such as vegetation community (e.g. *Eucalyptus obliqua* forest) and general habitat (e.g. creek line)

Before photographing the fungi, remove twigs, leaves, and excess soil to give a clear, clean image. Use focal stacking software to increase the area that is in focus and if you are using a smartphone to take your images, a range of add-on lens kits are available that may assist.

Image credit: Nicola Barnes

Above and below: Image credit Neale Dyster

Have you handled fungi?

Did you know some fungi are toxic? We recommend you wash your hands after handing fungi.

Tips for identifying fungi

Shape

The first thing to note is the shape of the fungi – which 'fungi group' (or morphology group) does the fungi belong to?

Stem

If the fungi has a stem, look for the remnants of a fleshy ring near the top of the stem, or at the base of the stem (volva).

Colour

Note the general colour of the fungus.

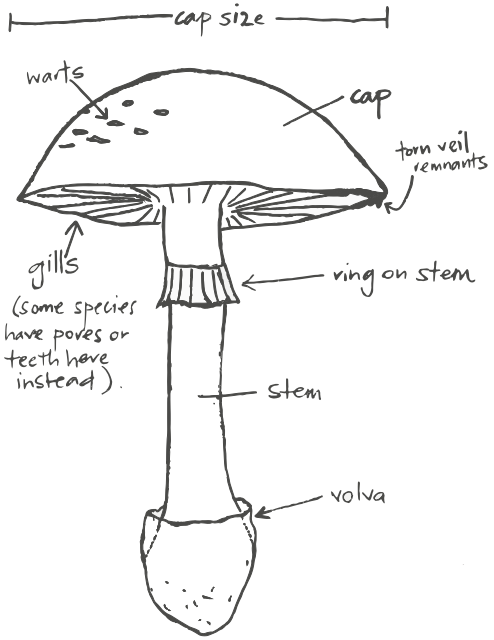
It helps to try and find a number of examples of the species and note the most common colour.

It's best to note colour on mature examples but not old or rotting ones as colour fades with age.

Texture

What is the texture? Is it sticky or gloopy looking? Does it have little 'warts' on the cap (remnants of a veil)?

If it has a cap, use a mirror to look underneath and note if it has gills, pores or 'teeth' – these features define the fungi group, not whether it has a cap.



Refer to the glossary on page 54 for a larger version of this image.

Spore surface

Like plants, the main aim of fungi fruiting bodies is to reproduce. Fungi have evolved many weird and wonderful shapes to help disperse their spores. Animals, raindrops and wind help different species.

The shape, texture and colour of the spore surface is an important defining feature to look out for.

How to use this guide

On the following pages we take a detailed look at our 20 target fungi species selected for this project. To help you identify them, we have included information for each species including photos, descriptions of fungi characteristics, similar looking species, fruiting time and current known distribution.

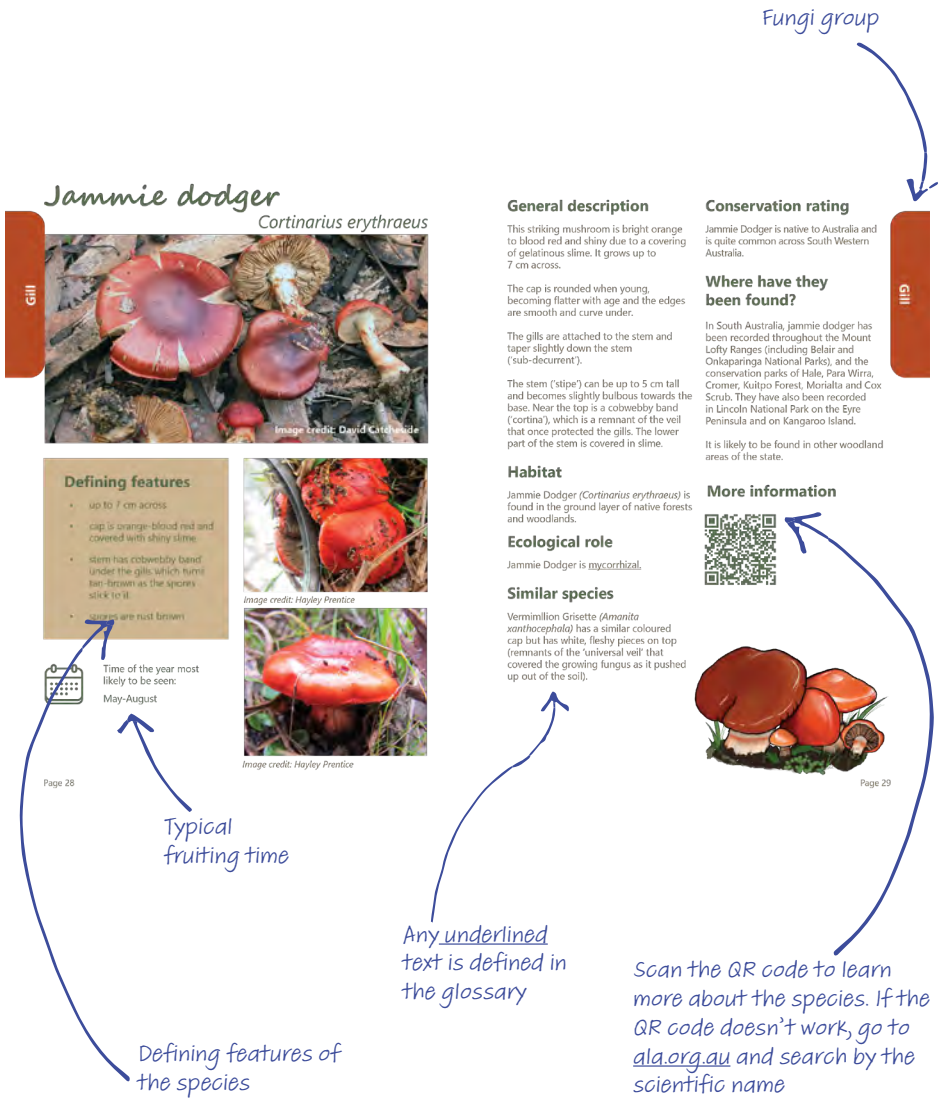



Image credit: David Catcheside

Hairy bracket*

Postia pelliculosa

Defining features

- up to 10 cm wide
- grows on tree trunks and logs
- top of cap is very hairy/spiky
- white sponge appearance underneath (due to fine pores)
- white spores

Time of the year most likely to be seen:

Most of the year

Image credit: Hayley Prentice

Image credit: Hayley Prentice

General description

Postia pelliculosa is a wood-rotting bracket fungus found on stumps and logs. The bracket is up to 10 cm wide and attached to the tree with a broad base.

