Perth Urban Bushland Fungi

Fungi of John Forrest National Park

Written and produced by

Neale L. Bougher, Roz Hart,

Aruni Jayasekera & Brett Glossop

Department of Environment and Conservation – Perth Urban Bushland Fungi Project

Recording GPS data

Initial talk to orient foray group

Microscopy session at workshop

Workshop - Group leaders on spore prints

PUBF Website : www.fungiperth.org.au

Western Australian Naturalists Club

BUSH SKILLS FOR THE HILLS

Government of Western Australia Department of Environment and Conservation

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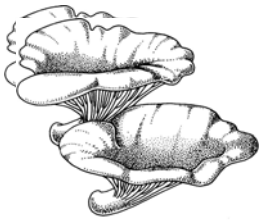

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Department of Environment and Conservation (DEC) – *Perth Urban Bushland Fungi Project*

Advice about the identity of the fungi was provided by Dr Neale Bougher, Mycologist. Organisational and technical support was provided by officers on the PUBF project – Roz Hart, Aruni Jayasekera and Brett Glossop.

Photos and field assistance by PUBF participants

lotterywest supported

PUBF Website : www.fungiperth.org.au

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This report presents data from the Perth Urban Bushland Fungi (PUBF) Project workshop held on 12 July 2009 in John Forrest National Park - a National Park in the Perth hills region of southwest Western Australia. Participants collected fungi with Group Leaders in the eastern area of John Forrest National Park in the morning and spent the afternoon inside at the "Hub of the Hills" Community Centre in Mundaring, learning about fungi in general, their features and their roles in helping to keep bushlands healthy. They also learnt more about the fungi they had collected that morning. The event was organised with "Bush Skills for the Hills" as part of their Winter Program.

Fifty people took part in the workshop. They were divided into five groups for the morning foray, led by Mark Brundrett and Aruni Jayasekera; Roz Hart and Laurton McGurk; Joe Froudist and Margaret Langley; Kevn Griffiths and Derek Mead Hunter; and Kirsten Tullis and Louise Little; all volunteer Leaders from the PUBF Project. The fungi collected were sorted and examined and some were vouchered for permanent lodgement at the Western Australian Herbarium. Mycologist Neale Bougher identified the fungi and led the workshop.

John Forrest National Park

The John Forrest National Park is situated about 25 km east of Perth's CBD on the western edge of the Darling Plateau in the Shire of Swan and Shire of Mundaring. It includes an extensive area (2,676 hectares) of lateritic soils with numerous granitic and doleritic outcrops and associated sands supporting five vegetation complexes (Department of Conservation and Land Management, 1994). Forest and woodland occur over much of the area with dominant trees such as jarrah (*Eucalyptus marginata*), marri (*Corymbia calophylla*) and wandoo (*Eucalyptus wandoo*). John Forrest National Park has a rich diversity of fungi, but prior to the current survey, few had been recorded and there were less than 10 collections from the Park vouchered and held at the Western Australian Herbarium.

John Forrest National Park Bushland Fungi

During the survey at John Forrest National Park in July 2009 a total of 84 fungi were recorded, which comprised 49 different fungi species. Twelve collections were lodged with the Department of Environment and Conservation Western Australian Herbarium (Tables 1, 2).

The majority of fungi observed during this survey at John Forrest National Park were decomposer fungi. These included the mushroom types of fungi such as the ubiquitous Golden Wood Fungus

(*Gymnopilus allantopus*), pictured here fruiting out of a gumnut and bracket types such as the Lilac Bracket Fungus (*Fomitopsis lilacinogilva*). In addition, many species of mycorrhizal fungi were recorded during this survey. Mycorrhizal fungi form partnerships with native plants such as eucalypts, acacias and sheoaks (allocasuarinas). The fungi assist the plants to obtain nutrients from the soil while receiving sugars in return. The mycorrhizal fungi observed at John Forrest National Park vary considerably in form. For example, mycorrhizal fungi such as *Amanita xanthocephala* and *Cortinarius australiensis* produce mushroom fruit bodies, whereas the possibly (though untested) mycorrhizal fungus *Sistotrema* produces an inconspicuous resupinate (skin fungus) type of fruit body. Only one species of mycorrhizal truffle fungi, *Cystangium* sp. was observed during the survey. This is a small, white truffle and it occurs only about 1 to 3 cm below the surface. The lack of other truffles recorded is not surprising due to the dry conditions and because the survey focussed on finding above-ground fungi fruit bodies. It is likely that a significant representation of Australia's hundreds of species of native truffles (Bougher and Lebel, 2001) occur at John Forrest National Park. For example, a collection of the genus *Auritella*, a truffle relative of the mushroom genus *Inocybe*, is vouchered at the Western Australian Herbarium from the park.

The Yellow Headed Amanita (*Amanita xanthocephala*) – a mycorrhizal partner of native plants at John Forrest National Park and elsewhere

Many examples of fungi that are restricted to particular microhabitats were recorded. For example certain fungi such as *Psilocybe coprophila* are restricted to animal dung, *Rickenella fibula* always occurs in moss beds as it has an association with the moss, and *Lichenomphalia* only occurs wherever an inconspicuous green alga is present. It forms a lichen with the alga.

Three species of fungi with large fruit bodies that occur on living or dying trees were observed during this survey. Two of these may be pathogenic but they may also persist as decomposers for long periods of time - the Ghost Fungus (*Omphalotus nidiformis*) and the Beefsteak Fungus (*Fistulina hepatica*). A third species, the Australian Honey Fungus (*Armillaria luteobubalina*), is a pathogen capable of rapidly infecting and killing trees and shrubs (see management discussion below). Large areas of John Forrest National Park are known to be infected by this fungus (Department of Conservation and Land Management, 1994).

The Australian Honey Fungus *Armillaria luleobubalina*

Some of the fungi recorded in this survey remain unidentified pending further collections or more detailed comparative analyses. Many of the fungi could only be identified to genus level. This is because detailed taxonomic examinations are yet to be completed and perhaps some are undescribed species. Far more fungi are likely to occur at John Forrest National Park than the 49 species recorded in this inaugural survey. Fewer fungi than may have been expected were found in the 2009 survey due to very dry weather conditions in the weeks preceding the survey. Because of the unpredictable nature of fungi fruiting, surveys need to be conducted over many years in order to capture the biodiversity of fungi present in any given area.

Management recommendations for understanding and conserving fungi biodiversity at the John Forrest National Park

Is the ecology and biodiversity of John Forrest National Park in balance for long-term health? To help answer that question, management strategies for the biodiversity of the bushland need to consider the Flora, Fauna and Fungi together. The Fungi have crucial ecological roles for maintaining bushland health, including linkages between the 3 F's. Conservation of biodiversity and general interest in the John Forrest National Park has primarily focussed on flora and fauna. An increased level of knowledge about the fungi at John Forrest National Park is required as a basis for documenting and understanding the fungi, and in turn for helping to manage and conserve the bushland's flora and fauna.

