

**Client report
to the Botanic Gardens and Parks Authority**

**Fungi survey -
Kings Park and Botanic Garden 2016**

Author: Neale L. Bougher

Department of Parks and Wildlife, Western Australia

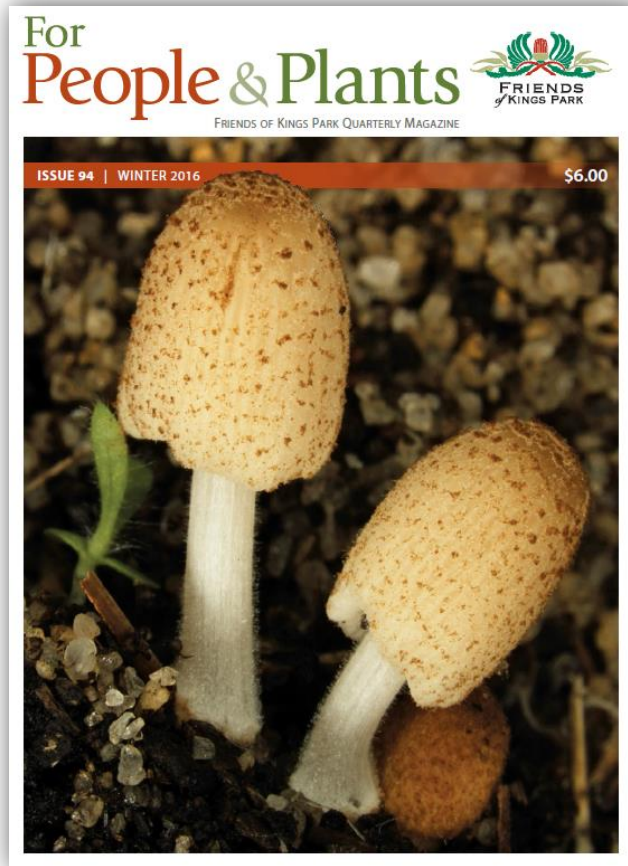


**Department of
Parks and Wildlife**



December 2016

Figures 1, 2: Cover page and first page of a magazine article published in 2016 promoting the fungi surveys at Kings Park (Bougher 2016a)



12 For People & Plants | Issue 94 | Winter 2016

For People & Plants | Issue 94 | Winter 2016 13

fungi

The Ghost Fungus (*Omphalotus nidiformis*), nicknamed because it glows in the dark, is probably the fungus most often seen by the general public at Kings Park.

Fungi surveys reveal new species in Kings Park

Story and photos by Neale Bougher Research Associate, Western Australian Herbarium, Department of Parks and Wildlife

Many fungi are being discovered for the first time in Kings Park, and for that matter in WA, Australia, and the world.

In a previous article in *For People & Plants* (see Bougher 2010) I pointed out that it was not known how many and what types of fungi occur at Kings Park. Since then five fungi surveys have been completed in the park.

The Ghost Fungus (*Omphalotus nidiformis*) is probably the fungus most often seen by the public at Kings Park, and it has been among the most frequent records from the surveys. However, many of the other species of fungi recorded in the surveys so far are less conspicuous and have only ever been spotted by the trained eyes of the survey team.

Each of the five annual surveys undertaken at Kings Park since 2010 took place between May and August when most fungi would be expected to fruit. During the surveys I was ably assisted by a keen bunch of 44 volunteers, students and BCPW staff and trainees. Each year we returned to the same set of four bushland sites representing different vegetation types. In addition, we visited other areas in Kings Park such as the Western Australian Botanic Garden and recently burnt bushland.

Participants gathering for one of the field survey days at Kings Park in 2015.

So far we have identified 242 species of fungi from the five fungi surveys at Kings Park. In addition we have categorised an extra 70 unidentified species from the surveys. Each year of survey revealed many new records for the park. In comparison, we matched the DNA sequences from the Kings Park fungi against a world wide database.

For example, one interesting new record observed for the first time in the most recent survey is *Pymomoa amphiduloides*. This fungus has a special ecological niche as it activates very soon after fire and heralds a subsequent succession of fire-responsive fungi species, some of which also are now known to occur at Kings Park.

fungi

Top: *Pymomoa amphiduloides* activates very soon after fire, and heralds a subsequent succession of fire-responsive fungi. In 2015 this fungus was discovered at Kings Park for the first time.

