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SECTION 4: "FINDING & COLLECTING"

Why find out about your local fungi?

The reasons why you may want to find out about fungi in your local area include:

- To find out which fungi are in your area.
- To be able to monitor changes in local fungi over time in your area.
- To help with choosing appropriate fungi for local revegetation conditions.
- To avoid choosing inappropriate fungi for re-introduction, such as disease fungi.
- To be able to monitor self-return or aided return of fungi into revegetation.
- To make new discoveries and contributions to scientific knowledge about Australia's fungi.
- To appreciate the wealth, beauty, and bizarre nature of Australia's biodiversity, aside from the plants and animals.

Finding out what is already known about fungi in your area

Tapping into local knowledge about fungi is one way to learn about local fungi. Before undertaking a survey for fungi it makes sense to try and find out what is already known. Unfortunately there are virtually no records compiled for local knowledge about woodland fungi in Australia. The best way to find out if there are local collections and collectors is via Land Conservation District Committees (LCDC's) and other community groups. (To obtain a contact phone number for you local LCDC in Western



Australia ring the LCDC Project Support Officer on 08 9368 3301)

There are few historical collections incorporating Australian woodland fungi. Detailed surveys of fungi in specific woodlands have been rarely undertaken in Australia. Relatively few fungi had been recorded in the Australian wheatbelt region prior to recent fungal diversity studies by CSIRO. Fungi from the CSIRO sampling expeditions are currently lodged in the CSIRO Forestry and Forest Products Herbarium in Perth. (For further details see the book chapter by Tommerup & Bougher listed in the **"Additional Resources"** section.)



Observing and searching for fungi

Fungi are visible and invisible members of woodland vegetation. Woodlands are rich in fungi. Woodlands have more species of fungi than plants. The fungi are often hidden from view but they are actively growing in soil, on roots and in litter. By gently scraping back some leaf litter fungal mycelium (threads) may sometimes be seen. Some fungi have conspicuous white or brightly coloured and abundant mycelium. But usually the threads are invisible to the naked eye. Fruit bodies are the most easily visible signs fungi are present.



Fungal mycelium amongst soil and rocks

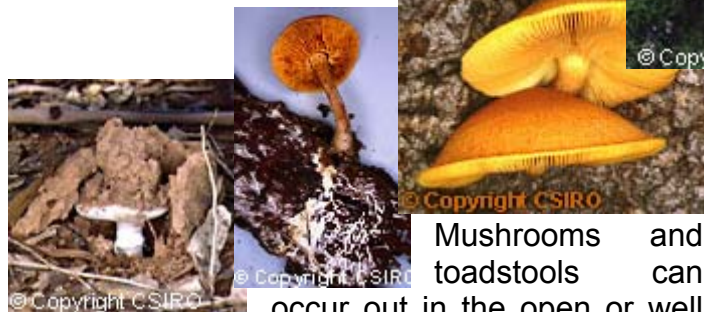


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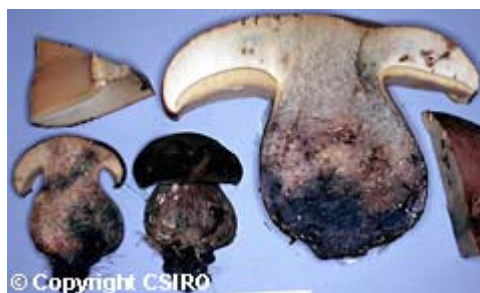


Where to see fungi

- on trees
- on wood
- in litter
- on ground
- many are below ground also



Mushrooms and toadstools can occur out in the open or well hidden in litter or under a shrub or log etc... or on logs or tree trunks well above the ground. They may be brightly coloured or drab/dull. They may be quite large or very small. Giant forms can be visible across paddocks, while others barely break the soil surface. Fungal species commonly have widely different requirements: some may favour certain situations, such as disturbed sites like road-sides, others may fruit only when a particular type of plant is nearby. It helps to have someone help to initially point out the fungi so as to help "get your eye in".