The bracket is covered with a dense layer of red-brown 'hair', and is soft and moist when fresh, and brittle when dry.

The underside is creamy-white and covered with small holes (termed a 'polypore'). These holes are the end of tubes that are lined with spores.

Habitat

Found on side of living and dead trunks, often of eucalypts.

Ecological role

Decomposer (saprophyte) to parasitic - causing a brown rot.

Similar species

Hairy bracket differs from scarlet bracket by having a creamy-white underside rather than a bright orange underside.

Fleshy, rather than leathery.

Conservation rating

Common.

Where have they been found?

A wide-spread species found in Australia, New Zealand and South America. In South Australia, it has been found at Spring Gully, Ngarkat Conservation Park, Deep Creek National Park, Stipiturus Conservation Park, Springmount, Porter Scrub Conservation Park, Nixon-Skinner Conservation Parks, Kuitpo Forest and in the South East region, as well as Kangaroo Island.

More information

** This species group does not have an official common name, so we have used 'hairy bracket' for this project.*

Scarlet bracket

Trametes coccinea group

Image credit: Nicola Barnes

Defining features

- large bracket, up to 15 cm across
- found on dead wood
- underside is orange and pored
- spores are white

Image credit: Hayley Prentice

Image credit: Hayley Prentice

Time of the year most likely to be seen:

May-August

General description

The fruiting bodies are bright reddish-orange and leathery to corky in texture.

Scarlet bracket is also a polypore. The underside is also reddish-orange and covered with small holes that are the end of tubes that are lined with spores.

Habitat

Usually grows on dead wood.

Ecological role

Decomposer (saprophyte) to parasitic - causing a white rot.

Similar species

Scarlet bracket is not a single species, but a group of similar species that have not yet been described and separated into individual species. It differs from hairy bracket by having a bright orange underside, rather than creamy white.

Conservation rating

Least concern, very common.

Where have they been found?

This wide-spread species group has been found throughout the southern hemisphere.

More information

Taxonomists have collected additional information about this species so the genus name has been updated. Field guides more than 3-4 years old will have this fungi listed as **Trametes coccinea.*

Bracket/polypore

Yellow coral fungus

Ramaria lorithamnus

Defining features

- up to 8 cm across
- yellow branches are slender and densely clustered
- tips have 1-2 forks (rarely 3) like little fingers
- turns wine-red when bruised
- yellow–brown spores

Time of the year most likely to be seen:

June-July

Image credit: David Catcheside

Image credit: Neale Dyster

General description

This is the most distinctive coral-like fungus in the region.

The bright, elegant, and densely clustered branches divide into one or two (sometimes three) blunt-tipped forks. Clusters are up to 10 cm high.

When bruised, it stains wine-red or brown. The branches turn yellow-brown to tan with age.

Habitat

Yellow coral fungus occurs on soil amongst leaf litter in closed wet eucalypt forests like stringybark (*Eucalyptus obliqua*), or open eucalypt woodland.

Yellow coral fungus occurs most often in clusters, but can also be found as individual clumps arising from a single stem.

Ecological role

Yellow coral fungus is mycorrhizal. It is thought to form a symbiotic relationship with the roots of eucalypts and other native plants.

Similar species

In the Murraylands and Riverland region, there are no other yellow, coral-like fungi which bruise wine-red.

Conservation rating

Yellow coral fungus (*Ramaria lorithamnus*) is endemic to Australia and New Zealand (GBIF 2018), but its status has not been formally assessed (Atlas of Living Australia 2018). Catcheside and Catcheside (2008) have assessed yellow coral fungus as of least concern in South Australia.

Where have they been found?

In South Australia, yellow coral fungus has been recorded in the Lincoln National Park on Eyre Peninsula, in the Barossa Valley at Kaiserstuhl Conservation Park, and on Kangaroo Island. Yellow coral fungus has been recorded in the wetter areas of the Mount Lofty Ranges and Fleurieu Peninsula.

There are only 60 records for this species in South Australia, and most of these were made before 1965.

More information

Fleshy ground cup

Aleurina ferruginea

Image credit: David Catcheside

Defining features

- tiny – up to 1 cm wide
- small fleshy orange discs or cups, often with olive-green tinge
- grows in leaf litter

Image credit: Hayley Prentice

Image credit: Reiner Richter

Time of the year most likely to be seen:

June-August

General description

Small, fleshy circles with raised edges, often looking like little cups. They are sticky or gelatinous. The centre is smooth and they can be filled with water after rain.

Habitat

On and under thick leaf litter.

Ecological role

Probably mycorrhizal.

Similar species

Other orange jelly-like fungus can look similar, such as scotsman's beard *(Calocera sp.)* and jelly bells *(Heterotextus sp)*. However these species grown on dead wood, whereas the fruiting bodies of fleshy ground cup push up through the soil.

Conservation rating

Common in woodlands.

Where have they been found?

This species occurs in south west Western Australia and also in the south east of Australia, including Tasmania. In South Australia, it has been found in Wilpena Pound, Para Wirra, Kaiserstuhl Conservation Park, Monarto Conservation Park, Deep Creek National Park, Scott Creek, Porter Scrub, Naracoorte Conversation Park, Wandilo Forestry Reserve, and in many parts of Kangaroo Island.

More information

Small dung button

Poronia erici

Image credit: David Catcheside

Defining features

- lives on poo!
- tiny – up to 0.6 cm across
- creamy white discs with 'black spots', which are actually pores

Image credit: Tijana Petrovic

Time of the year most likely to be seen:

June-August (but have been found all year round)

Image credit: Malcolm McKinty

General description

These tiny, thin fungi live on the dung of herbivorous animals. They grow along the surface of the dung as small flattish leathery disks. They appear to have black dots, which are actually holes or pores ('ostioles'), which connect to tiny, flask-shaped structures called perithecia. Spores are released through the pores.