Above: *Parasola auricoma* found during the Kings Park surveys was not previously known anywhere else in Australia.

Right: *Coprinella pyramidalis* also was not previously known anywhere else in Australia.

14 For People & Plants | Issue 94 | Winter 2016

For People & Plants | Issue 94 | Winter 2016 15

Background and Objectives

Kings Park and Botanic Garden is located only 1.5 km from central Perth, Western Australia, and includes a regionally significant bushland covering about 267 ha of the 406 ha Park. Kings Park lies on Spearwood dune systems with underlying limestone geology. The bushland has various vegetation types including woodlands with Tuart (*Eucalyptus gomphocephala*), Jarrah (*Eucalyptus marginata*), Marri (*Corymbia calophylla*), Banksia (including *Banksia attenuata*, *B. grandis*, *B. menziesii*, and *B. prionotes*), and Allocasuarina (*Allocasuarina fraseriana*). Three major plant communities occur at Kings Park – limestone heathland, Banksia woodland, and low moist areas with *Banksia ilicifolia* (Barrett and Tay, 2005).

Fungi and their linkages with flora and fauna undoubtedly have central roles in maintaining the ecology and health of the bushland at Kings Park. Fungi are also present in the Botanic Garden, including beneficial and decomposer fungi and some troublesome pathogenic fungi such as *Armillaria luteobubalina*. Major human-induced changes in the vegetation particularly since European settlement are likely to have caused changes in the fungus communities at Kings Park. The nature of these changes for fungi is not known because there have been only sporadic, uncoordinated records of fungi and their ecology at the park. Efforts to document the fungi at Kings Park since European settlement in the area have resulted in the accumulation of numerous records and collections, indicating that many hundreds of species of fungi are likely to occur in the park. However, the efforts have been mostly sporadic and uncoordinated and have not yielded an accurate measure of the total number of fungi species recorded to date at Kings Park. A historical investigation into the the fungi recorded from Kings Park and Botanic Garden dating back to the first known scientific record in 1839 revealed that a total of 285 scientific names of fungi had been recorded from Kings Park up until 2009, with 122 of the names designated to species level (Bougher 2010a, 2010b).

Any estimate the number of fungi species known so far from Kings Park depends on the level of acceptance of the many unverified or unverifiable names as representing or not individual species. In 2009, the Botanic Gardens and Parks Authority took a significant step to address the poor knowledge base about Kings Park's fungi by contracting the first of intended annual surveys to document the macrofungi of Kings Park. The survey in 2009 recorded a total of 123 fungi - 67% considered to be new records for the park (Bougher 2009a). A second contract survey, in 2010, recorded a total of 108 fungi - 47% new records (Bougher 2010c, Bougher 2011a). A third contract survey, in 2011, recorded a total of 106 fungi - 25% new records (Bougher 2011b). A fourth contract survey, in 2012, recorded 123 fungi - 24% new records (Bougher 2012). No surveys were undertaken in 2013 and 2014. After the fifth contract survey in 2015 which recorded 169 fungi (27% new records) (Bougher 2015), a total of 242 fungi named to species level had been calculated by adding up new records from each survey that were identified to species level and considered not to have been recorded from Kings Park before that particular year. It is possible that many unidentified or possibly inaccurately identified or duplicate records from Kings Park remained to be verified.

Ongoing protection and improvement of knowledge about bushland Flora, Fauna and Fungi is an integral part of future management of Kings Park and Botanic Garden. Fungi have direct relevance to the Strategic Policies in the Kings Park and Botanic Garden Management Plan 2014-2019 (Botanic Gardens and Parks Authority 2014). This includes scientific aspects of conserving and enhancing any native biological diversity of the designated land, inspiring educational & community involvement in biodiversity conservation, health & restoration of bushland, and undertaking research into collections of WA and other flora. The current work was contracted to improve the knowledge base about fungi within Kings Park and Botanic Garden.

The objective of this work was to:

Undertake the annual fungi survey for the draft Kings Park and Botanic Garden Draft Management Plan 2014-2019 (Botanic Gardens and Parks Authority 2014). This survey addressed the following:

a. Field survey

- Inventory of macrofungi fruiting at scheduled survey (including native & exotic, rare & endangered).
- Identity and description (key attributes) of species observed.
- Permanent reference resource of selected specimens.

b. Report

- Inventory and location of fungi observed during the current survey, identified to genus or species level, based on current survey: including possible designation as native and exotic, rare and endangered, beneficial, disease.
- Known vegetation and plant associations of fungal species recorded.

