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Members' Report 2020



Marasmius subsect. *Haematocephali*, photo Steve Axford

Summary of Key Achievements

- Growth in organisation membership to 130 Fungimap members
- Significant increase in book sales to general public
- Fungi data successfully transferred to Atlas of Living Australia
- Fungimap Australia project on iNaturalist app now has 30,320 sightings of 1,034 fungal species with 347 people involved
- Partnership with SA government Murraylands and Riverland Landscape Board led to production of several educational videos, booklet of target fungi species, poster and monitoring website
- Several successful events held to educate the general public about fungi (despite COVID-19 limitations!), including a screening of feature film "Fantastic Fungi" in Melbourne with panel discussion, and several events in SA and WA
- Fungimap now has process for accepting bequests
- Subscribers were encouraged to contact their local councils regarding including fungi in biodiversity reporting and programs
- Ongoing progress towards publishing *Fungi Down Under 2* in 2021



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Coordinators Report

What a year it's been! We are certainly living in interesting times. From bushfires to the pandemic, our country has experienced so much tumult, with repercussions for our fungi and our human connections with fungi. The bushfires in so many corners of the country have exposed the extreme vulnerabilities of our ecosystems in a drying and warming climate, with subsequent ramifications for many fungi that will have been permanently lost in these blazes. Yet at the same time some fungi only spore as a response to fire, and we have seen fungi stepping out to repair the damage and help rebuild and reshape devastated ecosystems. It makes us even more acutely aware of the importance of fungi in building resilience into our landscapes in the face of climate change.



Trametes coccinea and *Schizophyllum commune*, photo Sophie Green

It's been a year of huge public interest in fungi, with the pandemic-induced lockdowns moving us away from congregating with people, to instead congregating in quiet natural places with an abundance of fungi after the (mostly) good autumn and winter rains. We have been overwhelmed by the public's interest in learning more about fungi, evidenced by the massive growth in our online bookshop sales, ongoing enquiries to our IDs team, take up of the iNaturalist platform for recording fungi sightings, and popularity of fungi events.

It's been a year of transition and change for Fungimap. Our previous Coordinator Cameron left at the end of March, and we acknowledge the excellent work he did in continuing to build the organisation and in particular improving our electronic communications. We had to close our office at the Royal Botanic Gardens Victoria, initially due to lockdowns but now ongoingly as the RBGV require this space for new staff. We are hugely grateful to the RBGV for having generously sponsored Fungimap for so many years with office space, equipment and administrative support. Our wonderful team of volunteers who were based at the Gardens have largely been working from home during lockdown, and will eventually return to site under different working arrangements.

Our Committee of Management has several vibrant new members who joined us at the May AGM. With committee members now in Queensland, Victoria, WA and SA, and financial members in almost every state, we are becoming an increasingly Australia-wide organisation. I was employed in July as the new Coordinator, working from home in South Australia 10 hours a week, and now also operating the bookshop from home. I have been busy getting used to Fungimap systems, developing new administrative processes, and getting to know the many different people involved in the Fungimap community. I look forward to working with the Committee on our new



Rickenella fibula, photo Sophie Green



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strategic directions as the mapping/recording work we have led over the past 25 years transitions to the Fungimap Australia project on the iNaturalist app.

You will notice that this document is an end of year Member's Report, when previously we issued an end of year Newsletter. We have changed the format this year as we now email out a monthly eNews with fungi news and organisational updates to 700+ subscribers including our members. We have also enclosed a Member Survey to get your thoughts on what direction you would like our organisation to go in. We would appreciate you taking the time to complete this and help shape the direction of Fungimap. I thank everyone for your ongoing support and involvement!