Management recommendations involving fungi include:

1. **Undertake biological surveys to build up an inventory of fungi:** John Forrest National Park has a wide range of vegetation types (Department of Conservation and Land Management 1994) that undoubtedly influence the presence, abundance and spatial distribution of fungi species in the bushland. Different fungal communities are likely to occur in different parts of the bushland. Vegetation-fungi patterns could be clarified if surveys of fungi were carried out annually over many years. Far more fungi species are likely to occur in John Forrest National Park than the species recorded so far. Due to the unpredictable nature of fungi fruiting, surveys need to be conducted several times a year over many years in order to capture the biodiversity of fungi present in any given area. Such inventory data may be used to classify fungi communities at John Forrest National Park, compare the fungi communities at the bushland with those at other bushlands, and as a baseline for monitoring changes in biodiversity at the bushland - e.g. any trends indicating changes in the diversity of significant ecological groups of fungi such as mycorrhizal species, and the effects of major disturbances such as fire or disease incursions.
2. **Record comprehensive data on surveys:** (i) the identity of the fungi (ii) the main features of the fungi (including close-up photographs) (iii) habitat (in litter, on dead wood etc.) and (iv) plant species associated with each of the fungi. Standard recording sheets for fungi biodiversity surveys are available on request from PUBF (DEC Western Australian Herbarium) or from the PUBF website at www.fungiperth.org.au.
3. **Georeference the surveys:** It would be desirable to georeference future surveys at John Forrest National Park in order to build up a spatial map of distribution of individual fungi species. Such data can be overlain onto vegetation, soil and fire-age maps so as to potentially recognise associations between particular fungi and plants, or vegetation and landscape types. A georeferencing survey kit developed by John Weaver for PUBF is available on loan from the Western Australian Herbarium.
4. **Involve community:** It is recommended that further fungi surveys, involving members of the local community, be undertaken at John Forrest National Park. The involvement of local community members can facilitate a greater sampling effort, a general increase in awareness about fungi and their roles and linkages in bushlands, and a greater appreciation of the need to preserve bushland. Fungi surveys are well suited to annual involvement of Friends Groups and volunteers from the local community.
5. **Determine the mycorrhizal plant partners of fungi:** To understand the mycorrhizal relationships between fungi and plants at John Forrest National Park, a list of known plants at the Park should be annotated with the likely mycorrhizal status of each plant (e.g. categories such as, ectomycorrhizal, arbuscular, epacrid, orchid and not mycorrhizal). This will help understanding of how the pattern of occurrence of various species of fungi relates to the distribution of vegetation types at John Forrest National Park.
6. **Determine the animal interactions with fungi:** Determine what truffle fungi are present at John Forrest National Park and if they and other fungi are being used as a food resource by local mycophagous (fungus-eating) native mammals such as bandicoots. Such knowledge has

significant application if mammals are being encouraged or relocated into the area, or to help understand why there may have been declines in mammal populations at John Forrest National Park. Insects that use fungi as food and/or habitat are also likely to be present in the bushland.

7. **Management and monitoring of Armillaria:** Large areas of John Forrest National Park are known to be infected by *Armillaria* (Department of Conservation and Land Management, 1994). Direct management to contain particular *Armillaria* infestations is complex, and an analysis of the various intervention options is beyond the scope of this report. Management options for *Armillaria* that are often applied in gardens such as trenching or changes to soil pH are impracticable for natural bushlands. Quarantine options such as those applied for *Phytophthora* dieback are not as appropriate for *Armillaria*, due to the difference in how these vastly different organisms spread. In most cases, at least in the Perth Region, *Armillaria* infestations have been periodic, often flaring up and diminishing after a period of time. The underlying causes of such fluxes are not fully understood. The occurrence of high biodiversity of all types of fungi in bushlands and therefore the various contributions of those fungi to the overall health of bushlands may be one factor determining the frequency and severity of infestations of *Armillaria* (and other disease fungi). For John Forrest National Park, it is recommended that georeferenced surveys of *Armillaria* be undertaken to create a spatial map of the distribution of this fungus. This data can be overlain onto vegetation, soil and fire-age maps so as to potentially recognize associations between infestations and plants or vegetation and landscape types. It would be desirable to undertake the surveys successively over time to be able to monitor the spread, intensity and duration of *Armillaria* infections in John Forrest National Park.
8. **Include Flora, Fauna and Fungi in signage and interpretative material at the Park:** Due to its prominent position in the landscape and close proximity to Perth, John Forrest National Park is of high significance as a recreational reserve (Department of Conservation and Land Management, 1994). It has well-developed signage and facilities to enhance public engagement and education values of the Park. Flora, Fauna and Fungi could be included in signage and interpretative material at John Forrest National Park. This would help to promote public awareness and appreciation of the linkages between the 3Fs that influence the long-term health of the Park's bushland.
9. **Support a strategy to preserve representative landscapes:** Support a management plan that aims to preserve a variety of natural vegetation types and the diversity of plant species within the types. Also preserve a diversity of fire ages, including at least some long unburnt patches if possible. This strategy will help retain a variety of microhabitats for fungi – e.g. specific components of wood (logs, banksia bark, twigs etc.), litter, moss beds and specific mycorrhizal partner plants. In turn, this strategy may foster fungi biodiversity and may also help to limit disease incursions at John Forrest National Park.

References

Bougher, N.L. (2009). Fungi of the Perth Region and Beyond. Western Australian Naturalists' Club (Inc.), Perth, Western Australia.

Bougher, N.L. & Lebel, T. (2001). Sequestrate (truffle-like) fungi of Australia and New Zealand. Australian Systematic Botany 14, 439-484.

Department of Conservation and Land Management (1994). John Forrest National Park Management Plan 1994-2004. Management Plan No. 26.

Table 1: John Forrest National Park Fungi List: 12 July 2009

Life Mode Key: M = Mycorrhizal, S = Saprotrophic (Decomposer), S/P = Saprotrophic and Parasitic. Life Mode allocation is based on probability only, as many fungi have not been tested.
F map = Fungimap Target: refers to species that have been selected by the Australia-wide mapping project, Fungimap, for collecting detailed records to be compiled into distribution maps.
See Fungimap on-line at www.rbg.vic.gov.au/fungimap, and the book *Fungi Down Under* by Grey, P. and Grey, E (2005).
Page Num refers to the page number in the south-west WA fungi book (Bougher 2009), which is available as a bound book, DVD, or for downloading from the PUBF website at www.fungiperth.org.au