Methods

Fungi survey

In readiness for the 2016 field season, the present author produced *Kings Park Fungi [version 2.1] A visual guide to species recorded in surveys 2009 - 2015*. This guide (Bougher 2016b) proved to be a valuable tool for participants in the field during this season's survey.

Fungi were recorded and collected in Kings Park from May to July 2016 during survey days lead by the author and assisted by numerous volunteers (Figures 3- 6, and see Acknowledgements). Four repeat-visit sites representing different vegetation types in Kings Park were surveyed for macrofungi (Table 1, Map 1). In addition, other areas were visited to enable representation of the Botanic Gardens and areas of burnt bushland. The surveys within the vegetation types were measured by a person x time basis – approximately 60 person time minutes per site each survey time. The number and intensity of surveys were dictated by weather conditions and limitations imposed by the consultancy contract. All fungi observed were georeferenced, recorded and photographed *in situ*. Selected fungi were collected for later description, vouchering and identification. During recording and collecting, particular attention was given to many of the main fungal microhabitats including open and mossy ground, litter, woody debris and logs, bark of living trees. Specific vegetation or plant associations of fungi were noted.

Fungi were identified to genus or species level by constructing morphological descriptions of the fungi collected, and examining key microscopic characteristics of specimens. Identifying fungi is often more complicated than identifying plants, as there are no complete keys to the Australian fungi (such as Blackall & Grieve for the W.A. plants) to refer to. There are very few guidebooks, and they are far from complete in coverage, and in many cases quite inaccurate. A range of resources were utilized for identification: direct comparisons of macro and micro characters between Kings Park material and identified reference herbarium material (PERTH – Western Australian Herbarium), comparison with published mycological literature, and more generally by utilizing the author's own experience, knowledge and records. Identification enabled: (a) assessment of probable broad ecological roles of the fungi in community sustainability, (b) designation of fungi as native and exotic, and (c) a database of inventory data obtained for Kings Park and Botanic Garden comparable to available data of other similar woodland bushland areas. All of the fungi collected were photographed and preserved as air-dried, coded herbarium voucher material lodged at the Department of Parks and Wildlife's Western Australian Herbarium, Kensington (PERTH).