The giant *Phlebopus marginatus*

Truffle fungi may be found by using a three-pronged fork or similar gardening implement. In general most of their fruit bodies occur within 10 cm of the soil surface, especially in a zone immediately below the humus layer. Their presence may be indicated by



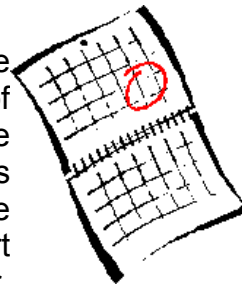
surface scratchings made by small animals attracted to them by fungal scents.

When to see fungi

Fungi may fruit at any time of the year but in temperate woodlands they are most abundant some time **after the autumn or winter rains** have soaked the soil. Fruit bodies of fungi are produced intermittently in response to rainfall and temperature. The annual fungal 'fruiting season' in Australian woodlands is brief in most years. Each particular area may have a brief period of intense fruiting over several or more days with fewer fruit bodies appearing before and after this peak period.



There is much variation in the timing and duration of fruiting of individual species of fungi, and the fruiting of any particular species cannot always be predicted. Some fungi may suddenly fruit for a short time. Some fungi fruit every year, either once or in several different months, but others do not.



Hence the absence of fruit bodies of a particular species in a specific area at any point in time does not necessarily confirm that its mycelium network is absent in the area.

Fungal fruit bodies are ephemeral structures (i.e. short lived). In some species they are large, take weeks to mature and then decay, while in others they are small and fragile, appearing and disappearing within a day. Perennial fruit bodies such as some woody bracket fungi may persist and remain visible for many years. At the other extreme are fungi that produce fruit bodies almost immediately after rain.





The woody bracket fungus,
Phellinus on an *Acacia*

Tip: There is **great joy** in discovering fungi on your land so give it a try!

Ways of surveying for fungi

It is important to determine the types of things you want to know about fungi in your area, as this can determine the way you may go about observing them, and the type of things you may record. Building up a knowledge base of fungi in local areas can be an ongoing process taking place over many years as the fungi fruit at unpredictable times and places. Fungal surveys can be based on observations only, or fungal specimens may be sampled. Surveying local fungi can be done randomly or systematically.



A simple way: Searching for fungi can be a relaxing pastime for people of all ages and interests, done almost at random or by chance during unplanned walks in suitable areas. This is the easiest and simplest survey and there may be no need to actually pick the fungi, and therefore little disruption to the fungi or soil. People may choose to photograph fungi without disturbing them. Virtually no planning, equipment or financial expense is needed for this type of activity.

A more thorough way: More thorough surveys may involve establishing permanent plots randomly or in specific vegetation types within remnant woodlands. The larger and more variable the remnant, the more or larger the plots needed. Trampling and disturbance need to be minimized in any survey, but more so for repetitive surveys on permanent plots.



All the fungi seen on plots can be recorded, but there is little need to measure number of fruit bodies - just lots or few, or simply presence/absence. If the purpose of surveys is to compare different remnants, some consistency in surveying is required. For example, have the same number and size of plots in each remnant, and same time/person effort for each plot. Effort can best be standardized by allocating the same time on each plot no matter how many people are surveying, e.g. 20 minutes per plot would require 1 person for 20 mins., or 2 people for 10 mins.

Collecting and handling fungi

Australian fungi are generally not poisonous to touch or handle. However it is a good idea to wash hands before eating in case of bacteria or other nasty bugs on the fungi.

When collecting a fungus, extract the whole fruit body including the base of the stalk by using a small knife or other instrument to dig well under and into the soil. When collecting fungi, do not cut the stalk. The base of the stalk is an important structure for identifying some fungi. A 'good collection' of a fungus consists of at least several fruit bodies of the same species, preferably young and mature specimens at different stages of development, collected at the same place and time.

Brush any excessive soil off the fruit body (being careful not to remove any part of the fungus, including any attached mycelium at the base) and immediately place in waxed paper or a storage container to prevent desiccation.

Rotting or maggot-infested specimens should be discarded.

All of the fruit bodies constituting a collection should ideally be produced by the same individual mycelium, and therefore be collected from a small patch, e.g. around a single tree, or in a discrete patch. The bagged or wrapped specimens may be placed in lidded plastic containers to prevent squashing and dehydration. Film canisters are useful containers for small fungi. Baskets are suitable for carrying collections in the field. Truffle



fungi are usually less delicate and may be carried in a cloth carry bag. Specimens should be kept out of direct sunlight and heat as much as possible after collection to avoid desiccation before returning to the lab. In hot conditions a cool-box is useful for storing collections. Do not freeze or refrigerate specimens. Avoid bruising, breaking or squashing specimens.

