Perth Urban Bushland Fungi

Port Kennedy Scientific Park Fungi Report 2007

Written and produced by
Neale L. Bougher, Roz Hart,
Sarah de Bueger & Brett Glossop
Department of Environment and Conservation – Perth Urban Bushland Fungi Project

Examining desiccated fungi on a sand dune

The survey team

Recording GPS information

Searching for native truffles

PUBF Website : www.fungiperth.org.au

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Government of Western Australia Department of Environment and Conservation
Western Australian Naturalists Club

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Department of Environment and Conservation (DEC)
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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, Sarah de Bueger, and Brett Glossop.

Photos and field assistance by PUBF participants

PUBF Website : www.fungiperth.org.au

Perth Urban Bushland Fungi Project Mycologist Neale Bougher and Community Education Officer Roz Hart conducted a biological survey for fungi in Port Kennedy Scientific Park, on 17 July 2007. Fungi Leaders and volunteers from the Perth Urban Bushland Fungi (PUBF) Project, as well as Rockingham Lakes Regional Park Operations Officer Renee Miles, assisted with the fungi survey.

This fungi survey was conducted as part of a **Department of Environment and Conservation (DEC) Regional Parks Community Grant** awarded to the Perth Urban Bushland Fungi Project in 2007 to survey three sites in nominated DEC Regional Parks.

Port Kennedy Scientific Park fungi : 17 July 2007

The survey at Port Kennedy Scientific Park was preceded by below average rainfall for June and early July 2007. The soil, woody material and plants were drier than would be expected by mid July at the park, and a dry breeze was active on the day of survey. Only a total of 25 fungi was recorded, comprised of 16 different fungi species. Nine fungi were vouchered into the WA Herbarium. Nevertheless, the fungi collected represent a wide range of ecological types, including genera of decomposer fungi such as *Agaricus*, and beneficial mycorrhizal fungi belonging to genera such as *Inocybe* associated with *Acacia*.

The dry conditions may have limited the abundance of the fleshy and more conspicuous forms of fungi, such as mushroom or toadstool types. It was evident that a previous rainfall event (perhaps 10 days earlier?) had stimulated copious fruiting of some *Psathyrella* and *Coprinus* species on the coastal sand dunes adjacent to the beach, but the fruit bodies had become severely desiccated by the time of this survey. Resupinate (skin or crust) fungi that usually occur on dead wood were represented by the violet-coloured resupinate fungus- *Hjorstamia crassa*, the golden *Mycoacia subceracea*, and unidentified species. 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, or perhaps some specimens are undescribed species.

Far more fungi are likely to occur at Port Kennedy Scientific Park than those recorded in this inaugural 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. Such inventory data can be used as a baseline to monitor changes in biodiversity at the park, such as any trend towards reduction 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.

Management recommendations for understanding and conserving Fungi Biodiversity at Port Kennedy Scientific Park

Port Kennedy Scientific Park is part of the Rockingham Lakes Regional Park for which a Management Plan is current (2003-2013). The objectives of the regional Management Plan do not specifically include fungal biodiversity. The disease-causing fungus *Armillaria luteobubalina* is mentioned as affecting many of the dominant trees and shrubs in the region, such as at Cape Peron and Lake Richmond. *Armillaria* was not observed during the current survey at Port Kennedy but was previously reported and discussed in a PUBF fungus survey report for Paganoni Swamp which is also part of the Rockingham Lakes Regional Park.

Fungal biodiversity is not considered in the current Management Plan for Rockingham Lakes Regional Park, but to help achieve management objectives stated in the Plan for conservation and rehabilitation of flora and fauna at the park, Flora, Fauna and Fungi do need to considered together. The Fungi have crucial ecological roles for maintaining bushland health, including linkages between the 3 F's. An increased level of knowledge regarding the fungi at Port Kennedy Scientific Park is required as a basis for documenting and understanding the fungi, and in turn for helping to manage the Park's Flora and Fauna.