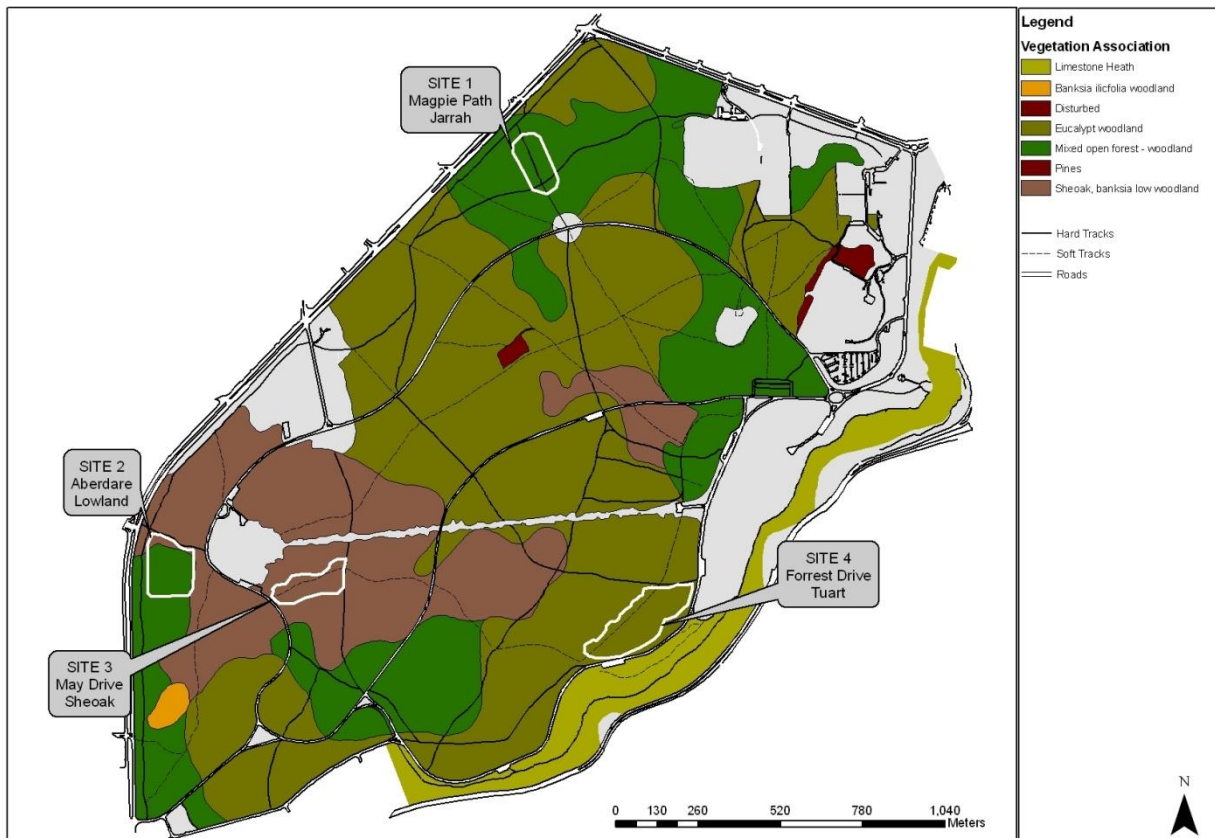


Figures 3 -6 : Some of the participants examining fungi during the 2016 survey at Kings Park.

Table 1: Sites surveyed for fungi at Kings Park in 2016.

Site ID	Site Name	Details/ Coordinates	Vegetation	Notes	Survey Visits 2015
1	Magpie Path	Approx. 25 m on either side of 200 m length of path. Survey south point on paved path: 31° 57' 17.93" S x 115° 49' 54.83". North point on path: 31° 57' 11.71" S x 115° 49' 51.90".	Jarrah open woodland	This area was partly burnt in 2009. Some invasive sugar gums are present.	2
2	Aberdare Lowland	Approx. 25 m on either side of 150 m length of path. Survey start point on sand track off May Drive: 31° 57' 57.50" S x 115° 49' 49' 14.80". End point on track: 31° 58' 2.32" S x 115° 49' 12.97".	Mixed open forest – woodland	South side of track last burnt 1989. More timber than in the north side (site 3).	2
3	May Drive Allocasuarina	Approx. 25 m on either side of 250 m length of path. Survey start point on sand track off May Drive: 31° 58' 0.00" S x 115° 49' 22.02". End point on track: 31° 57' 57.13" S x 115° 49' 30.53".	<i>Allocasuarina/Banksia</i> low woodland.	Last burnt probably in 1989. Dominated by <i>Allocasuarina</i> and <i>Banksias</i> but there is also a patch of young Marri.	2
4	Forrest Drive Tuart (Block S18)	Area approx. 400 m in length x 100 m wide on interior side of Forrest Drive. Area approx. bounded by the following points: NE corner - 31° 57' 59.11" S x 115° 50' 8.51". NW corner - 31° 58' 6.88" S x 115° 49' 58.90". SE corner (at Forrest Dr.) - 31° 57' 58.90" S x 115° 50' 13.06". SW corner (at Forrest Dr.) - 31° 58' 7.44" S x 115° 49' 59.60".	Tuart woodland	Extensively burnt early in 2009. Fungi survey primarily in the remaining unburnt fringes.	2
5	Opportunistic	Entire area of Kings Park.	Natural and planted	Includes other areas of bushland and gardens in the Park.	6

Map 1: Sites 1 to 4 surveyed for fungi at Kings Park and Botanic Garden in 2016



Results

A total of 159 different fungi were recorded at Kings Park in 2016 during the period of this consultancy (Table 2). This number includes fungi identified to species level, fungi identified to genus level only, and undetermined and ‘ragbag’ records.

The fungi recorded in 2016 represent 108 known genera and 56 families (+ 7 undetermined or ragbag groupings for which genera and families unknown) (Table 3).

Some of the notable fungi are highlighted in the *Discussion*. Descriptive data for the 59 fungal collections from 2016 that were vouchered for permanent reference are given in Appendix 1.