**Only
collect if
you have a
purpose.**

**Otherwise
look and
leave.**

Remember:

- During surveys, it is usual to find many un-named fungi, because many Australian fungi have not been named.
- Guidebooks containing every fungus such as those available for flowers and birds are not available.
- Your survey will most likely contribute to new discoveries about Australian fungi.



Gear which can be useful when observing, collecting, and surveying fungi

Only eyes and bare hands are needed or...

- collecting basket or bag
- field guide to help identify fungi
- pocket knife or trowel for unearthing entire specimens
- magnifying lens
- small note book for recording data in the field
- containers, wax wrap & paper bags for specimens
- truffle fork for finding truffles
- map or GPS for establishing geographic location
- camera with close-up lens
- colour film
- brush for cleaning dirt off specimens

Remember to clean and wash tools in 70% methylated spirits (7 parts meths: 3 parts water) before using or re-using to prevent contamination between sites.

Only collect if you have a real purpose. Otherwise Look and Leave.

Conservation and Licences

When collecting fungi be aware of **conservation principles** and do not pick more fruit bodies than needed. Try to identify as many fungi as possible without uprooting them. There are some potentially



rare and endangered native fungi unique to Australian woodlands (e.g. *Torrendia grandis*). Although removing fruit bodies does not necessarily kill the fungal networks, disturbance to the soil can disrupt them and they may need considerable recovery. **Minimize soil disturbance** and try not to spread soil or wood in case dieback or other diseases are present in the area. Brush excess soil off fungi at the spot where they were collected, and clean trowels or other instruments used to dig them up. To clean and wash tools use 70% methylated spirits (7 parts meths: 3 parts water).

Written permission is usually needed from landholders or managers of any land that is to be surveyed for fungi in Australia. A **licence or permit** must be obtained to collect fungi legally on any land, other than private property. Government agencies in each Australian state issue licences - such as the **Department of Conservation and Land Management** in Western Australia.

Codes of Conduct for collecting fungi are in place for some countries, but not yet established for Australia. See for example the British wild mushroom pickers' code of conduct at http://www.britmycolsoc.org.uk/files/pickers_code.pdf.

Safety First

Handling fungi

There is **little or no risk of being poisoned** by touching or handling fungi, although rarely some people develop minor skin allergies. For hygiene purposes, wash your hands after handling fungi. Scratching and digging around for fungi in soil, and turning over bits of wood or litter can sometimes disturb some poisonous animals such as scorpions. Old bits of potentially tetanus-infested metal can be uncovered. Hence some people wear gloves when collecting fungi. Have a **first aid kit handy to treat minor cuts and abrasions**.

Poisonous and hallucinogenic fungi

Any normally harmless fungus, including the cultivated white button mushroom (*Agaricus*



bisporus), is able to cause an **upset stomach** if eaten in excess, due to the indigestible chitinous composition of its cell walls. Only a low proportion of fungi world-wide are dangerously poisonous, and although relatively little is known about Australian fungi this is probably also the case here. A few Australian fungi also produce **hallucinogenic effects**. Information about poisonous and hallucinogenic Australian fungi and their toxins is provided in most of the books and web sites on Australian fungi listed in the **additional resources section**.

Recognising and eating edible fungi

There are **no reliable rules** for recognising edible, poisonous, or hallucinogenic species of fungi. Fungi with a neat, clean appearance are not necessarily edible, and ugly or messy fungi are not necessarily poisonous. The edibility of a fungus is not necessarily revealed by observing animals feeding on it.

As a **general rule**, if there is the slightest doubt, a cautious approach is recommended, and only small amounts of the fungus should be sampled on the first occasion. Also remember to keep a sample of the fungus to help identify it, in case it causes illness. Immediately seek medical attention if poisoning is suspected.

The best way to try and distinguish between edible and poisonous fungi is to either consult a professional mycologist who might be capable and willing to provide an identification or, more wisely, **learn to reliably recognise and identify species of fungi**.

This is the End of this Section: "Finding and Collecting"

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