Management recommendations involving fungi include:

1. **Undertake biological surveys to build up an inventory of fungi:** Far more fungi are likely to occur in Port Kennedy Scientific Park than those recorded in the inaugural 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. Such inventory data can be used as a baseline for monitoring changes in biodiversity at Port Kennedy Scientific Park, such as any trend towards reduction 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…), (iv) plant species associated with each of the fungi. Standard recording sheets for fungi biodiversity surveys are available on request from PUBF.
3. **Georeference the surveys:** It would be desirable to georeference the surveys at Port Kennedy Scientific Park 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 recognize 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 WA Herbarium.
4. **Involve community:** It is recommended that further fungi surveys involving members of the local community be undertaken at Port Kennedy Scientific Park. The involvement of community members can facilitate a greater sampling effort, a general increase in awareness of 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 Port Kennedy Scientific Park, the list of known plants at Port Kennedy should be annotated with the likely mycorrhizal status of each plant, e.g. categories such as - ectomycorrhizal, arbuscular, epacrid, orchid, not mycorrhizal. This will help understand how the pattern of occurrence of various species of fungi relates to the distribution of vegetation types at Port Kennedy Scientific Park.
6. **Determine animal interactions with fungi:** Determine what truffle fungi are present at Port Kennedy Scientific Park, and if they and other fungi are being used as a food resource by local native mammals. Such information 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 Port Kennedy Scientific Park.
7. **Include Flora, Fauna and Fungi in signage and interpretative material at the Park:** to promote public awareness and appreciation of the conspicuous and less conspicuous biodiversity at Port Kennedy Scientific Park and the linkages between the 3F's that influence the long-term health of the Park. The Rockingham Lakes Regional Park Management Plan 2003-2013 (Appendix A of that Plan) indicates that interpretation signs are to be located at selected access points at Port Kennedy Scientific Park, and those points would be the most appropriate target area for such signage.
8. **Support a strategy for preservation of representative landscapes:** Support a management plan that aims to preserve a variety of natural vegetation types and the diversity of plant species within the type groups. 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, cones, twigs etc…), litter, moss beds, and specific mycorrhizal partner plants. In turn, this strategy may foster fungal and other biodiversity at Port Kennedy Scientific Park.

References:

Bougher, N.L., Hart, R., & de Bueger S. (2006) Paganoni Bushland fungi report. Perth Urban Bushland Fungi Project Client Report., Perth, Western Australia (22 pages).

Bougher, N.L (2007 updated 3rd edition). Perth Urban Bushland Fungi Field Book. Perth Urban Bushland Fungi , Perth, Western Australia (self managed format liked to www.fungiperth.org.au).

Department of Conservation and Land Management. Rockingham Lakes Regional Park draft Management Plan 2003-2013.

Port Kennedy Scientific Park Fungi List : 17 July 2007

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.

Field Book Page # refers to the Perth Urban Bushland Fungi Field Book which is available for downloading from the project website at www.fungiperth.org.au