Habitat

Found on herbivore dung.

Ecological role

Saprotrophs – they decompose the plant matter in animal poo.

Similar species

Large dung button (*Poronia punctata)* is similar but prefers to grow on cow and horse dung, not marsupial scats.

Conservation rating

Fairly common

Where have they been found?

This species is found in southern parts of Australia, from south east Western Australia to the east coast of Australia. In South Australia, it has been found in a variety of locations from the Eyre Peninsula, to the Fleurieu Peninsula, the South East region and Kangaroo Island. It occurs in the Flinders Ranges and Coorong National Parks, as well as Ngarkat and Danggali Conservation Parks.

More information

Fly agaric

Amanita muscaria

Image credit: Malcolm McKinty

Defining features

- up to 25 cm across
- cap edge is smooth or faintly grooved
- stem has skirt-like ring
- stem base is bulbous with scaly bands
- white spores

Time of the year most likely to be seen:

April-July

Image credit: Renate Faast

Image credit: Neale Dyster

General description

The iconic toadstool of fairy tales. Did you know this spectacular bright red and white-spotted mushroom is a weed?

The cap of this large mushroom can vary from scarlet red to yellow-orange (especially as it matures). White–cream spotty warts on the cap are remnants of the veil that protects the mushroom as it emerges. The gills range from white to pale yellow. A large, frilled ring encircles the white to cream stem. The bulbous base of the stem (volva) has two to three scaly rings around it.

Habitat

Fly agaric is mostly found in disturbed, open areas with leaf litter beneath non-native trees (especially pine and birch). It is thought to have been introduced to Australia as the mycorrhizal partner of plantation pine trees imported from Europe.

As it has recently been found amongst native forest and woodland (e.g. eucalypt), fly agaric may be partnering with native hosts and displacing our native fungi. **You can help us to improve our knowledge of this weed, and how to protect native bushland, by reporting fly agaric sightings to Fungimap.**

Fly agaric occurs as individuals through to large groups.

Ecological role

Mycorrhizal.

Similar species

Vermilion grisette (*Amanita xanthocephala)* is the native look-alike of this weed (see description on page 13). The native *Amanita* is smaller, the cap has flattish yellow patches rather than raised white warts, and a yellow or orange rim around the base of its stem.

Conservation rating

Fly agaric (*Amanita muscaria*) is native to Europe and North America (GBIF 2017). It is a weed, and spreading into native forests and woodlands in Australia (Atlas of Living Australia 2017).

Where have they been found?

Fly agaric has been recorded extensively throughout Kangaroo Island. It also occurs in the Mount Lofty Ranges and the Fleurieu Peninsula, particularly around Kuitpo Forest. Fly agaric has only been recorded from cool, moist areas to date.

More information

Vermilion grisette

Amanita xanthocephala

Image credit: Neale Dyster

Defining features

- up to 5 cm across
- cap edge has grooves
- bare stem (no ring)
- bright yellow–orange rim on the swollen base
- white spores

Image credit: Neale Dyster

Image credit: Maree Elliot

Time of the year most likely to be seen:

May-October

General description

This bright, beautiful mushroom is the native look-alike of the introduced red and white-spotted mushroom. The cap is orange with cream–orange irregular blotches. These are remnants of the veil that protects it as it emerges from the soil. The gills and stem are white to pale yellow.

The bright colour and blotches can be washed away by rain, so they sometimes look a bit 'washed out'.

Habitat

Vermilion grisette often grows amongst leaf litter in the more open areas of native forests and woodlands. In the Murraylands and Riverland region, it occurs amongst stringybark (*Eucalyptus obliqua)* and mallee (*Eucalyptus incrassata*) woodland communities.

Vermilion grisette occurs as individuals or in small, scattered groups.

Ecological role

Mycorrhizal. There is some evidence that vermilion grisette can change from mycorrhizal to saprotrophic depending on conditions.

Similar species

Fly agaric *(Amanita muscaria),* the well-known red and white mushroom is a weed. It has white–cream warts on the cap, a ring around the stem, and no yellow rim around the stem base. Although it tends to occur near exotic pines, it is also extending into native bushland.

Conservation rating

Vermilion grisette *(Amanita xanthocephala)* is endemic to eastern and southern Australia (GBIF 2017). It is considered to be common (Atlas of Living Australia 2017) but has not been formally assessed.

Where have they been found?

In South Australia, vermilion grisette has been recorded from Wilpena Pound down to Penola and Mary Seymour Conservation Parks in the South East region, in Eyre Peninsula parks, and many sites on Kangaroo Island.

Vermilion grisette mushrooms have also been recorded in moist habitats in the Riverland.

More information

Orange funnel*

Austropaxillus infundibuliformis group

Defining features

- cap up to 15 cm wide
- distinctive funnel shape with gills exposed on the sides
- rusty orange cap, gills and stem
- rusty brown spores

Time of the year most likely to be seen:

April-July

Image credit: Hayley Prentice

Image credit: Reiner Richter

General description

These distinctively funnel-shaped mushrooms look like they've been turned inside out! The species name *'infundibuliformis'* means 'in the form of a funnel'. The cap is convex and the edge of the cap folds under.

The caps mostly appears orange but can range from yellow to brown. As it matures, the edges of the cap become wavy.

The gills are easy to see and run down along the stem ('decurrent').

Habitat

Orange funnels are native to Australia ('endemic'). They are found on the ground in eucalypt forests and often found along roadsides.

Ecological role

Orange funnels are mycorrhizal.

Similar species

This is actually a group of species that have not yet been separated. So there may be some variation in appearance.

Conservation rating

Common.

Where have they been found?

Orange funnel is found across southern Australia with records from Western Australia to Victoria and New South Wales. In South Australia, it is known to occur in the Flinders Ranges and Mount Remarkable National Parks, Lincoln National Park, Para Wirra Conservation Park, Porter Scrub Conservation Park, Belair National Park, Deep Creek Conservation Park, and various parts of Kangaroo Island.