Warm regards, Sophie Green (Fungimap Coordinator)



Dacryopinax, photo Steve Axford

Fungimap Committee of Management

President - **Roz Hart** (WA) - *microbiologist who is passionate about education and raising awareness of fungi in an accessible way*

Vice-President - **Jasmin Packer** (SA) - *conservation biologist at University of Adelaide, passionate about protecting Australia's amazing fungi and other biodiversity, custodian and bushcarer of Heritage Agreement forest with over 30 species of native fungi, intrigued by bandicoot-truffle interactions!*

Treasurer - **Sara Romberg** (VIC) - *our finance, compliance and reporting queen! (who also values the importance of fungi)*

Lyn Allison (VIC) - *citizen scientist with special interest in promoting biodiversity (including fungi) in urban parks, leads Westgate Biodiversity in revegetating this once neglected park in inner Melbourne, and manages our website*

Laurton McGurk (WA) - *specialises in Amanitas, teaching children about fungi, has a fascination with the tiny fungi, used to specialise in DNA analysis, and is a dab wizz at producing amazing fungi-themed cakes!*

Susie Webster (QLD) - *a community scientist who is very interested in finding our rare and at risk fungi and working with IUCN to have them listed. Susie is also trying to put fungal dots all over the Australian map especially Central and Western Queensland, and searching for evidence of fossil fungi.*

Sherie Bruce (QLD) - *previously the Coordinator of Capricorn Conservation Council, specialises in mycoremediation, grows and cultures fungi, and is about to commence DNA analysis*



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President's Report

As Sophie has said above, it's been an amazing, challenging and overall a very positive year for Fungimap, despite huge unexpected changes due to COVID-19. Our wonderful, hardworking Fungimap management committee and volunteers went way beyond the call of duty, especially in March, April and May after our coordinator Cam resigned. We were juggling hard together to perform the most essential of his numerous tasks when we received a body blow when the RBG was closed to volunteers, affecting both our on-site volunteers and our bookshop sales. However we are not easily daunted and we twisted and turned quickly in many various ways in our endeavours to continue this valuable organisation.



Omphalotus nidiformis, photo Steve Axford

We took the difficult decision to take on the search for and employment of our Coordinator ourselves, no longer relying on the services of the RBG for these specific functions. This allowed us to advertise nationwide for someone able to take on the Coordinator role, which we were able to do in the new COVID-era of remote meetings. As you know, this enabled us to engage Sophie Green who is located in South Australia. We are really enjoying working with Sophie as well as our two new Management Committee members from Brisbane and Rockhampton in Queensland, who joined us in May at the AGM, adding another state and two valuable people to our national team. Their contributions and enthusiasm came at a most important time.

Holding meetings electronically really suits our widespread management committee. Due to the physical isolation required to respond to the COVID pandemic, many groups and people have had to quickly come up to speed with this expanding technology so we have all had a lot of practice and become much more proficient.

We maintain our link with RBGV where our Victorian volunteers hope to return soon. They support Fungimap as they have so wonderfully done over the many years since we began in 1996. As we grow into more of an Australia-wide organisation, the time has come for us to branch out with more independence.

A challenge to all of us has been working out how to conduct forays with the restrictions on group sizes. Fungi did not recognise a mammalian pandemic and fruited mostly around their usual times. Rainfall or lack of rain is what matters to them. Realising that we might spend the whole WA fungi season in lockdown, I managed to conduct three highly successful Western Australian fungi walks with Kings Park guides in our local Kings Park *just* as group size restrictions increased to ten allowed outdoors together and everyone was just so happy to be outside together in groups of ten in our favourite park. Teaching everyone how to use iNaturalist has been the main focus this year, and the numbers of people joining and photos submitted have been very encouraging.

Fungimap is thriving in these extraordinary times, thank you to everyone involved so much for all your support, encouragement and participation.

Roz Hart (Fungimap President)