Scientific Name	Common Name	Form	Habitat	Life Mode	F map	Page Num	Specimen ID
***Agaricus* sp.**		mushroom	litter/ground	S			4304
***Amanita* sp.**		mushroom	litter/ground	M			4303, 4329 4348
Amanita xanthocephala	**Yellow Headed Amanita**	mushroom	litter/ground	M	Yes	J-55	4341
Armillaria luteobubalina	**Australian Honey Fungus**	mushroom	dead/living trees & roots	P	Yes	J-2	4288
***Arrhenia* sp.**		mushroom	moss	S			4321
Boletellus obscurecoccineus	**Rhubarb Bolete**	mushroom	litter/ground	M	Yes	K-1	4295, 4314 4351
***Bovista* sp.**		puffball	litter/ground	S			4320
Byssomerulius corium	**Bysso Skin Fungus**	resupinate/shelf	dead wood	S		O-3	4356
Calocera guepinioides	**Scotsman's Beard**	jelly fungus	dead wood	S		Q-1	4339
Coltriciella dependens		mushroom	litter/ground	S		N-10	4311
Cortinarius australiensis		mushroom	litter/ground	M			4359
***Cortinarius* sp.**		mushroom	litter/ground	M			4301, 4302 4306, 4317 4340
Crepidotus nephrodes		shell	dead wood	S			4300
***Cystangium* sp.**		truffle	underground/under litter	M		I-7	4293
***Dermocybe* sp.**		mushroom	litter/ground	M		J-99	4331
Exidia nucleata		jelly	dead wood	S			4290
Fistulina hepatica	**Beefsteak Fungus**	bracket	dead wood	P/S	Yes	N-9	4308
Fomitopsis lilacinogilva	**Lilac Bracket Fungus**	bracket	dead wood	S		N-2	4297, 4316 4362
***Galerina* sp.**		mushroom	litter/ground	S			4354
***Grandinia* sp.**		resupinate	dead wood	S			4350
Gymnopilus allantopus	**Golden Wood Fungus**	mushroom	dead wood	S		J-15	4285, 4292 4360
Gymnopilus purpuratus		mushroom	dead wood	S			4313

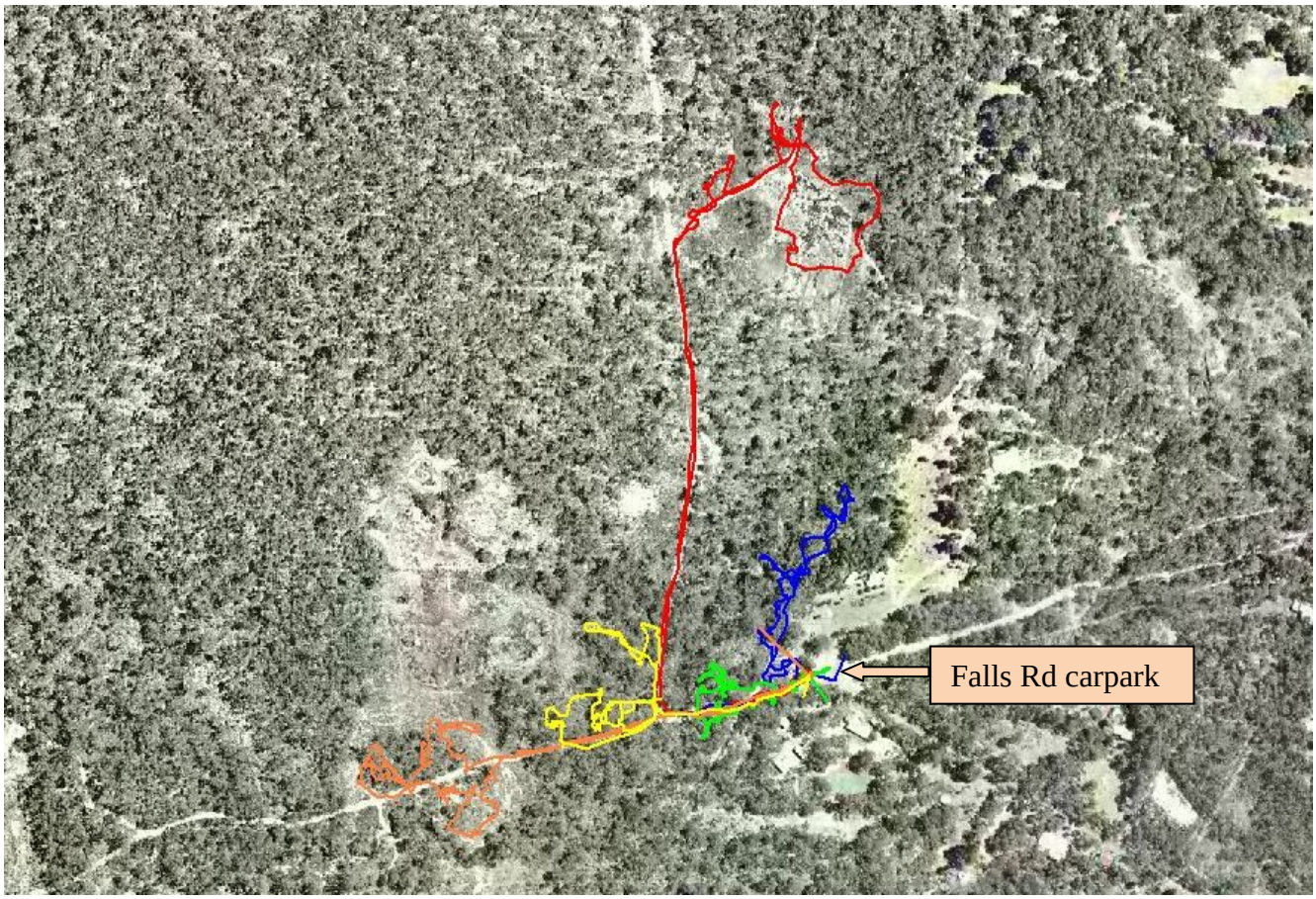
***Gymnopilus* sp.**		mushroom	dead wood	S			4307, 4334
***Hebeloma* sp.**		mushroom	litter/ground	M			4336
Hebeloma westraliense		mushroom	litter/ground	M			4333
Henningsomyces candidus	**Miniature Chimney Pots**	tubular	dead wood	S		R-1	4310
***Hymenoscyphus* sp.**		cup	dead wood	S			4344
***Laccaria* sp.**		mushroom	litter/ground	M			4278, 4298 4305, 4315 4322, 4327
***Lichenomphalia* sp.**		mushroom	litter/ground	S			4328
Macrolepiota clelandii		mushroom	litter/ground	S			4312, 4332
***Mycena* sp.**		mushroom	litter/ground	S			4280, 4287 4345, 4349
Omphalotus nidiformis	**Ghost Fungus**	mushroom	dead wood	S/P	Yes	J-21	4299
***Phlebia* sp.**		resupinate	dead wood	S			4358
Pholiota communis	**Common Pholiota**	mushroom	litter/ground	S		J-26	4294
***Pholiota* sp.**		mushroom	dead wood	S			4289
***Poria* sp.**		resupinate	dead wood	S			4281, 4291 4338
***Psathyrella* sp.**		mushroom	litter/ground	S			4286, 4357 4361
Psilocybe coprophila	**Dung Cap Psilocybe**	mushroom	dung	S		J-95	4309, 4330 4335, 4355
Pycnoporus coccineus	**Scarlet Bracket Fungus**	bracket	dead wood	S		N-8	4318
Rickenella fibula	**Orange Mosscap**	mushroom	litter/ground	S		J-27	4325
***Russula* sp.**		mushroom	litter/ground	M			4353
***Schizopora* sp.**		resupinate	dead wood	S			4284, 4347
***Sistotrema* sp.**		resupinate	litter/ground	S/M			4283
Stereum illudens	**Purplish Stereum**	bracket	dead wood	S		O-6	4337
***Tremella mesenterica* group**	**Yellow Brain Fungus**	jelly fungus	dead wood	S	Yes	Q-2	4279, 4319
Undetermined Agaric		mushroom	litter/ground	?			4326, 4343
Undetermined Discomycete		cup	dead wood	S			4342, 4352
Undetermined Myxomycete	**Slime Mould**	slime mould	dead wood	S			4296
Undetermined Resupinate		resupinate	dead wood	S			4282, 4323 4324