More information

** This species group does not have an official common name, so we have used 'orange funnel' for this project.*

Jammie dodger

Cortinarius erythraeus

Image credit: David Catcheside

Defining features

- up to 7 cm across
- cap is orange-blood red and covered with shiny slime
- stem has cobwebby band under the gills which turns tan-brown as the spores stick to it
- spores are rust brown

Time of the year most likely to be seen:

May-August

Image credit: Hayley Prentice

Image credit: Hayley Prentice

General description

This striking mushroom is bright orange to blood red and shiny due to a covering of gelatinous slime. It grows up to 7 cm across.

The cap is rounded when young, becoming flatter with age and the edges are smooth and curve under.

The gills are attached to the stem and taper slightly down the stem ('sub-decurrent').

The stem ('stipe') can be up to 5 cm tall and becomes slightly bulbous towards the base. Near the top is a cobwebby band ('cortina'), which is a remnant of the veil that once protected the gills. The lower part of the stem is covered in slime.

Habitat

Jammie dodger *(Cortinarius erythraeus)* is found in the ground layer of native forests and woodlands.

Ecological role

Jammie dodger is mycorrhizal.

Similar species

Vermimllion grisette *(Amanita xanthocephala)* has a similar coloured cap but has white, fleshy pieces on top (remnants of the 'universal veil' that covered the growing fungus as it pushed up out of the soil).

Conservation rating

Jammie dodger is native to Australia and is quite common across south western Australia.

Where have they been found?

In South Australia, jammie dodger has been recorded throughout the Mount Lofty Ranges (including Belair and Onkaparinga National Parks), and the conservation parks of Hale, Para Wirra, Cromer, Kuitpo Forest, Morialta and Cox Scrub. They have also been recorded in Lincoln National Park on the Eyre Peninsula and on Kangaroo Island.

It is likely to be found in other woodland areas of the state.

More information

Elegant blue webcap

Cortinarius rotundisporus

Defining features

- up to 7 cm across
- cap is blue and slimy
- cap centre is dark yellow
- stem is long (up to 14 cm)
- rusty-brown spores

Image credit: Torbjorn von Strokirch

Image credit: Malclom McKinty

Time of the year most likely to be seen:

April-September

General description

One of the most distinctive, large native mushrooms in this region.

The blue cap has a dark yellow bump (umbo) in the centre, and is slimy when young. The convex cap flattens as it matures. Gills are light lavender and darken to rusty–brown as the spores mature.

The tall, slender stem is light blue at the top, white–yellow and wider towards the base. The stem also has fine remnants of a veil (cortina), sometimes dusted with brown spores. The veil protects the gills of young specimens.

Habitat

Elegant blue webcap grows in wet to moist habitats. In the Murraylands and Riverland region, it is found on bare soil or amongst litter in stringybark (*Eucalyptus obliqua*) forests and woodlands.

Elegant blue webcap occurs as individuals or in small groups.

Ecological role

As a mycorrhizal partner, elegant blue webcap grows on, and extends, the roots of eucalypts and other native plants.

Similar species

The slimy cap and stem distinguish the elegant blue webcap from other mushrooms in the Murraylands and Riverland region.

Conservation rating

Elegant blue webcap (*Cortinarius rotundisporus*) is endemic to southern Australia (GBIF 2017). Although its conservation status has not yet been formally assessed (Atlas of Living Australia 2018), Catcheside and Catcheside (2008) assessed elegant blue webcap as of least concern.

Where have they been found?

In South Australia, the elegant blue webcap has been recorded in Lincoln National Park on the Eyre Peninsula, on Kangaroo Island, and in the South East region. It has also been found in stringybark forest in the Mount Lofty Ranges and Fleurieu Peninsula.

More information

Dragon caps*

Entoloma viridomarginatum

Image credit: Nicola Barnes

Defining features

- a small mushroom, 2-3 cm across
- cap is yellow-green to brilliant blue-green
- pale green gills with dark green edges
- pink spores

Image credit: Reiner Richter

Image credit: Reiner Richter

Time of the year most likely to be seen:

May-August

General description

This gorgeous little mushroom is very distinctive with a slender stem and a vibrant greenish-blue cap.

The cap has a small shallow depression at the centre ('convex') and can be faintly striped ('striate').

The gills are pale green with a *dark green edge* – a distinctive feature of this species. They are narrowly attached to the stem ('adnate').

The stem is also yellow-green to dark green-blue and has no skirt. White threads (mycelium) can be seen at the base.

Habitat

Dragon caps grows on soils among grass and moss in native forest and woodlands.

Ecological role

Dragon caps is most likely saprotrophic

Similar species

Green skinheads *(Dermocybe austroveneta)* is green but larger than dragon caps. Similarly elegant blue webcap *(Cortinarius rotundisporus)* is larger and more blue.

Conservation rating

Dragon caps is not a common species, but is widespread.

Where have they been found?

In South Australia, this fungus occurs in many parts of the Murraylands and Riverland region including Ral Ral Creek area, Billiatt Conservation Park near Pinaroo, Ngarkat Conservation Park and the Coorong. It has also been found at Mount Rescue Conservation Park, Para Wirra and parts of Kangaroo Island.

More information

** This species does not have an official common name, so we have used 'dragon caps' for this project.*

Gill

Yellow navel

Lichenomphalia chromacea

Defining features

- up to 2.5 cm across
- yellow with central indent
- flattens to funnel shape with age
- always grows on mat of green algae
- white spores

Time of the year most likely to be seen:

May-September

Image credit: Neale Dyster

Image credit: Neale Dyster

General description

The yellow navel is a dainty little mushroom up to 3 cm tall.

The cap colour ranges from bright yellow to dull yellow-orange. It starts out with a convex cap depressed in the centre, which flattens out and then inverts into a funnel shape as it matures. The rim of the cap is down-curved with a wavy edge. It has wide-spaced gills the same colour as the cap, extending partway down the stem. The stem is yellow and smooth, up to 0.3 cm (3 mm) thick.

The species was previously known as *Omphalina chromacea*.

Habitat

One of the distinctive features of yellow navel is that it is always associated with mats of green algae. They are found on disturbed, often bare ground, in plantations or native forests.

Yellow navels often grow in large groups.