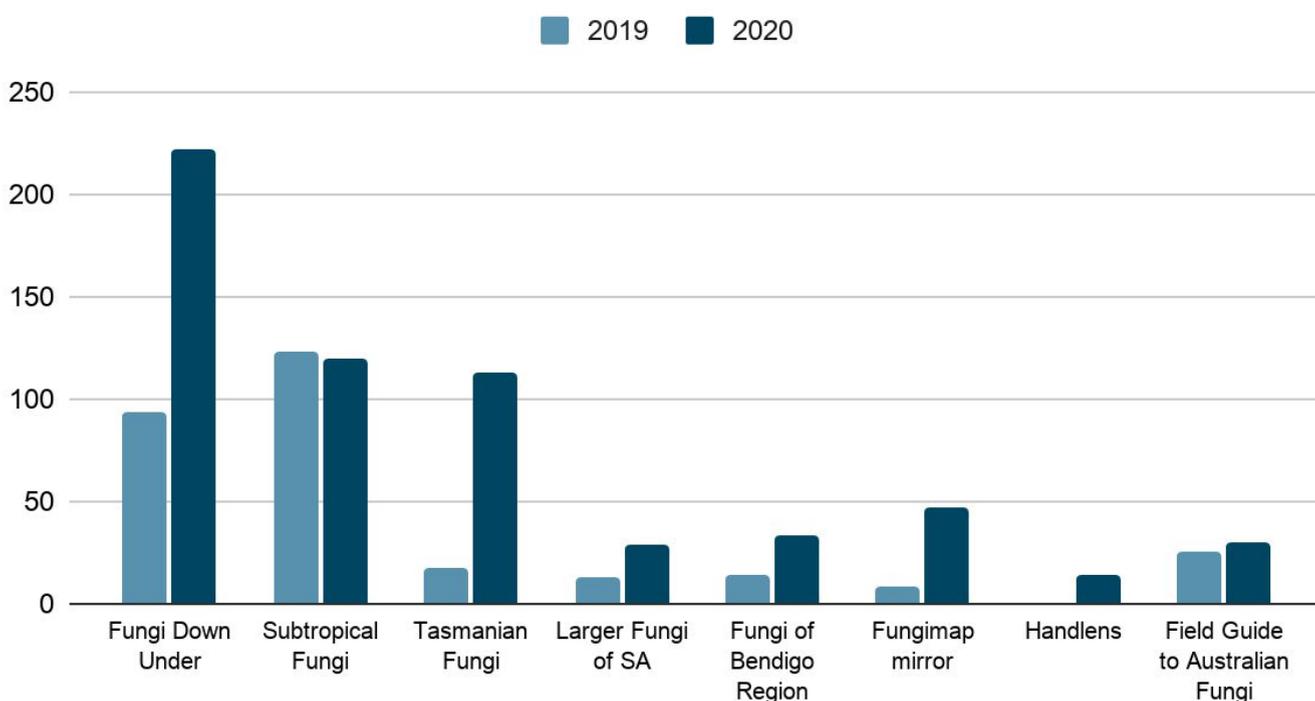
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Book Shop

We were greatly surprised by the demand for fungi books once Australia went into lockdown due to the COVID-19 pandemic. Thankfully Sapphire stepped in initially to manage our online book sales, but then with the Fungimap office having to be closed due to the lockdown for an indeterminate period of time, we needed a new plan!

We cannot thank volunteer and Fungimap member Graham Patterson enough for stepping up and running our online bookshop from home for at least 6 months of this year! Graham ran the bookshop in an incredibly competent and meticulous manner, including ordering new stock, maintaining financial records, liaising with customers, and providing excellent service. We had approximately 400 sales over this period so Graham must have made several hundred trips to the post office!! And he had to put up with his lounge room being filled with boxes of books! So a huge huge thanks to you Graham, you are wonderful.

Select Book Sales Comparison



SA Partnerships

The partnerships that our Vice-President Jasmin Packer has developed with the SA government Murray Darling Basin NRM board (now Murraylands and Riverland Landscape Board) have continued to bear fruit. This year a series of great educational videos were developed, including one on [“The Kingdom of Fungi”](#), another on [“How to go for a fungi walk”](#) looking for 10 target fungi species, and another on [“How to use iNaturalist and the Fungimap Australia project”](#). This follows on from previous collaborations with the Murraylands and Riverland region developing a [fungi monitoring website](#), booklet of target fungi species and fungi poster for the region.



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Work is underway to include an additional ten species of Riverland fungi in the “Find our Fungi” project. A community awareness walk and talk event will then hopefully be scheduled in the Riverland next year to promote the awareness of fungi and get locals involved in this citizen science project.