Table 2 : Permanent Vouchered Specimens from John Forrest National Park, 2009

Twelve of the fungi collected during this event were deposited into the Western Australian Herbarium with the following details:

Armillaria luteobubalina	Voucher Number BOU 553	Specimen ID 4288
Arrhenia sp.	Voucher Number BOU 554	Specimen ID 4321
Boletellus obscurecoccineus	Voucher Number BOU 550	Specimen ID 4314
Cystangium sp.	Voucher Number BOU 559	Specimen ID 4293
Dermocybe sp.	Voucher Number BOU 558	Specimen ID 4331
Exidia nucleata	Voucher Number BOU 552	Specimen ID 4290
Gymnopilus sp.	Voucher Number BOU 556	Specimen ID 4334
Gymnopilus sp.	Voucher Number BOU 548	Specimen ID 4307
Hebeloma westraliense	Voucher Number BOU 555	Specimen ID 4333
Macrolepiota clelandii	Voucher Number BOU 557	Specimen ID 4332
Pholiota communis	Voucher Number BOU 551	Specimen ID 4294
Sistotrema sp.	Voucher Number BOU 549	Specimen ID 4283

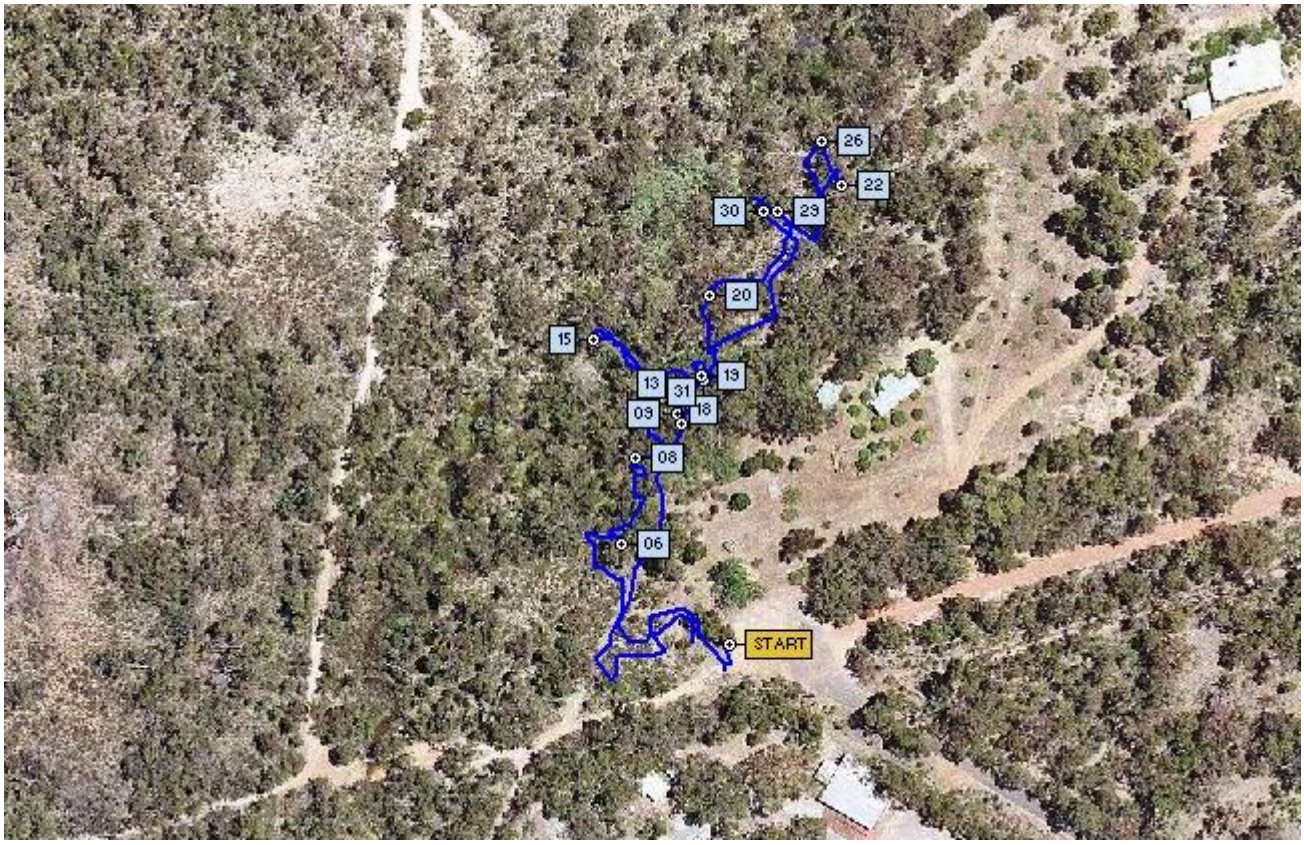
Google Map showing the location of John Forrest National Park. Fungi were collected in the eastern area of the park, accessed via Falls Rd, Parkerville.



Aerial photo showing the colour coded tracks walked by the five groups on 12 July 2009.

Georeferenced Tracks and Photos

Mark Brundrett and Aruni Jayasekera's group, 12 July 2009



The numbers on the coloured dots in the fungi photos correspond to the collecting number and usually do not match the photo number. It is the photo number preceding the fungus name which correlates with the site on the map above.

Event: John Forrest National Park Date: 12/07/2009
Group Number: 279 Leaders Mark Brundrett and Aruni Jayasekera
Photographer: Mark Brundrett

06 *Laccaria* sp.

Specimen ID: 4278

Within litter in jarrah forest
Latitude: 31° 52' 25.5"South Longitude: 116° 6' 49"East
12/07/2009 Image: JF92_279MB06

08 *Tremella mesenterica* group **Yellow Brain Fungus**

Specimen ID: 4279

On dead wood in jarrah forest
Latitude: 31° 52' 24.6"South Longitude: 116° 6' 49.1"East
12/07/2009 **Fungimap Target** Image: JF92_279MB08

09 *Mycena* sp.