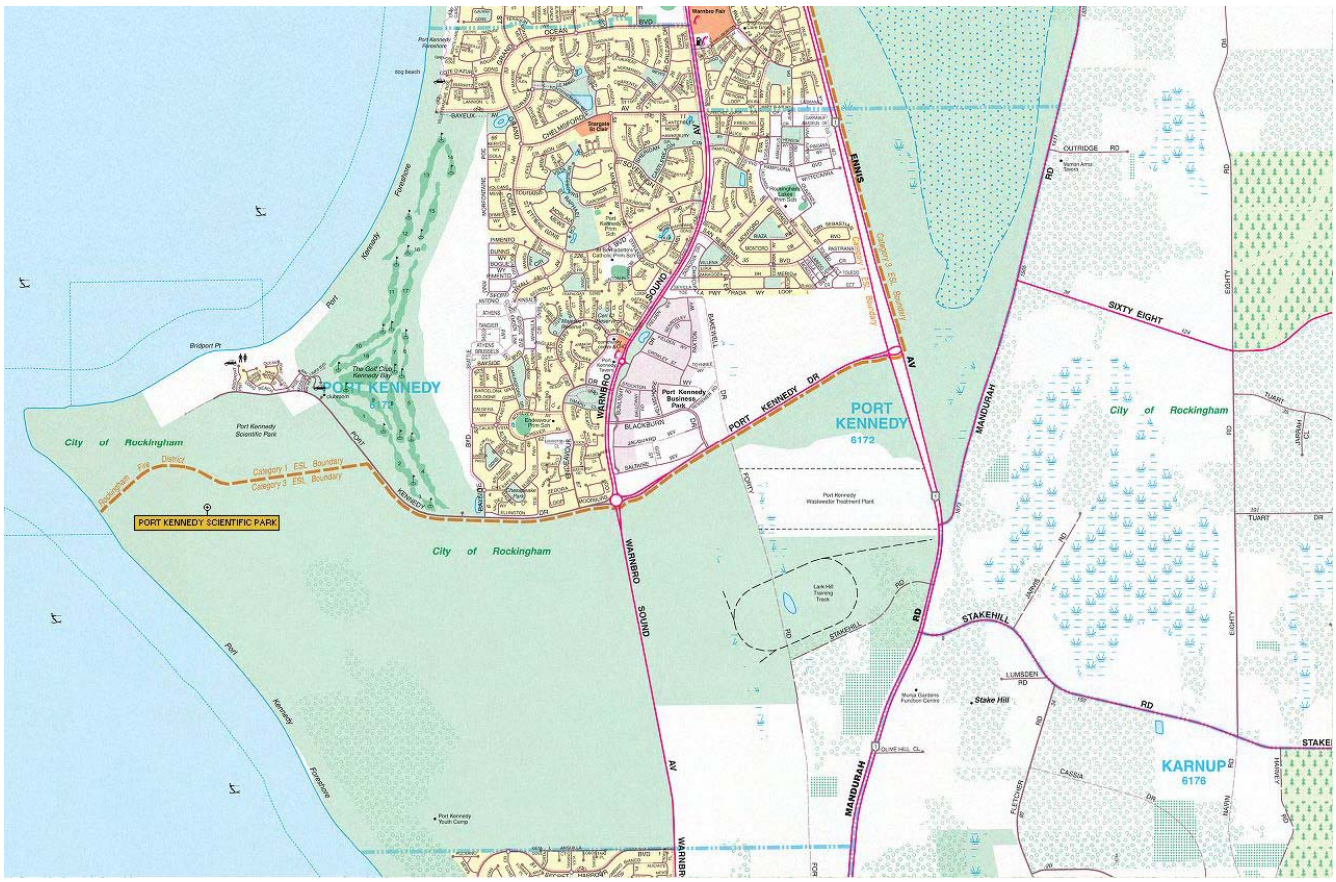
Fungimap Target: refers to species that have been selected by the Australia-wide mapping project, Fungimap, for collecting detailed records to be compiled into distribution maps. See Fungimap on-line at www.rbg.vic.gov.au/fungimap and the book *Fungi Down Under* by Grey, P. and Grey, E (2005).

Scientific Name	Common Name	Form	Habitat	Life Mode	Fungimap Target	Field Book Page #	Specimen ID
***Agaricus* sp.**		mushroom	litter/ground	S			3335, 3348
***Clitocybe* sp.**		mushroom	litter/ground	S			3336
***Coprinus* sp.**		mushroom	litter/ground	S			3351
Fomitopsis lilacinogilva	**Lilac Bracket Fungus**	bracket	dead wood	S		N-2	3337
***Inocybe* sp.**		mushroom	litter/ground	M			3340, 3341 3343
***Lyophyllum* sp.**		mushroom	litter/ground	S			3338
***Melanoleuca* sp.**		mushroom	litter/ground	S			3342, 3347
***Mycoacia* sp.**		resupinate	dead wood	S			3356
***Peniophora* sp.**		resupinate	dead wood	S			3359
***Poria* s.l.**		resupinate	dead wood	S			3358
***Psathyrella* sp.**		mushroom	litter/ground	S			3350, 3352 3353, 3355
Schizophyllum commune	**Split Gill Fungus**	shell	dead wood	S	Yes	R-2	3349
***Tremella mesenterica* group**	**Yellow Brain Fungus**	jelly fungus	dead wood	S	Yes	Q-2	3344
Undetermined Resupinate		resupinate	dead wood	M			3339, 3345 3346
Undetermined Slime Mould	**Slime Mould**	slime mould	dead wood	S			3357
***Xerula* sp.**		mushroom	litter/ground	S			3354

Permanent Vouchered Specimens

Nine of the fungi collected during this event were deposited into the WA Herbarium fungi collection with the following details:

***Clitocybe* sp**.	**Voucher ID:** E9053	**Specimen ID:** 3336
***Inocybe* sp**.	**Voucher ID:** E9060	**Specimen ID:** 3340
***Inocybe* sp**.	**Voucher ID:** E9057	**Specimen ID:** 3341
***Inocybe* sp**.	**Voucher ID:** BOU356	**Specimen ID:** 3343
***Lyophyllum* sp**.	**Voucher ID:** E8469	**Specimen ID:** 3338
***Melanoleuca* sp**.	**Voucher ID:** E9052	**Specimen ID:** 3347
***Melanoleuca* sp**.	**Voucher ID:** E9058	**Specimen ID:** 3342
***Psathyrella* sp**.	**Voucher ID:** E9055	**Specimen ID:** 3352
***Xerula* sp**.	**Voucher ID:** E9056	**Specimen ID:** 3354



StreetExpress Map showing the location of Port Kennedy Scientific Park, Bush Forever Site 377.