These resources have proved to be very useful for Fungimap to then host events in the region. We collaborated with the Adelaide Hills Science Hub and Adelaide Fungal Studies Group to deliver a fantastic fungi foray focussed on iNaturalist recording as part of National Science Week, and then a Fungi Scavenger Hunt for both children and adults as part of the SA Nature Festival. The huge level of interest in these two fungi events, with both selling out very quickly and long waiting lists, has demonstrated the need to run more public fungi events and also develop more fungi resources for the public to utilise.

Fungi Records and iNaturalist Update

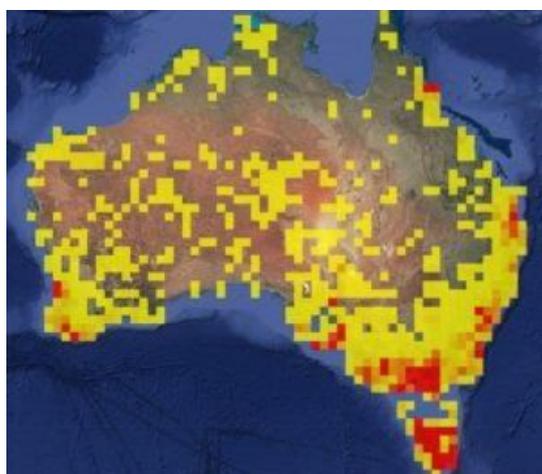
By Tom May

When Fungimap commenced in the mid 1990s, records submitted were stored at first in spreadsheets and then in the “Fungimap database”, an Access database maintained at Royal Botanic Gardens Victoria. There was no online interface for this database but the records were used to create the maps for *Fungi Down Under*, when it was published in 2005.

With the advent of the [Atlas of Living Australia](#) (ALA), the portal provided by the ALA provided a window into data aggregated from a variety of contributors, including Fungimap and reference collections such as fungaria and herbaria.

Fungimap data had not been supplied to the ALA for some years, but with assistance from the Field Naturalists Club of Victoria Environment Fund, data supply to the ALA is now up-to-date.

The density map below is based on records currently in the Fungimap database (not including iNaturalist records, see below). Even with more than 100,000 records, there are plenty of spots around Australia where recorders can fill blanks in distributions! Even near larger cities, which is where most records come from, there are under-recorded grids.



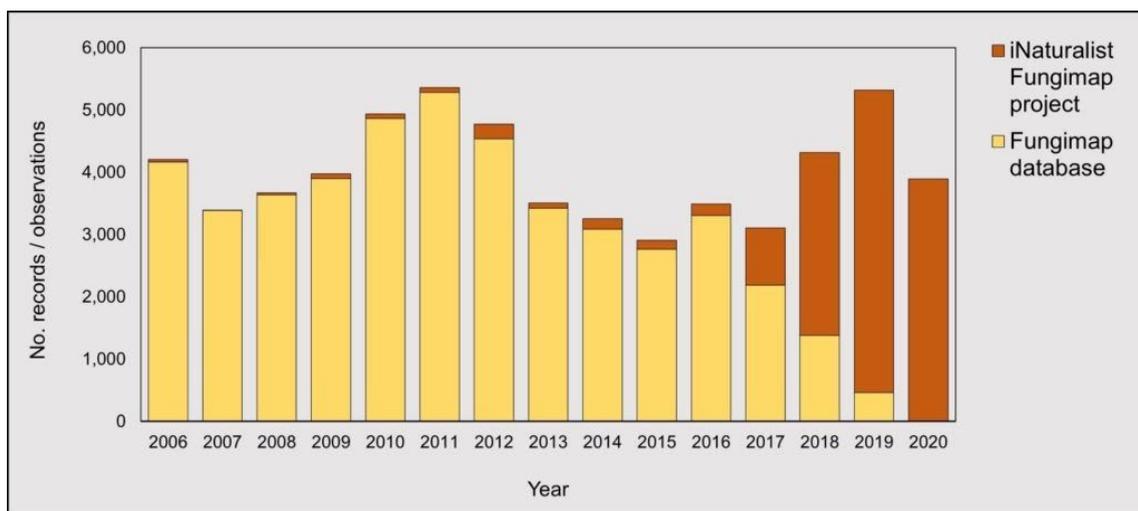
Density maps of records from the Fungimap database (to September 2020). Well-recorded grids are in shades of orange and red (highest recording) and less recorded grids are in yellow. The blank grids have no Fungimap records. Prepared using the spatial portal of the ALA (<https://spatial.ala.org.au>).