Specimen ID: 4280

Within litter in jarrah forest
Latitude: 31° 52' 24.1"South Longitude: 116° 6' 49.7"East
12/07/2009 Image: JF92_279MB09

13 *Poria* sp.

Specimen ID: 4281

On dead wood within litter in marri forest
Latitude: 31° 52' 23.4"South Longitude: 116° 6' 48.6"East
12/07/2009 Image: JF92_279MB13

15 Undetermined Resupinate

Specimen ID: 4282

On dead wood by the creek in jarrah/marri forest
Latitude: 31° 52' 23.4"South Longitude: 116° 6' 48.6"East
12/07/2009 Image: JF92_279MB15

18 *Sistotrema* sp.

Specimen ID: 4283

On dead marri leaf litter in marri forest
Latitude: 31° 52' 23.8"South Longitude: 116° 6' 49.9"East
12/07/2009 Image: JF92_279MB18
Vouchered WA Herbarium: **BOU 549**

19 *Schizopora* sp.

Specimen ID: 4284

On dead marri wood/bark in marri forest
Latitude: 31° 52' 23.8"South Longitude: 116° 6' 49.9"East
12/07/2009 Image: JF92_279MB19

20 *Gymnopilus allantopus* **Golden Wood Fungus**

Specimen ID: 4285

On dead marri wood in marri forest
Latitude: 31° 52' 23"South Longitude: 116° 6' 49.9"East
12/07/2009 Image: JF92_279MB20

22 ***Psathyrella*** **sp.**

Specimen ID: 4286

On litter in jarrah forest
Latitude: 31° 52' 21.9"South Longitude: 116° 6' 51.5"East
12/07/2009 Image: JF92_279MB22

26 ***Mycena*** **sp.**

Specimen ID: 4287

On trunk of dead jarrah in jarrah forest
Latitude: 31° 52' 21.3"South Longitude: 116° 6' 51.3"East
12/07/2009 Image: JF92_279MB26

29 ***Armillaria luteobubalina*** **Australian Honey Fungus**

Specimen ID: 4288

On ground/soil/litter at the base of jarrah tree in jarrah forest
Latitude: 31° 52' 22.3"South Longitude: 116° 6' 51"East
12/07/2009 **Fungimap Target** Image: JF92_279MB29
Vouchered WA Herbarium: BOU 553

30 ***Pholiota*** **sp.**

Specimen ID: 4289

On the ground within litter and rotting jarrah wood in jarrah forest
Latitude: 31° 52' 22.3"South Longitude: 116° 6' 51"East
12/07/2009 Image: JF92_279MB30

31 ***Exidia nucleata***

Specimen ID: 4290

On dead marri wood in jarrah/marri forest
Latitude: 31° 52' 24.2"South Longitude: 116° 6' 49.7"East
12/07/2009 Image: JF92_279MB31
Vouchered WA Herbarium: BOU 552

Georeferenced Tracks and Photos

Roz Hart and Laurton McGurk's group, 12 July 2009

The numbers on the coloured dots in the fungi photos correspond to the collecting number and usually do not match the photo number. It is the photo number preceding the fungus name which correlates with the site on the map above.

Event: John Forrest National Park Date: 12/07/2009
Group Number: 280 Leaders Roz Hart and Laurton McGurk
Photographer: Laurton McGurk

05 ***Poria* sp.**

Specimen ID: 4291

On dead wood in eucalypt forest
Latitude: 31° 52' 27.1"South Longitude: 116° 6' 49"East
12/07/2009 Image: JF92_280LM05

07 ***Gymnopilus allantopus*** **Golden Wood Fungus**

Specimen ID: 4292

On partly buried dead wood in eucalypt forest
Latitude: 31° 52' 27.2"South Longitude: 116° 6' 49"East
12/07/2009 Image: JF92_280LM07

14 ***Cystangium*** **sp.**

Specimen ID: 4293

Within litter in disturbed site in eucalypt forest

Latitude: 31° 52' 27.1"South Longitude: 116° 6' 48.4"East

12/07/2009 Image: JF92_280LM14

Vouchered WA Herbarium: BOU 559

16 ***Pholiota communis*** **Common Pholiota**

Specimen ID: 4294

Within litter in eucalypt forest

Latitude: 31° 52' 27.2"South Longitude: 116° 6' 47.6"East

12/07/2009 Image: JF92_280LM16

Vouchered WA Herbarium: BOU 551

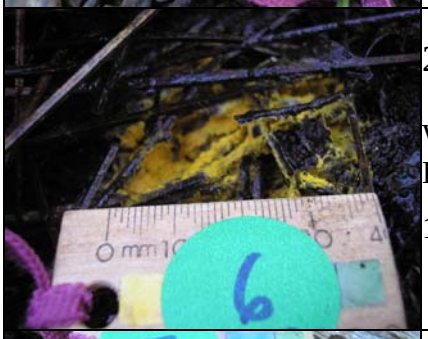
19 ***Boletellus obscurecoccineus*** **Rhubarb Bolete**

Specimen ID: 4295

Within litter in eucalypt forest

Latitude: 31° 52' 27.2"South Longitude: 116° 6' 47.6"East

12/07/2009 **Fungimap Target** Image: JF92_280LM19



24 **Undetermined Myxomycete** **Slime Mould**

Specimen ID: 4296

Within litter in eucalypt forest

Latitude: 31° 52' 27.2"South Longitude: 116° 6' 47.3"East

12/07/2009 Image: JF92_280LM24

25 ***Fomitopsis lilacinogilva*** **Lilac Bracket Fungus**

Specimen ID: 4297

On dead log in eucalypt forest

Latitude: 31° 52' 27.4"South Longitude: 116° 6' 47.4"East

12/07/2009 Image: JF92_280LM25

28 ***Laccaria*** **sp.**

Specimen ID: 4298

Within litter in eucalypt forest

Latitude: 31° 52' 27.2"South Longitude: 116° 6' 47.9"East

12/07/2009 Image: JF92_280LM28

	30 ***Omphalotus nidiformis*** **Ghost Fungus** Specimen ID: 4299 Attached to the base of tree trunk in eucalypt forest Latitude: 31° 52' 28"South Longitude: 116° 6' 46.8"East 12/07/2009 **Fungimap Target** Image: JF92_280LM30
	34 ***Crepidotus nephrodes*** Specimen ID: 4300 Attached to bark at base of a tree in eucalypt forest Latitude: 31° 52' 28"South Longitude: 116° 6' 46.8"East 12/07/2009 Image: JF92_280LM34
	37 ***Cortinarius*** **sp.** Specimen ID: 4301 Within litter in eucalypt forest Latitude: 31° 52' 26.8"South Longitude: 116° 6' 46.9"East 12/07/2009 Image: JF92_280LM37
	38 ***Cortinarius*** **sp.** Specimen ID: 4302 Within litter in eucalypt forest Latitude: 31° 52' 26.6"South Longitude: 116° 6' 46.9"East 12/07/2009 Image: JF92_280LM38
	40 ***Amanita*** **sp.** Specimen ID: 4303 On ground within litter in eucalypt forest Latitude: 31° 52' 26.6"South Longitude: 116° 6' 47.4"East 12/07/2009 Image: JF92_280LM40
	42 ***Agaricus*** **sp.** Specimen ID: 4304 Within litter in eucalypt forest Latitude: 31° 52' 26.6"South Longitude: 116° 6' 46.8"East 12/07/2009 Image: JF92_280LM42