- 24% of the fungi (38) from the current 2016 survey are considered to be new records for Kings Park (colour entries in Table 2), i.e. they do not match any of the fungi from the 2009 to 2015 surveys, or any of the pre-2009 names that have specific epithets. *
- 74% of the fungi (115 species) in the current survey are considered to be the same as species recorded previously (black entries in Table 2), i.e. same as any of the pre-2016 names that have specific epithets.
- All fungi recorded in 2016 are considered to be indigenous except *Suillus granulatus* (a mycorrhizal associate of *Pinus*). *Leucogyrophana pseudomollusca* which occurs on *Pinus* wood in a rehabilitated area in Kings Park may also be exotic.
- *Gymnopilus allantopus*, and *Pycnoporus coccineus* were the only species found in all five of the survey sites.
- Saprotrophic fungi (128 species) were represented by more species than mycorrhizal fungi (29) and pathogenic fungi (2) (Table 3).
- Fungi were present in a wide range of vegetation and microhabitat types. Dead wood with 84 species, and leaf litter or soil with 108 species had the greatest diversity of fungi (Table 3).

* NOTES: (i) The figure for “new records” considers pre-2009 names that have specific epithets and does not consider any pre-2009 records that were not identified to species level. (ii) Species groups listed in 2016 (as new “ragbags” in Table 2) are not included as new records in this report if there had been any category of name listed under a particular genus pre-2016. Therefore *Russula ragbag* and *Scleroderma ragbag* were excluded because various records labelled as "*Russula sp.*" and "*Scleroderma sp.*" had been recorded at Kings Park in previous years (see Bougher 2010a).

Table 2: Identity and some ecological characteristics of fungal species in Kings Park 2016 (arranged in order of genus, species). **Maroon** = new records of species previously not recorded from Kings Park found during 2016. **Sp. ID** refers to Project code numbers assigned to taxa. **“Ragbag” species names** refer to uncertain numbers of undetermined species grouped under a common name pending further studies to resolve their identity.

Forms: BR = bracket; CD = cup/disc; CO = coral; CU = cushion; CY = cyphelloid; FL = flask; JE = jelly fungus; MO = mould; MU = mushroom; PF = puffball/earthball; PS = pustules; RE = resupinate; RU = rust; SH = shell/fan/spoon; TR = truffle. *Ecology/Life modes (putative in most cases):* S = saprotrophic; P = pathogenic; M = mycorrhizal. *Microhabitat types:* A = Animal; B = Bark of living tree; BG = Burnt ground/litter; D = Dung; DT = Diseased or dying tree/plant; DW = Dead wood/logs; L = Leaf litter or soil; MB = Moss on bark of living tree; MG = Moss on ground, wood or rocks; U = Underground. *Ecology/Life modes:* S = saprotrophic; P = pathogenic; M = mycorrhizal; ? = not known or cannot be assumed with confidence. *Microhabitat types:* A = Animal; B = Bark of living tree; BG = Burnt ground/litter; D = Dung; DT = Diseased or dying tree/plant; DW = Dead wood/logs; L = Leaf litter or soil; MB = Moss on bark of living tree; MG = Moss on ground, wood or rocks; U = Underground