There has been an enthusiastic take-up of iNaturalist by Fungimappers, and the iNaturalist Fungimap project is now one of the largest projects on iNaturalist



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covering a group of Australian biota (total records to date more than 29,300). The graph below shows the successful transition to iNaturalist. The overall recording rate is more or less steady, in the range 3000 to 5000 records per year.



Records over time from the Fungimap database and the iNaturalist Fungimap project (research grade only)

We encourage Fungimappers to continue to submit their observations through iNaturalist, as this facilitates submission of geo-referenced images as well as curation of the observations by a wide range of experts. There is a dedicated [Fungimap Australia project](#) within iNaturalist and research grade observations are provided to the ALA on a regular basis.

We'll continue to maintain the Fungimap database for the moment. There remain some recent records yet to be entered into the Fungimap database, especially from paper-based observations, and work continues on databasing these records. An updated set of the records in the Fungimap database will now be supplied to the ALA approximately every six months.

Due to some glitches in a previous data transfer, there are several thousand Fungimap records sitting in the ocean that are corrupted "rogue" records. The same records (uncorrupted) are mapped to the correct location. We are working with the ALA to remove the duplicate corrupted records. Also as part of the data clean up, we've tested the option to include the recorder's name. Previously all Fungimap records were sent to the ALA with only the recorder number (used internally to track recorders in the Fungimap database). Just let us know if you'd like your name used when data from the Fungimap database is supplied to the ALA. If you are using iNaturalist, you get to choose what name you wish to associate with your records: whether your full name, or a nickname.

Processing records, cleaning up data and providing it to the ALA has been a team effort, and we particularly thank volunteers Caine Barlow, Graham Patterson and Wendy Cook along with Tom May at RBG Victoria and Fungimap Coordinator Cameron Durnford; along with the FNCV Environment Fund. Please direct any questions about data and mapping to fungimapids@gmail.com



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Leave a Living Legacy

A bequest to Fungimap is a gift of lasting, positive change for a better, more sustainable world for your family and future generations. Leaving a bequest is also a powerful reflection of the values and principles you treasure.

Fungi face similar threats to plants and animals from climate change, pollution, over-exploitation, as well as habitat destruction and fragmentation.

Your living legacy will cost you nothing now but, large or small, it will help us protect fungi and the environment through advocacy, conservation work, and education.

To find out more about how to leave a gift to Fungimap in your will, we can post you out some information or you can visit <https://fungimap.org.au/leave-a-living-legacy/>

Discovering fire fungi

First published February 2020 and updated November 2020.

By Dr Sapphire McMullan-Fisher and Cameron Durnsford



Pyronema mycelium holding soil together after fire (photo SJM McMullan-Fisher)

After the widespread fires, many people are returning to these areas to monitor the recovery of bushlands. We are hoping that you will help us understand how Australian fungi respond after fire.

If you are in a fire-affected area and you see a fungus please submit it to our iNaturalist project [Fungimap Australia](#).

Fungi that are triggered to fruit after fire are often called pyrophilous (fire-loving) fungi. Fungi can be some of the first species to respond after fire with stonemaker fungi sometimes pushing up through the ash bed even before the first rains. These are saprobic or rotter fungi that are decomposing woody debris and buried wood. Another saprobic fungi that responds after fire is *Pyronema*, the orange mycelium of which can sometimes be seen en

masse. This mycelium, and that of other species that survive fire whose threads remain unseen, are important for holding together the ash and soil, and helping prevent erosion.