Georeferenced Tracks and Photos

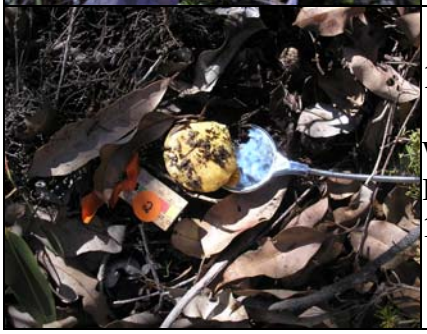
Joe Froudist and Margaret Langley's group, 12 July 2009

The numbers on the coloured dots in the fungi photos correspond to the collecting number and usually do not match the photo number. It is the photo number preceding the fungus name which correlates with the site on the map above.

Event: John Forrest National Park Date: 12/07/2009
Group Number: 281 Leaders Joe Froudist and Margaret Langley
Photographer: Margaret Langley

09 ***Laccaria*** **sp.**

Specimen ID: 4305
On the ground in mossbed in marri woodland
Latitude: 31° 52' 27.8"South Longitude: 116° 6' 39.9"East
12/07/2009 Image: JF92_281ML09



10 ***Cortinarius*** **sp.**

Specimen ID: 4306
Within litter in marri woodland
Latitude: 31° 52' 29.1"South Longitude: 116° 6' 38.2"East
12/07/2009 Image: JF92_281ML10

12 ***Gymnopilus*** **sp.**

Specimen ID: 4307
On laterite soil at the base of dead jarrah in woodland
Latitude: 31° 52' 29.1"South Longitude: 116° 6' 37.8"East
12/07/2009 Image: JF92_281ML12
Vouchered WA Herbarium: BOU 548

14 ***Fistulina hepatica*** **Beefsteak Fungus**

Specimen ID: 4308
At the base of dead jarrah tree in eucalypt woodland
Latitude: 31° 52' 29.1"South Longitude: 116° 6' 37.8"East
12/07/2009 **Fungimap Target** Image: JF92_281ML14

17 ***Psilocybe coprophila*** **Dung Cap Psilocybe**

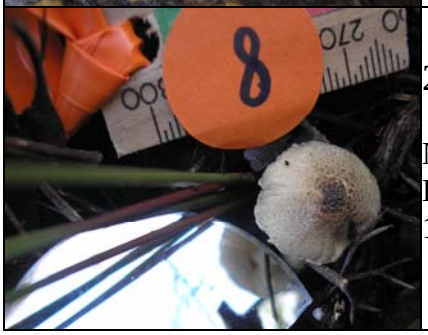
Specimen ID: 4309
On kangaroo dung in eucalypt woodland
Latitude: 31° 52' 29.1"South Longitude: 116° 6' 37.8"East
12/07/2009 Image: JF92_281ML17

20 ***Henningsomyces candidus*** **Miniature Chimney Pots**

Specimen ID: 4310
On dead branch in jarrah/marri forest
Latitude: 31° 52' 29.2"South Longitude: 116° 6' 37.7"East
12/07/2009 Image: JF92_281ML20

23 ***Coltriciella dependens***

Specimen ID: 4311
On dead wood in moist litter in jarrah/marri forest
Latitude: 31° 52' 29.2"South Longitude: 116° 6' 37.7"East
12/07/2009 Image: JF92_281ML23



25 ***Macrolepiota clelandii***

Specimen ID: 4312
Near the base of jarrah attached to litter in jarrah/marri forest
Latitude: 31° 52' 29.2"South Longitude: 116° 6' 37.4"East
12/07/2009 Image: JF92_281ML25

	27 ***Gymnopilus purpuratus*** Specimen ID: 4313 Attached to litter in jarrah/marri forest Latitude: 31° 52' 28.5"South Longitude: 116° 6' 36.9"East 12/07/2009 Image: JF92_281ML27
	29 ***Boletellus obscurecoccineus*** **Rhubarb Bolete** Specimen ID: 4314 Within litter in jarrah woodland Latitude: 31° 52' 28.2"South Longitude: 116° 6' 36.8"East 12/07/2009 **Fungimap Target** Image: JF92_281ML29 **Vouchered WA Herbarium: BOU 550**
	31 ***Laccaria*** **sp.** Specimen ID: 4315 Attached to litter in open jarrah/marri woodland between xanthorrhoea Latitude: 31° 52' 28.3"South Longitude: 116° 6' 36.6"East 12/07/2009 Image: JF92_281ML31
	32 ***Fomitopsis lilacinogilva*** **Lilac Bracket Fungus** Specimen ID: 4316 On dead eucalypt in open jarrah/marri forest Latitude: 31° 52' 28.7"South Longitude: 116° 6' 36.4"East 12/07/2009 Image: JF92_281ML32
	33 ***Cortinarius*** **sp.** Specimen ID: 4317 In litter near xanthorrhoea in open jarrah/marri forest Latitude: 31° 52' 28.9"South Longitude: 116° 6' 36.3"East 12/07/2009 Image: JF92_281ML33
	37 ***Pycnoporus coccineus*** **Scarlet Bracket Fungus** Specimen ID: 4318 On a dead *Melaleuca raphiophilla* in open shrubland near gravel track Latitude: 31° 52' 29.6"South Longitude: 116° 6' 37.2"East 12/07/2009 Image: JF92_281ML37

38 ***Tremella mesenterica*** **group** **Yellow Brain Fungus**
Specimen ID: 4319
On dead grevillea twig in open shrub near track
Latitude: 31° 52' 29.4"South Longitude: 116° 6' 37.8"East
12/07/2009 **Fungimap Target** Image: JF92_281ML38

39 ***Bovista*** **sp.**
Specimen ID: 4320
In soil near verticordia and astroloma in open shrubland near creek
Latitude: 31° 52' 30.6"South Longitude: 116° 6' 39.7"East
12/07/2009 Image: JF92_281ML39

41 ***Arrhenia*** **sp.**
Specimen ID: 4321
On a mossbed on granite in shrubland
Latitude: 31° 52' 29.9"South Longitude: 116° 6' 40.5"East
12/07/2009 Image: JF92_281ML41
Vouchered WA Herbarium: BOU 0554