Ecological role

Yellow navels are colonisers of bare ground, helping to reduce soil erosion.

Species of *Lichenomphalia* are lichenised fungi. An alga and a fungus are in a symbiotic partnership. The algal partner is a single-celled alga, so the mat is created by the fungal partner's hyphal filaments and is coloured green by the algal cells.

Similar species

Another lichenised species, *Lichenomphalia umbellifera* is duller orange to tan brown.

Orange mosscaps (*Rickenella fibula*) are orange-yellow with tiny caps (<1 cm across). Mosscaps also have finer gills, a longer slender stem, and are always associated with thick moss mats.

Conservation rating

Yellow navel *(Lichenomphalia chromacea)* is native to Australia but has not been formally assessed. The Atlas of Living Australia (2017) considers it to be common.

Where have they been found?

Yellow navel occurs across the south of Australia including south west Western Australia, southern South Australia, Victoria, New South Wales and Tasmania. It has been found in the Mount Lofty Ranges and Fleurieu Peninsula near Willunga, and in Kuipto Forest in eucalypt woodlands and hardwood plantations, on Kangaroo Island, in the South East region of South Australia, and in mallee areas including Danggali Conservation Park and Ngarkat Conservation Park.

More information

Nargan's bonnet

Mycena nargan

Defining features

- up to 2 cm across
- cap is dark brown with white spots
- white spores

Time of the year most likely to be seen:

July-August

Image credit: Geoff Carle

Image credit: Geoff Carle

General description

This cute little mushroom grows amidst some of the wettest spots in our region.

White speckled scales are highlighted against the chestnut to almost black bell-shaped cap. As the mushroom ages, these scales are rubbed or washed off. The cap is moist to sticky. Gills are white to pale grey. The slender stem (up to 4 cm tall) is light brown to grey-brown, with a pale, slightly swollen base that is very spotty when young.

Habitat

Nargan's bonnet occurs in wet areas in native forests and woodlands. It grows on well-rotted wood that is protected and retains moisture, the underside of logs and sticks, amongst leaf litter, shady stumps, and in hollows.

In the Murraylands and Riverland region, it has been recorded on rotting wood beneath native cherry (*Exocarpos cupressiformis*), and within a river redgum (*Eucalyptus camaldulensis*) community.

Ecological role

This little decomposer (saprotroph) prefers larger dead wood habitats like logs and stumps, but is occasionally found on twigs.

Similar species

Nargan's bonnet can only be distinguished from other dark brown *Mycenas* by the white spots on the cap and stem.

Conservation rating

Nargan's bonnet (*Mycena nargan*) is endemic to southern and eastern Australia (GBIF 2017). It is considered to be common (Atlas of Living Australia 2017) but has not been formally assessed. The holotype of Nargan's Bonnet was collected from Kuitpo Forest.

Where have they been found?

In South Australia, Nargan's bonnet occurs in Alligator Gorge, Kaiserstuhl Conservation Park, Belair National Park, Deep Creek Conservation Park, the South East region, the Barossa Valley and Fleurieu Peninsula. Nargan's bonnet has only been recorded within cool, moist areas to date.

More information

Ghost fungus

Omphalotus nidiformis

Image credit: Renate Faast

Defining features

- up to 30 cm across
- glows in the dark
- fan or funnel-shaped
- cap is white-cream with darker centre
- grows on logs or base of trees
- white spores

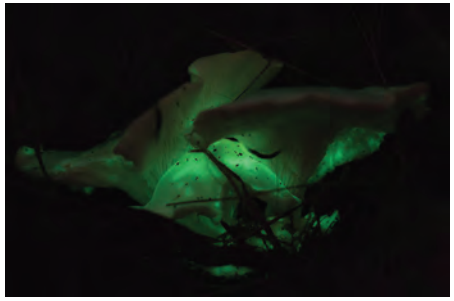


Image credit: Rusty Ryder

Image credit: Renate Faast

Time of the year most likely to be seen:

May-July

General description

The impressive fan-like tiers of the ghost fungus are most spectacular at night.

The ghost fungus is a large fan or funnel-shaped mushroom. The centre of the white–cream cap is often tinted with orange, brown or blueish-black shades. Its gills run down the length of the short, tapering stem. The stem may be central to off-centre. The ghost fungus is highly toxic.

Ghost fungus is well-known for its glow-in-the dark properties. On dark nights, the faint green glow of fresh specimens is an amazing sight! The bioluminescence fades as the fungus ages.

Habitat

Ghost fungi grow on living or dead wood, often at the base of trees or on fallen logs. They occur in diverse habitats, from temperate native forests and woodlands to urban parks and gardens.

In the Murraylands and Riverland region, they are often seen at the base of stringybarks (*Eucalyptus obliqua)*, but can also be associated with other native trees, shrubs and introduced pines.

The ghost fungus grows as individuals or in overlapping clusters.

Ecological role

The ghost fungus is a parasite and decomposer (saprotroph). It causes white rot in living trees, and may promote the formation of hollows.

It was thought that the ghost fungus glows in the dark to attract spore-dispersing insects, but a recent study conducted on Kangaroo Island by University of Adelaide researchers found no evidence for this. Instead, the bioluminescence may simply be a by-product of fungal metabolism.

Similar species

Brown oyster mushrooms (*Pleurotus australis*) are olive-brown with grey gills, are never centrally attached, and do not glow in the dark.

Conservation rating

Ghost fungus *(Omphalotus nidiformis)* is endemic to Australia and occurs nowhere else in the world. Its conservation status has not been formally assessed, but it is considered to be common (Atlas of Living Australia 2017).

Where have they been found?

The ghost fungus has a wide distribution. In South Australia, it occurs from Wilpena Pound down to the South East region, and on Kangaroo Island. Ghost fungus has been recorded in stringybark woodlands on the Fleurieu Peninsula, and in semi-arid mallee woodlands near Monarto.

More information

Orange mosscap

Rickenella fibula

Defining features

- up to 1 cm across
- cap is orange and flattens with age
- stem is long and slender
- cap and stem covered in fine hairs
- grows within moss
- white spores

Time of the year most likely to be seen:

June-July

Image credit: Nicola Barnes

Image credit: David Pearce

General description

The dainty little orange mosscap looks like orange pins when it first emerges.