Aerial photo showing in orange the route followed for this fungi survey on 17 July 2007.

StreetExpress map reproduced with permission of DLI, P332, Aerial photos reproduced with permission of DLI, 13/2005.
OziExplorer and OziPhotoTool were used to produce the track and linked fungi photos.

Georeferenced Track and Photos

Date : 17 July 2007

Surveying group: Neale Bougher, Roz Hart, Lyndall Steed, Joe Froudist, Jolanda Keeble, Phylis Robertson and DEC Regional Parks Operations Officer Renee Miles.

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.

Port Kennedy, Rockingham Lakes Regional Park Date: 17/07/2007
Group Number: 223 Photographer: Roz Hart

06 *Agaricus* sp.

Specimen ID: 3335

Growing in sand in acacia shrubland.
Latitude: 32° 22' 23.4"South Longitude: 115° 44' 14.8"East
17/07/2007
Image: PK76_223RH06

09 *Clitocybe* sp.

Specimen ID: 3336

Growing in sand in acacia shrubland.
Latitude: 32° 22' 23.4"South Longitude: 115° 44' 14.8"East
17/07/2007
Image: PK76_223RH09

Vouchered WA Herbarium: **E9053**

10 *Fomitopsis lilacinogilva*

Lilac Bracket Fungus

Specimen ID: 3337

Growing on dead acacia in shrubland.
Latitude: 32° 22' 22.9"South Longitude: 115° 44' 14.1"East
17/07/2007
Image: PK76_223RH10

13 *Lyophyllum* sp.

Specimen ID: 3338

Growing in sand in acacia shrubland.
Latitude: 32° 22' 22.4"South Longitude: 115° 44' 13.8"East
17/07/2007
Image: PK76_223RH13

Vouchered WA Herbarium: **E8469**

15 Undetermined Resupinate

Specimen ID: 3339

Growing in dead wood in acacia shrubland.
Latitude: 32° 22' 27.5"South Longitude: 115° 43' 41"East
17/07/2007
Image: PK76_223RH15

17 *Inocybe* sp.

Specimen ID: 3340

Growing in sand in *Acacia rostellifera* coastal dunes.
Latitude: 32° 22' 26.8"South Longitude: 115° 43' 40.5"East
17/07/2007
Image: PK76_223RH17
Vouchered WA Herbarium: **E9060**

19 *Inocybe* sp.

Specimen ID: 3341

Growing in sand in *Acacia rostellifera* coastal dunes.
Latitude: 32° 22' 26.6"South Longitude: 115° 43' 39.7"East
17/07/2007
Image: PK76_223RH19
Vouchered WA Herbarium: **E9057**

20 *Melanoleuca* sp.

Specimen ID: 3342

Growing in sand in *Acacia rostellifera* coastal sand dunes.
Latitude: 32° 22' 26.6"South Longitude: 115° 43' 39.7"East
17/07/2007
Image: PK76_223RH20
Vouchered WA Herbarium: **E9058**

21 *Inocybe* sp.

Specimen ID: 3343

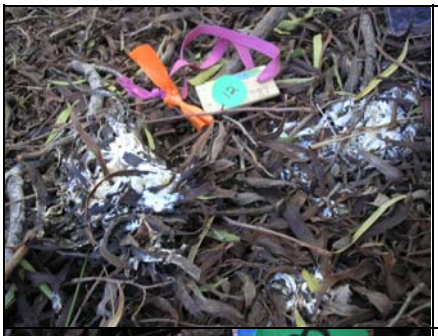
Growing in sand in *Acacia rostellifera* coastal dunes.
Latitude: 32° 22' 26.7"South Longitude: 115° 43' 39.3"East
17/07/2007
Image: PK76_223RH21
Vouchered WA Herbarium: **BOU 00356**