Other 'fire fungi' are disc and cup fungi that are commonly seen fruiting after fire in large numbers in a variety of colours including orange, red, brown, and even black and grey. We now know that many of these discs and cups are mycorrhizal including *Geopyxis carbonaria* and *Peziza tenacella*. These mycorrhizal species are spreading their spores across the fire ground so they are ready to partner with the newly germinating generation of plants.

Where ground-dwelling marsupials like bandicoots, bettongs, potoroos, bilbies and quenda survive, they dig up the fire-stimulated truffles like *Mesophellia* species, and Star Truffle (*Nothocastoreum cretaceum*) among others. This digging and feasting across the fire ground also helps spread spores of the mycorrhizal



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associates of a new generation of plants. *Laccaria*, an important group of mushroom-shaped mycorrhiza, also may fruit en masse after fire.

Although a suite of fire-adapted fungi is discussed in this article, many fungi do not survive fire as their habitats – leaf litter, logs or topsoil – are lost or sterilised through burning, or they die because their plant partners die and most mycorrhizal fungi depend on their living plant partners. Where fires have been patchy, some fungi may survive and are important to spread their spores into the new returning vegetation. Unfortunately the drought conditions that precipitated the recent catastrophic fires mean that many fungi populations may have already been under extreme stress and where fires burnt through the organic layers of soil there may be nothing left in the ‘spore bank’.

Below are some post-fire fungi to look out for. Recording the progression of fungi that appear as your local vegetation recovers will help us learn more about our fungi. Most studies on fire fungi in Australia are several decades old so we need data on how our fungi are responding to current conditions in the varied landscapes affected by fire. We hope that land management agencies will include data in their analyses of fire recovery as the absence of some of these groups of fungi could be signs of unhealthy ecosystems and need more active restoration.

Stonemaker fungi

This group of decomposer fungi – *Laccocephalum*, *Neolentinus* and *Pleurotus tuber-regium* – produce storage organs which are called sclerotia. These are often to be found rotting large woody materials like logs, stags, and stumps, sequestering nutrients into a storage organ which is why they can rapidly put up fruit bodies and spread spores to land on new substrate to start their life cycle again. It is important to remember that logs, branches and even leaves which may be considered ‘waste’ are actually the nutrients that will be recycled to feed the new generation of plants and animals as the ecosystem regenerates from fire.



Laccocephalum tumulosum (photo Richard Hartland CC-BY-SA)

Stonemaker fungi are both adapted to fire and to long periods without fire where they recycle wood and other organic materials. These and other ‘rotter’ fungi mycelia are food for wood and litter-inhabiting invertebrates. The recycling of organic materials is an important part of the food web: fungi are food for invertebrates, which in turn are food for ‘insectivorous’ birds. Removal of wood and other organic material removes this part of the nutrient cycle and causes less healthy ecosystems and is responsible for species extinctions.

Some descriptions of the more recognisable Stonemaker fungi:

- [Laccocephalum hartmannii](#) – Chestnut Polypore – (a [lost fungus](#), see Fungimap website)
- [Laccocephalum mylittae](#) – Native Bread
- [Neolentinus dactyloides](#) – Leathery Sawgill



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Disc and cup fungi

These 'discomycetes' are the sporebodies of some ascomycetes. Some are mycorrhizal ascomycetes, those often seen are *Geopyxis carbonaria* and *Peziza tenacella*. Other disc and cup fungi are saprobic, like *Anthracobia muelleri* and contribute to nutrient cycling.



Anthracobia muelleri (V and C Ryan CC-BY-NC)

Truffles

Australia is a centre of diversity for truffle-like fungi – a common adaptation to a long term drying environment. Rather than spread their spores on air currents like many fungi, these fungi are adapted to be dispersed in the scats of ground-dwelling marsupials. The extinction of many of these marsupials means these fungi-eating specialists are no longer around to act as matchmaker between plants and fungi. So plants only have the nearby surviving mycorrhizae to depend upon for survival.



Star Truffle (*Nothocastoreum cretaceum*, photo SJM McMullan-Fisher)

Some truffle-like fungi like *Mesophellia* species and Star Truffle (*Nothocastoreum cretaceum*) are adapted to fruit after fire. This gives a food source for fungi-eating mammals which spread the fungi spores around ready to partner with regenerating plants.