The cap of this tiny mushroom (2–10 mm across) is supported by slender stems (5–45 mm tall, 0.5–1.5 mm wide). The cap, when young, is ridged and has a distinctive pale rim. As it matures, the cap flattens and turns a pale yellow-orange, with a darker central depression.

Young caps and stems are covered with very fine hairs (visible with a hand lens), that give them a fuzzy appearance. Gills are cream to pale orange, and taper down the stem.

Habitat

One of the distinctive features of this species is that it is always associated with thick moss beds. The orange mosscap can occur singly, scattered or in clusters.

Ecological role

The orange mosscap is thought to be a decomposer (saprotrophic).

It is also thought to have a unique and close association with the moss it grows amongst. The nature of this relationship is unknown.

Similar species

Yellow navels (*Lichenomphalia chromacea*) are brighter yellow, have larger caps (to 2.5 cm) with stouter stems (shorter and thicker) and lack fine hairs. *Lichenomphalia umbellifera* tends to be duller orange to tan brown. Both these species are always associated with mats of green algae.

Conservation rating

Orange mosscap *(Rickenella fibula)* occur in southern Australia, as well as in Europe and North America. Orange mosscap has not been formally assessed, but the Atlas of Living Australia (2017) considers it to be common. Catcheside and Catcheside (2008) assessed orange mosscap as of least concern.

Where have they been found?

In South Australia, orange mosscap occur from Alligator Gorge in Mount Remarkable National Park, through to the Fleurieu Peninsula and Kangaroo Island. It has been found in a mixed eucalypt woodland in Kuitpo Forest.

More information

Gill

Sandy stilt-puffball

Battarrea phalloides

Defining features

- large stalked puffball - up to 40 cm tall!
- looks superficially like a mushroom, but the spores are on the top of the cap and are initially covered with a dome-shaped lid.
- stem is long and looks scaly and fibrous
- spores are brown

Image credit: Kathryn Vassallo

Image credit: Malcolm Mckinty

Time of the year most likely to be seen:

Most of the year

General description

This puffball develops underground and when it first emerges it looks like a light coloured egg.

As the 'egg' expands, it splits in half horizontally. The bottom half (the volva) stays in the ground and the top part of the ball is pushed upwards on an extending stalk. The stem is very tall, light brown and scaly.

At maturity the eggshell-like covering on top falls away and reveals a spore sac. The powdery spore mass is quite sticky and as it dries the brown, powdery clouds of spores float away when disturbed.

Habitat

In dry, sandy soil in native vegetation.

Ecological role

Probably saprotrophic.

Similar species

Battarrea stevenii appears similar but grows much taller, to 70 cm. *Podaxis pistillaris* is another puffball relative and occurs in the same habitat, but has a longer cap.

Conservation rating

Common in dryland areas.

Where have they been found?

The sandy stilt-puffball occurs worldwide. In South Australia, it has been found at Arkaroola, Lake Gilles, Billiatt and Karte Conservation Parks, Reeves Plains and the Adelaide Botanic Garden.

More information

Arched earthstar

Geastrum fornicatum

Defining features

- up to 6 cm across
- looks like a ball on stilts!
- spore 'sac' is round or somewhat flattened- with an opening at the top
- the spore sac sits on 4-5 rays. The tips of the rays are attached to a base resembling half an eggshell.
- spores are brown

Image credit: David Catcheside

Time of the year most likely to be seen:

Most of the year

General description

Young earthstars start off roughly spherical, up to 4 cm across and push up through the ground.

As the arched earthstar matures, the outer layer splits and is left at the base as a shell-like cup. The remaining layers then split from the top into four or five segments which then fold back towards the ground. Eventually this lifts the central spore sac off the ground.

The exposed spore sac has a central opening. When there is pressure on the mature sac (e.g. rain or wind), this 'puffs' the spores out into the air currents.

Habitat

In litter under trees in dry woodlands and mallee scrub. Usually drylands sites. Found singly or in small clusters.

Ecological role

Saprotrophic.

Similar species

The arched earthstar and the beaked earthstar are similar. In comparison:

- the arched earthstar has fewer supporting segments (4-5) and at maturity these appear like 'legs'. The spore sac is supported above these legs with a short 'stem'. The original outer layer forms a wrinkled, eggshell-like cup at the base.
- the beaked earthstar has more supporting segments (7-10) and they don't contract to the ground as strongly. The spore sac is raised on a longer, narrow stem. The opening of the spore sac has a more prominent 'beaked' opening. There is a pattern underneath the sac that looks like wheel spokes. There is no eggshell-like cup at the base.

Conservation rating

Common.

Where have they been found?

In South Australia, arched earthstars have been found in Lake Gilles, Monarto and Danggali Conservation Parks, and near Roxby Downs.

More information

Beaked earthstar

Geastrum pectinatum

Image credit: David Catcheside

Defining features

- up to 5 cm across
- spore sac is raised on a narrow stem
- opening of the spore sac is 'beaked'
- underside of the spore sac has a circular pattern of grooves
- spores are brown

Image credit: Tijana Petrovic

Image credit: Malcolm McKinty

Time of the year most likely to be seen:

Most of the year

General description

Young earthstars start off roughly spherical as they push up through the ground, usually 1 to 2 cm across.

As the beaked earthstar matures, the outer layer splits from the top into seven to ten segments which then fold back towards the ground. The ring of segments is usually up to 5cm across.

The spore sac is elevated from the supporting segments via a narrow 'stem' that is up to 1 cm wide. The base of the spore sac (only visible underneath) has a circle of grooves, like spokes of a wheel.

The spore sac is less spherical than other earthstars, and looks more squashed (depressed globose). In the centre, the pore opening is prominent and raised into a small cone shape – hence the name beaked earthstar.

Similar species

The arched earthstar and the beaked earthstar are similar (see comparison on previous page).

Habitat

In litter under trees in dry woodlands and mallee scrub. Usually drylands sites. Found singly or in small clusters.

Ecological role

Saprotrophic

Similar species

The arched earthstar and the beaked earthstar are similar (see comparison on previous page).

Conservation rating

Common.

Where have they been found?