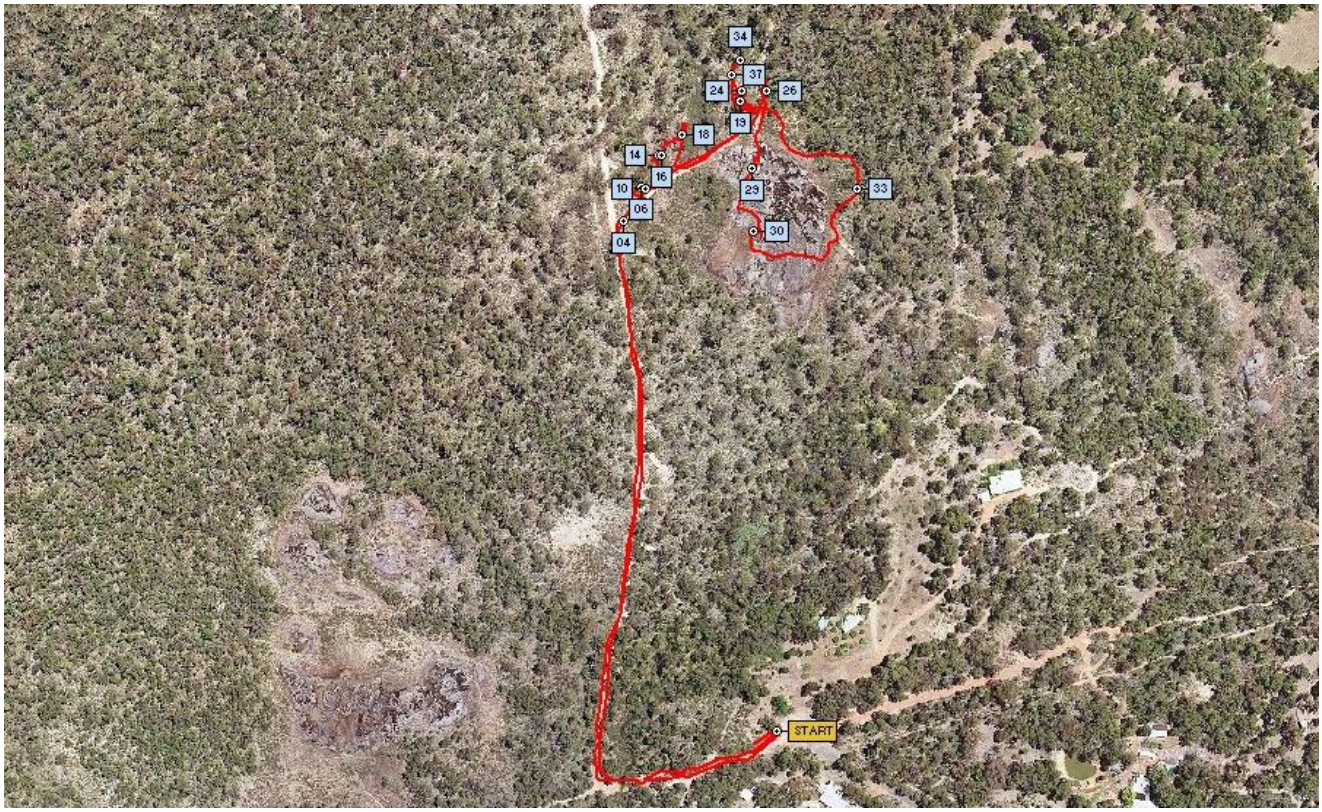
43 ***Laccaria*** **sp.**
Specimen ID: 4322
In mossbed on granite in open shrubland
Latitude: 31° 52' 29.7"South Longitude: 116° 6' 40.3"East
12/07/2009 Image: JF92_281ML43

45 **Undetermined Resupinate**
Specimen ID: 4323
On dead xanthorrhoea in open shrubland
Latitude: 31° 52' 29.2"South Longitude: 116° 6' 40.4"East
12/07/2009 Image: JF92_281ML45

46 **Undetermined Resupinate**
Specimen ID: 4324
On dead melaleuca log in open shrubland
Latitude: 31° 52' 28.9"South Longitude: 116° 6' 40.2"East
12/07/2009 Image: JF92_281ML46

Georeferenced Tracks and Photos

Kevn Griffiths and Derek Mead-Hunter's group, 12 July 2009



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Event: John Forrest National Park Date: 12/07/2009
Group Number: 282 Leaders Kevn Griffiths and Derek Mead-Hunter
Photographer: Derek Mead-Hunter

04 *Rickenella fibula* **Orange Mosscap**
Specimen ID: 4325

On moss in woodland
Latitude: 31° 52' 15"South Longitude: 116° 6' 46.2"East
12/07/2009
Image: JF92_282DMH04

10 *Laccaria* sp.
Specimen ID: 4327

On moss on clay soil in woodland
Latitude: 31° 52' 14.3"South Longitude: 116° 6' 46.8"East
12/07/2009
Image: JF92_282DMH10

11 ***Lichenomphalia*** **sp.**

Specimen ID: 4328

In moss on clay in woodland
Latitude: 31° 52' 14.3"South Longitude: 116° 6' 46.8"East
12/07/2009
Image: JF92_282DMH11

14 ***Amanita*** **sp.**

Specimen ID: 4329

On clay soil within litter in woodland
Latitude: 31° 52' 13.6"South Longitude: 116° 6' 47"East
12/07/2009
Image: JF92_282DMH14

16 ***Psilocybe coprophila*** **Dung Cap Psilocybe**

Specimen ID: 4330

On dung in wandoo woodland
Latitude: 31° 52' 13.5"South Longitude: 116° 6' 47.1"East
12/07/2009
Image: JF92_282DMH16

18 ***Dermocybe*** **sp.**

Specimen ID: 4331

On clay soil in wandoo woodland
Latitude: 31° 52' 13.3"South Longitude: 116° 6' 47.4"East
12/07/2009
Image: JF92_282DMH18
Vouchered WA Herbarium: BOU 558

19 ***Macrolepiota clelandii***

Specimen ID: 4332

On clay in wandoo woodland
Latitude: 31° 52' 12.4"South Longitude: 116° 6' 49.1"East
12/07/2009 Image: JF92_282DMH19
Vouchered WA Herbarium: BOU 557

24 ***Hebeloma westraliense***

Specimen ID: 4333

Under marri in jarrah/marri open woodland
Latitude: 31° 52' 12"South Longitude: 116° 6' 49.4"East
12/07/2009
Image: JF92_282DMH24
Vouchered WA Herbarium: BOU 555

26 *Gymnopilus* sp.