Other fire-adapted fungi

Laccaria are a small mushroom shaped mycorrhiza that often fruit prolifically after fire. Again, this is good timing for these fungi to sporulate and find new plant partners. In other parts of the world, fire is considered to be an important trigger for the fruiting of Morels (*Morchella*) species. This has not been recorded in Australia, but it would be good to collect good evidence about which fungi DO fruit as fire affected areas recover.

Fungi after fire give hope

Evidence of sporebodies, like discs and cups, stonemaker fungi, mushrooms and other shaped fungi after fire is important, their presence indicates that there is an active return of spores into the recovering environment.

Please read the section and links below to learn how to record the best information and images to help us understand how our fungi respond to these fires through our iNaturalist project [Fungimap Australia](#).



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Tips for clear images

Set the fungi up so that you can see as many features in one shot or take several images showing important features.

- Get close, use macro settings or apps where possible
- Have good light without glare, use tripods, timers, diffuse lights in low light conditions
- Use Aperture-priority or image stacking modes

At least one image should include:

- Add size like a ruler or 5 cent piece 'echidna'
- A white point object like a label to help with digital colour corrections
- Mirrors can help with under surface shots
- Fungi habitat*

Capture ephemeral features:

- Colour changes, milk etc.
- Stem base like discs etc.
- Veil remains, rings, volvas etc.

*Habitat images are particularly important after disturbance events as they give users information about conditions at the site. For example, they can show if the area was severely burned or if patches of litter or vegetation survived the fire. As the iNaturalist identification algorithm works on the first images posted, habitat shots are better posted last.



Geastrum triplex, photo Steve Axford



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Acknowledgements

Principal Sponsor

We thank the Royal Botanic Gardens Victoria who continue to provide significant in-kind assistance to Fungimap including office space, and IT, equipment and administrative support to Fungimap volunteers.

Donations

We greatly appreciate the substantial financial support from our regular donors Frances Guard, Blanche Higgins, and Susan Nelles. Thanks also to the following individuals and groups who made donations to Fungimap in 2020, as well as a number of anonymous donors (and apologies in advance to anyone who has been missed): Heino Lepp, Valerie La May, David Munro, Eileen Collins, Elizabeth Sheedy, Bev Robinson, Maurita Harney, Frank Hufschmid, Malcolm McKinty, Helen Jones, Fiona Duggan, Theresa Bint, Suzanne Baker, Pamela and David Catcheside, Roz Hart, Jill Fechner, William Hollingworth, Sue Bendel, Tegan Platt, Nicholas Farr, Ray Wallace, Dianne Davies, Virgil and Jurrie Hubregtse, Alison Moore, and Dr Miranda Y Mortlock.

We also appreciate the many "Sponsor a Species" donations towards publishing *Fungi Down Under 2*, and a recent donation from the Sturt Upper Reaches Landcare Group towards image manipulation and layout/design work for this project.

Project Partners

A sincere thanks to this year's project partners: the Field Naturalists Club of Victoria through their Environment Fund, and the SA government Murraylands and Riverland Landscape Board.

Volunteers

A huge thanks to our volunteer team who have endured challenging volunteer circumstances this year and contributed a huge number of hours to the organisation: Graham Patterson (IDs, data and bookshop), Wendy Cook (data team), Caine Barlow (data team), Sapphire McMullan-Fisher (projects), and Jane Dennithorne (archiving and bookshop). Thanks also to Tom May for ongoing coordination and support of the database team and fungi records work.

Thanks also to all the efforts of our hardworking committee of management: Roz Hart, Jasmin Packer, Sara Romberg, Lyn Allison, Laurton McGurk, Susie Webster, and Sherie Bruce.

Thanks also to all the Fungimap members and members of the general public who have submitted fungi records this year, both directly to Fungimap and via iNaturalist. We appreciate the time it takes to do this, particularly those who are new to iNaturalist, but these records are invaluable for furthering our understanding of Australian fungi. Please keep up the great work!

This End of Year Report has been compiled by Sophie Green with assistance from the Committee of Management.



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