The beaked earthstar is found worldwide. In South Australia, it has been found at Hambidge, Mambray Creek, Lake Gilles, Karte, Ferries-McDonald and Danggali Conservation Parks, near Kingoonya, and Adelaide Botanic Garden.

More information

Collared earthstar

Geastrum triplex

Defining features

- up to 12 cm across rays
- thin, spherical sac sitting in a star-shaped cup
- 4 to 8 rays curl under, rays often crack to form a 'collar' around spore sac
- no dirt stuck to underside
- pale ring around pointed spore-releasing pore
- brown spores

Image credit: Nicola Barnes

Image credit: Torbjorn von Strokirch

Time of the year most likely to be seen:

July-September

General description

An intriguing puff ball that unfurls into a pretty little star.

Young earthstars emerge as a sphere with a pointy beak. The outer layer splits into 4-8 'rays' that curl out to reveal a papery spore-filled sac. The inner layer often cracks to form a collar around the sac.

Spores are released from the central pore by wind (blowing across the pore) and/or raindrops (forcing air out of the sac). The curled rays lift the sac and help to spread the spores further.

Habitat

In the Murraylands and Riverland region, collared earthstar has been recorded in deep leaf litter under native cherry trees (*Exocarpos cupressiformis*), and in stringybark (*Eucalyptus obliqua*) and mallee woodland.

Collared earthstar occurs as individuals through to large clusters.

Ecological role

Collared earthstar is a decomposer (saprotroph). It breaks down, and obtains its nutrients from, leaf litter and humus.

Similar species

Geastrum saccatum and *Geastrum fimbriatum* are smaller, rarely have cracked or split rays, lack the pale ring around the spore-releasing hole, and usually have debris adhering to their outside surface. The collared earthstar (*Geastrum triplex*) never has dirt stuck to it.

Conservation rating

Collared earthstar *(Geastrum triplex)* has not been formally assessed, but the Atlas of Living Australia (2017) considers it to be common. Catcheside and Catcheside (2008) assessed collared earthstar as of least concern.

Where have they been found?

The collared earthstar is a widespread species found in Asia, Europe, New Zealand, North and South America, and Australia (GBIF 2017). In South Australia, the collared earthstar has been recorded in Wilpena Pound, on Kangaroo Island, and in the Naracoorte and Mary Seymour Conservation Parks in the South East region. It has been recorded near Springton, in stringybark woodlands on the Fleurieu Peninsula, and in mallee woodlands present in Monarto, Ngarkat and Danggali Conservation Parks.

More information

Puff ball

Copper coin

Coltricia cinnamomea

Image credit: David Catcheside

Defining features

- up to 5 cm across
- cap has cinnamon–brown bands (like age-rings on a tree)
- cap has distinctive sheen of tiny, shiny, radiating hairs
- underside has pores not gills
- yellow–brown spores

Time of the year most likely to be seen:

May-September

Image credit: Thelma Bridle

Image credit: Thelma Bridle

General description

A small, tough pored fungus with a wood-coloured cap and central stem. The chestnut–brown, flattish cap is darker around the central depression and lighter towards the edges. The coloured bands look like age-rings on a tree stump. Fine velvety fibres radiating from the centre gives it a shiny, satin lustre.

The underside has dark, rusty-brown shallow pores (1-3 per mm) instead of gills.

Alternative name: Fairy stool

Habitat

Copper coin is often found on compacted soils in native forests and woodlands. It can occur in a wide range of habitats, from semi-arid mallee (*Eucalyptus incrassata*) through to more temperate stringybark (*Eucalyptus obliqua*) woodlands.

Copper coin tends to occur as scattered individuals.

Ecological role

Copper coin has a surprising lifestyle strategy. This tough little fungus is symbiotic (mycorrhizal) where it lives below ground amongst its plant partner's roots, and then uses dead wood to support its fruiting bodies. This strategy is thought to protect it from extreme conditions such as drought and floods.

Similar species

In the Murraylands and Riverland region, there are no other small, tough fungi with pores and a stem. *Phellodon* and *Hydellum* have similar colouring, but with spines (also called "teeth") instead of pores.

Conservation rating

Copper coin (*Coltricia cinnamomea*) occurs in Australia, Europe, Japan, New Zealand and North America. It is vulnerable worldwide (GBIF 2017). Although copper coin has not been formally assessed in Australia (Atlas of Living Australia 2017), Catcheside and Catcheside (2008) assessed it as of least concern.

Where have they been found?

In South Australia, the copper coin has been recorded in all regions from the Flinders Ranges to Kangaroo Island, and down to the South East region. The copper coin can be found in mallee woodlands through to the more temperate stringybark woodlands of the Fleurieu Peninsula.

More information

Tough pore

Field notes section

Add your own personal tips for identifying these species

Hairy bracket* *(Postia pelliculosa)*	
Scarlet bracket (*Trametes coccinea* group)	
Yellow coral fungus (*Ramaria loirthamnus*)	
Fleshy ground cup *(Aleurina ferruginea)*	
Small dung button *(Poronia erici)*	
Fly agaric *(Amanita muscaria)*	
Vermilion grisette (*Amanita xanthocephala*)	
Orange funnel* (*Austropaxillus infundibuliformis* group)	
Jammie dodger *(Cortinarius erythraeus)*	
Elegant blue webcap (*Cortinarious rotundisporus*)	

Dragon caps* *(Entoloma viridomarginatum)*	
Yellow navel (*Lichenomphalia chromacea)*	
Nargan's bonnet (*Mycena nargan*)	
Ghost fungus (*Omphalotus nidiformis*)	
Orange mosscap (*Rickenella fibula*)	
Sandy stilt-puffball *(Battarrea phalloides)*	
Arched earthstar *(Geastrum fornicatum)*	
Beaked earthstar *(Geastrum pectinatum)*	
Collared earthstar (*Geastrum triplex*)	
Copper coin *(Coltricia cinnamonea*)	

Other fungal groups you may see

You may see other fascinating fungi while hunting for the target species featured in this field guide.

There are over 400 species to discover in the Murraylands and Riverland region. We are still discovering new species–you might even find one!