Taxon ID	Species	Family	Common Name	Form	Life Mode	Microhabitat	Native/Exotic	Voucher Code	2016 SITES	1	2	3	4	5	ALL YE ARS (2009-2016)	New in 2016
KP236	1. <i>Agaricus campestris</i>	Agaricaceae		MU	S	L	N	NLB 1427	4, 5				Y	Y	4, 5	New since 2009
KP216	2. <i>Agaricus ragbag</i>	Agaricaceae	Almond Mushroom	MU	S	L	N		5					Y	5	New
KP064	3. <i>Aleurina ferruginea</i>	Pyronemataceae		CD	S	L	N	NLB1052	1, 2	Y	Y				1, 2	
KP255	4. <i>Amanita cf. umbrinella</i>	Amanitaceae		MU	M	L	N	NLB 1029	5					Y	5	
KP075	5. <i>Amanita ragbag, white with ring</i>	Amanitaceae		MU	M	L	N	Davison30-2010 BOUGHER 746	1, 3	Y		Y			1, 3, 4, 5	
KP256	6. <i>Amanita xanthocephala</i>	Amanitaceae	Vermillion Amanita	MU	M	L	N		2, 4, 5		Y		Y	Y	1, 2, 4, 5	
KP229	7. <i>Arcyria ripara</i>	Arcyriaceae		SL	S	DW	N		1	Y					1	New
KP082	8. <i>Banksiamyces toomansis</i>	Leotiaceae		CD	S	DW	N	BOUGHER 665	3			Y			2, 4	
KP260	9. <i>Bolbitius titubans</i>	Bolbitiaceae		MU	S	L	N	NLB1352	5					Y	4, 5	
KP110	10. <i>Bolbitius titubans var. olivacea</i>	Bolbitiaceae		MU	S	L	N	NLB1353	5					Y	5	
KP192	11. <i>Botryobasidium subcoronatum</i>	Botryobasidiaceae		RE	S	DW	N	NLB 1145 NLB 1163 NLB1173 NLB 1400	1	Y					1, 5	
KP225	12. <i>Bovista pulyuggeoides</i>	Lycoperdaceae		PF	S	L	N	NLB 1379	2		Y				2	New
KP261	13. <i>Bovista ragbag</i>	Lycoperdaceae		PF	S	L	N		1	Y					1, 2, 4	
KP262	14. <i>Calocera guepinioides</i>	Dacrymycetaceae	Scotsman's Beard	JE	S	DW	N		1, 3	Y		Y			all	
KP240	15. <i>Calvatia fusca</i>	Lycoperdaceae	Chooks Egg puffball	PF	S	L	N	NLB 1425 NLB 1426	4				Y		4	New
KP259	16. <i>Campanella gregaria</i>	Tricholomataceae	Gregarious Bells	SH	S	DW	N	E9353, E9390, E9416	1, 2, 3	Y	Y	Y			all	
KP199	17. <i>Ceriporia cf. reticulata</i>	Phanerochaetaceae		RE	S	DW	N	NLB 1154	3			Y			3, 4	
KP072	18. <i>Ceriporia tarda</i>	Phanerochaetaceae		RE	S	DW	N	BOUGHER 652 NLB 1023	1	Y					1, 2, 3, 4	
KP156	19. <i>Chlorophyllum brunneum</i>	Agaricaceae	Shaggy Parasol	MU	S	L	N		5					Y	5	
KP348	20. <i>Clavulina cristata</i>	Ramariaceae		CO	M	L	N		2, 3		Y	Y			1, 2, 3	
KP049	21. <i>Clavulina vinaceocervina</i>	Clavulinaceae	Flesh-coloured Coral Fungus	CO	M	L	N	E9455	3			Y			1, 2, 3, 5	
KP264	22. <i>Clitocybe cf. clitocyboides</i>	Tricholomataceae		MU	S	DW	N	BOUGHER 670 NLB1133 NLB 1152 NLB1153 NLB1384	1, 2, 3, 4	Y	Y	Y	Y		ALL	
KP358	23. <i>Clitopilus hobsonii</i>	Entolomataceae	Tiny White Fans	SH	S	DW	N	BOUGHER 515, 525	1	Y					1, 2, 3, 4	
KP266	24. <i>Coltricia cinnamomea</i>	Hymenochaetaceae	Tough Cinnamon Fungus	MU	S	L	N		1	Y					1, 2, 4	
KP230	25. <i>Comatricha elegans</i>	Stemonitidaceae		SL	S	DW	N		1	Y					1	New since 2009
KP211	26. <i>Conocybe apala var. apala</i>	Bolbitiaceae		MU	S	L	N	NLB 1341	5					Y	5	New
KP210	27. <i>Coprinellus ragbag</i>	Psathyrellaceae		MU	S	L	N		5					Y	5	New
KP267	28. <i>Coprinopsis cf. stangliana</i>	Psathyrellaceae	Western Australian Magpie fungus	MU	S	L	N	NLB 1424	4, 5				Y	Y	1, 4, 5	
KP219	29. <i>Coprinopsis lagopus</i>	Psathyrellaceae		MU	S	D	N	NLB 1350	5					Y	5	New