26 *Tremella mesenterica* group

Yellow Brain Fungus

Specimen ID: 3344

Growing on dead wood in *Acacia rostellifera* coastal dunes.
Latitude: 32° 22' 26.9"South Longitude: 115° 43' 38.9"East
17/07/2007 **Fungimap Target**
Image: PK76_223RH26



29 Undetermined Resupinate

Specimen ID: 3345

Growing on dead wood in *Acacia rostellifera* coastal dunes.
Latitude: 32° 22' 26.9"South Longitude: 115° 43' 38.9"East
17/07/2007
Image: PK76_223RH29

32 Undetermined Resupinate

Specimen ID: 3346

Growing at the base of a dead *Acacia rostellifera* in coastal dunes.
Latitude: 32° 22' 26.9"South Longitude: 115° 43' 38.9"East
17/07/2007
Image: PK76_223RH32

34 *Melanoleuca* sp.

Specimen ID: 3347

Growing in sand in *Acacia rostellifera* coastal dunes.
Latitude: 32° 22' 26.9"South Longitude: 115° 43' 38.9"East
17/07/2007
Image: PK76_223RH34

Vouchered WA Herbarium: **E9052**

36 *Agaricus* sp.

Specimen ID: 3348

Growing in sand near basket bush in coastal dunes.
Latitude: 32° 22' 40.1"South Longitude: 115° 43' 36.1"East
17/07/2007
Image: PK76_223RH36

37 *Schizophyllum commune* **Split Gill Fungus**

Specimen ID: 3349

Growing on dead acacia in coastal dunes.
Latitude: 32° 22' 40.1"South Longitude: 115° 43' 36.1"East
17/07/2007 **Fungimap Target**
Image: PK76_223RH37

45 *Psathyrella* sp.

Specimen ID: 3350

Growing in sand in tuart/sea spinach/heath shrubland.
Latitude: 32° 22' 45.5"South Longitude: 115° 43' 32.5"East
17/07/2007
Image: PK76_223RH45

OziExplorer and OziPhotoTool were used to produce the track and linked fungi photos.

47 *Coprinus* sp.

Specimen ID: 3351

Growing in open sand in coastal dunes.
Latitude: 32° 22' 46.2"South Longitude: 115° 43' 32"East
17/07/2007
Image: PK76_223RH47

49 *Psathyrella* sp.

Specimen ID: 3352

Growing in open sand in coastal dunes.
Latitude: 32° 22' 46.4"South Longitude: 115° 43' 31.8"East
17/07/2007
Image: PK76_223RH49
Vouchered WA Herbarium: **E9055**

50 *Psathyrella* sp.

Specimen ID: 3353

Growing in open sand in coastal dunes.
Latitude: 32° 22' 47.5"South Longitude: 115° 44' 32.5"East
17/07/2007
Image: PK76_223RH50

51 *Xerula* sp.

Specimen ID: 3354

Growing in sand under *Acacia rostellifera* in coastal dunes.
Latitude: 32° 22' 46.8"South Longitude: 115° 44' 33"East
17/07/2007
Image: PK76_223RH51
Vouchered WA Herbarium: **E9056**

54 *Psathyrella* sp.

Specimen ID: 3355

Growing in sand in coastal dunes.
Latitude: 32° 22' 46.1"South Longitude: 115° 44' 32.9"East
17/07/2007
Image: PK76_223RH54

55 *Mycoacia* sp.

Specimen ID: 3356

Growing on dead wood in coastal dunes.
Latitude: 32° 22' 40.6"South Longitude: 115° 44' 33.5"East
17/07/2007
Image: PK76_223RH55

	**57 Undetermined Slime Mould** **Slime Mould** Specimen ID: 3357 Growing on dead wood in coastal dunes. Latitude: 32° 22' 40.6"South Longitude: 115° 44' 33.5"East 17/07/2007 Image: PK76_223RH57
	**59 *Poria* s.l.** Specimen ID: 3358 Growing on dead wood in coastal dunes. Latitude: 32° 22' 40.6"South Longitude: 115° 44' 33.5"East 17/07/2007 Image: PK76_223RH59
	**61 *Hjorstamia crassa*** Specimen ID: 3359 Growing on dead wood in coastal dunes. Latitude: 32° 22' 40.1"South Longitude: 115° 44' 33.1"East 17/07/2007 Image: PK76_223RH61