Specimen ID: 4334

On jarrah bark in jarrah/marri woodland
Latitude: 31° 52' 12.1"South Longitude: 116° 6' 49.8"East
12/07/2009 Image: JF92_282DMH26

Vouchered WA Herbarium: BOU 556

29 *Psilocybe coprophila* **Dung Cap Psilocybe**

Specimen ID: 4335

On horse dung in open woodland
Latitude: 31° 52' 13.5"South Longitude: 116° 6' 49.7"East
12/07/2009 Image: JF92_282DMH29

30 *Hebeloma* sp.

Specimen ID: 4336

On gritty sand in woodland with *Hakea petiolaria*
Latitude: 31° 52' 15"South Longitude: 116° 6' 49.8"East
12/07/2009 Image: JF92_282DMH30

33 *Stereum illudens* **Purplish Stereum**

Specimen ID: 4337

On dead wood in marri/wandoo woodland
Latitude: 31° 52' 14.3"South Longitude: 116° 6' 52.3"East
12/07/2009 Image: JF92_282DMH33

34 *Poria* sp.

Specimen ID: 4338

On dead wandoo branch in wandoo woodland
Latitude: 31° 52' 11.8"South Longitude: 116° 6' 49.1"East
12/07/2009 Image: JF92_282DMH34

37 *Calocera guepinioides* **Scotsman's Beard**

Specimen ID: 4339

On dead jarrah wood in marri/wandoo woodland
Latitude: 31° 52' 11.4"South Longitude: 116° 6' 49.3"East
12/07/2009 Image: JF92_282DMH37

Georeferenced Tracks and Photos

Kirsten Tullis and Louise Little's group, 12 July 2009

The numbers on the coloured dots in the fungi photos correspond to the collecting number and usually do not match the photo number. It is the photo number preceding the fungus name which correlates with the site on the map above.

Event: John Forrest National Park Date: 12/07/2009
Group Number: 283 Leaders Kirsten Tullis and Louise Little
Photographer: Louise Little

11 ***Amanita xanthocephala*** **Yellow Headed Amanita**
Specimen ID: 4341
On sand/gravel in marri/blackbutt woodland
Latitude: 31° 52' 28.2"South Longitude: 116° 6' 42.6"East
12/07/2009 **Fungimap Target** Image: JF92_283LL11

15 **Undetermined Discomycete**
Specimen ID: 4342
On marri nut in marri woodland
Latitude: 31° 52' 27.7"South Longitude: 116° 6' 42.5"East
12/07/2009 Image: JF92_283LL15

16 **Undetermined Agaric**

Specimen ID: 4343

Under litter in marri/blackbutt forest
Latitude: 31° 52' 27.7"South Longitude: 116° 6' 42.5"East
12/07/2009 Image: JF92_283LL16

20 ***Hymenoscyphus*** **sp.**

Specimen ID: 4344

On live wood under litter in marri/blackbutt forest
Latitude: 31° 52' 27.7"South Longitude: 116° 6' 42.4"East
12/07/2009 Image: JF92_283LL20

22 ***Mycena*** **sp.**

Specimen ID: 4345

On live wood under litter in marri/blackbutt forest
Latitude: 31° 52' 27.7"South Longitude: 116° 6' 42.4"East
12/07/2009 Image: JF92_283LL22

24 ***Schizopora*** **sp.**

Specimen ID: 4347

Under litter in marri/blackbutt forest
Latitude: 31° 52' 27.7"South Longitude: 116° 6' 42.3"East
12/07/2009 Image: JF92_283LL24

26 ***Amanita*** **sp.**

Specimen ID: 4348

Under litter in marri forest
Latitude: 31° 52' 27.7"South Longitude: 116° 6' 42"East
12/07/2009 Image: JF92_283LL26

30 ***Mycena*** **sp.**

Specimen ID: 4349

Growing on live wood in marri forest
Latitude: 31° 52' 27.5"South Longitude: 116° 6' 42.6"East
12/07/2009 Image: JF92_283LL30

31 ***Grandinia*** **sp.**

Specimen ID: 4350
Growing on a live branch of blackbutt in marri/blackbutt forest
Latitude: 31° 52' 27.5"South Longitude: 116° 6' 43.5"East
12/07/2009 Image: JF92_283LL31

34 ***Boletellus obscurecoccineus*** **Rhubarb Bolete**

Specimen ID: 4351
Within litter in marri/blackbutt forest
Latitude: 31° 52' 27.5"South Longitude: 116° 6' 43.5"East
12/07/2009 **Fungimap Target** Image: JF92_283LL34

36 **Undetermined Discomycete**

Specimen ID: 4352
Under litter in marri forest
Latitude: 31° 52' 27.5"South Longitude: 116° 6' 43.6"East
12/07/2009 Image: JF92_283LL36

37 ***Russula*** **sp.**

Specimen ID: 4353
Under litter in marri forest
Latitude: 31° 52' 27.5"South Longitude: 116° 6' 43.6"East
12/07/2009 Image: JF92_283LL37

38 ***Galerina*** **sp.**

Specimen ID: 4354
Growing on sedge in marri forest
Latitude: 31° 52' 28.7"South Longitude: 116° 6' 43.4"East
12/07/2009 Image: JF92_283LL38

41 ***Psilocybe coprophila*** **Dung Cap Psilocybe**

Specimen ID: 4355
Growing on dung in marri/blackbutt forest
Latitude: 31° 52' 27.8"South Longitude: 116° 6' 43.6"East
12/07/2009 Image: JF92_283LL41

43 ***Byssomerulius corium*** **Bysso Skin Fungus**
Specimen ID: 4356
On dead wood in marri/blackbutt forest
Latitude: 31° 52' 27.8"South Longitude: 116° 6' 43.6"East
12/07/2009 Image: JF92_283LL43

60 ***Psathyrella*** **sp.**
Specimen ID: 4357
Within litter in marri/blackbutt forest
Latitude: 31° 52' 27.8"South Longitude: 116° 6' 43.7"East
12/07/2009 Image: JF92_283LL60

61 ***Phlebia*** **sp.**
Specimen ID: 4358
On a dead branch in marri/blackbutt forest
Latitude: 31° 52' 27.8"South Longitude: 116° 6' 44.4"East
12/07/2009 Image: JF92_283LL61

64 ***Cortinarius australiensis***
Specimen ID: 4359
On the ground in marri/blackbutt forest
Latitude: 31° 52' 27.1"South Longitude: 116° 6' 45.4"East
12/07/2009 Image: JF92_283LL64

65 ***Gymnopilus allantopus*** **Golden Wood Fungus**
Specimen ID: 4360
On dead wood in marri/blackbutt forest
Latitude: 31° 52' 25.1"South Longitude: 116° 6' 45.1"East
12/07/2009 Image: JF92_283LL65

70 ***Fomitopsis lilacinogilva*** **Lilac Bracket Fungus**
Specimen ID: 4362
Growing on a very large fallen tree in marri/blackbutt forest
Latitude: 31° 52' 25.1"South Longitude: 116° 6' 43.1"East
12/07/2009 Image: JF92_283LL70