On these pages we describe some of the other common fungi in our region. The fungi groups they belong to are in **bold** below. Refer to *Fungi groups* on page 4 for more information on the groups.

The fungi examples on these pages are harder to identify as their appearance is less distinctive and they have not been genetically classified. Yet they are stunning and fun to get to know!

Bird nest

(Cyathus species*)*

Fungi in the **bird nest** group are small cups with tiny sacs of spores that look like 'eggs'. These sacs pop out when raindrops fall into the cups and disperse the spores.

Image credit: David Pearce

White Brain

(*Tremella fuciformis* group)

White brain belongs to the **jelly** group. Yellow species (*Tremella mesenterica/ aurantia* group) are also common.

Image credit: Rowan Angas

Split gill

(*Schizophyllum* commune)

Split gill is a **gill** fungus. These furry fans are white to pale grey, and form overlapping tiers on dead wood (native and exotic).

Image credit: Thelma Bridle

Scotsman's beard

(Calocera guepinioides group*)*

Scotsman's beard is in the **club and coral** group. These are club-shaped with a fleshy texture or fluffy attachment at the base.

Image credit: Thelma Bridle

Glossary

Common

Occurs in large numbers and over a wide geographic area.

Endemic

Only occurs naturally in a particular geographic area (e.g. endemic to South Australia).

Gills

Blade or leaf-like plates on which spores are produced. These radiate beneath the cap of a mushroom.

Holotype

Single specimen that is collected, formally described, and stored to characterise and formally define an organism (e.g. species or sub species).

Least concern

The conservation status given to species that are not considered rare or threatened.

Mutualist

A symbiotic relationship where both organisms benefit (e.g. mycorrhizae or lichen).

Mycorrhizal

A mutualist fungus that lives in the soil and has a symbiotic relationship with a host plant. The fungus grows on and/or within the roots of the host plant. The fungus helps the plant access water and minerals in exchange for the sugars that the plant produces.

Parasite

A fungus that lives in or on another living organism and gains nutrients from it. The damage caused by the fungus ranges from mild irritation through to death of the host.

Saprotroph (decomposer or rotter)

A fungus that feeds on dead or decaying organic matter, including dead wood and bones. These fungi play an important role in recycling nutrients from organic waste to create new or healthier soil.

Size

The overall width of the fruit body (e.g. cap, coral or jelly width) is given for each species in this field guide Species are described as small (1–2.5 cm), medium (2.6–10 cm) or large (>10 cm).

Spore

The microscopic reproductive unit of a fungus (has a similar function as a plant 'seed').

Synonym

A previous (outdated) scientific name for the same species.

Umbo

A dome-like structure in the centre, and highest point, of a mushroom cap.

Volva

A structure at the base of the stem of some mushrooms. It can vary from a cup-shaped sac, to scaly rings (like on fly agaric) or a ridge (like on vermilion grisette) around the stem base. It is the remains of the veil that protects the mushroom as it emerges, and indicates that the mushroom was fully enclosed (some other mushroom species are partly covered; others not at all).

Vulnerable

Has a restricted occurrence and is considered 'threatened'.

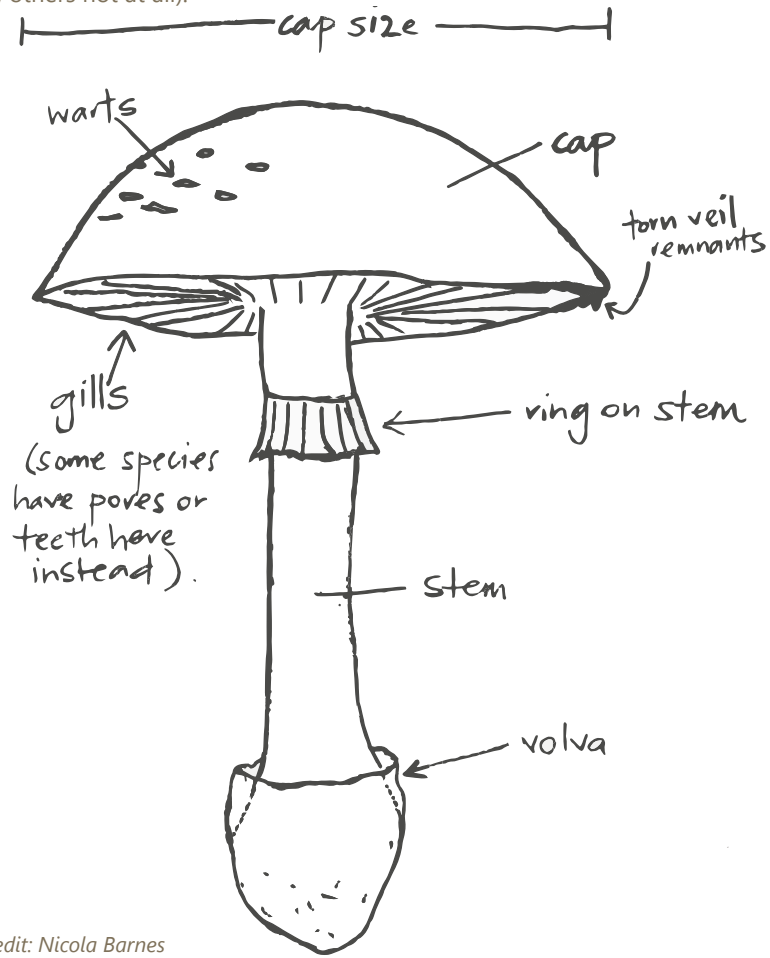


Image credit: Nicola Barnes

Want to know more?

Do you want to learn more about native fungi?

Atlas of Living Australia

Fungimap

Murraylands and Riverland Landscape Board community fungi monitoring

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Do you want your kids to discover more about native fungi?

Junior Field Naturalists

Murraylands and Riverland Landscape Board Education program

Image credit: Nicola Barnes

A big thank you to our photographers!

This field guide would not have been made possible without the generous contribution of the high quality photographs it contains from many fungi enthusiasts. All contributors are volunteers and citizen scientists and we thank them for their contribution.

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What to measure on your fungi:

- cap size
- cap colour & texture
- spore surface e.g. gills or pores
- stem e.g. ring present or not
- stem base e.g. sac present or not