Taxon ID	Species	Family	Common Name	Form	Life Mode	Mic ro habitat	Nati ve/Exo tic	Voucher Code	2016 SITES	1	2	3	4	5	ALL YE ARS (200 9 - 2016)	New in 2016
						W										
KP250	30. <i>Corioloopsis cf. merulinus</i>	Polyporaceae		RE	S	D W	N	NLB 1458	1	Y					1	New
KP345	31. <i>Cortinarius archeri</i>	Cortinariaceae	Archer's Cortinarius	MU	M	L	N	BOUGHER 614 NLB1128	3			Y			2, 3, 5	
KP233	32. <i>Cortinarius cf. austroalbidus</i>	Cortinariaceae		MU	M	L	N		1	Y					1	New
KP325	33. <i>Cortinarius ochraceofulvus</i>	Cortinariaceae	Golden Tuart Cortinarius	MU	M	L	N		2, 4, 5		Y		Y	Y	1, 2, 4, 5	
KP148	34. <i>Cortinarius sp. silvery blue</i>	Cortinariaceae		MU	M	L	N	NLB 1046	2, 4		Y		Y		2, 4	
KP235	35. <i>Cortinarius sp. small orange-brown</i>	Cortinariaceae		MU	M	L	N	NLB 1395	5					Y	5	New
KP268	36. <i>Crepidotus eucalyptorum</i>	Crepidotaceae	Eucalypt Crepidotus	SH	S	B	N	E9360	1, 2, 4, 5	Y	Y		Y	Y	1, 2, 4, 5	
KP346	37. <i>Crepidotus mollis</i>	Crepidotaceae		SH	S	D W	N	BOUGHER 648 NLB 1034	1	Y					1, 2, 3, 4	
KP270	38. <i>Crepidotus ragbag</i>	Crepidotaceae		SH	S	D W	N		1	Y					1, 4, 5	
KP242	39. <i>Cyathus olla</i>	Agaricaceae		BN	S	D W	N		4, 5				Y	Y	4, 5	New
KP218	40. <i>Cyathus stercoreus</i>	Agaricaceae	Shaggy Birds Nest fungus	BN	S	D W	N	NLB 1349	5					Y	5	New
KP222	41. <i>Cyathus striatus</i>	Agaricaceae	Striped Birds Nest fungus	BN	S	D W	N	NLB 1367	5					Y	5	New
KP272	42. <i>Descolea maculata</i>	Cortinariaceae		MU	M	L	N	BOUGHER 685	2		Y				1, 2	
KP238	43. <i>Dichostereum rhodosporum</i>	unknown	Smooth ochre skin fungus	RE	S	D W	N	NLB 1428	4				Y		4	New
KP231	44. <i>Echinostelium minutum</i>	Echinosteliaceae		SL	S	D W	N		1	Y					1	New since 2009
KP274	45. <i>Exidia ragbag</i>	Exidiaceae		JE	S	D W	N		1, 2, 4	Y	Y		y		all	
KP246	46. <i>Exidiopsis sp. tough patches</i>	Auriculariaceae		JE	S	D W	N	NLB 1459	1	Y					1	New
KP297	47. <i>Fomitiporia robusta</i>	Hymenochaetaceae	Woody Layered Bracket Fungus	BR	P	DT	N		3, 5			Y		Y	1, 2, 3, 5	
KP275	48. <i>Fomitopsis lilacinogilva</i>	Coriolaceae		BR	S	D W	N		1, 2	Y	Y				all	
KP096	49. <i>Galerina marginata</i>	Cortinariaceae		MU	S	D W	N	NLB 1409	1, 5	Y				Y	1, 5	
KP081	50. <i>Galerina pumila</i>	Cortinariaceae		MU	S	L	N	BOUGHER 672	5					Y	5	
KP031	51. <i>Galerina sp. small brown in litter</i>	Cortinariaceae		MU	S	D W/L	N	E9359 BOUGHER 723	2		Y				1, 2	
KP163	52. <i>Ganoderma australe</i>	Ganodermataceae	Artists Conk	BR	P	D W	N	NLB 1102	5					Y	5	
KP221	53. <i>Geastrum triplex</i>	Geastraceae	Earthstar	EA	S	L	N	NLB 1330	5					Y	5	New since 2009
KP277	54. <i>Gymnopilus allantopus</i>	Cortinariaceae	Golden Wood Fungus	MU	S	D W	N	E9355	all	Y	Y	Y	Y	Y	all	
KP237	55. <i>Gymnopilus junonius</i>	Cortinariaceae		MU	S	D W	N	NLB 1432	5					Y	5	New
KP278	56. <i>Gymnopilus perplexus</i>	Cortinariaceae		MU	S	D W	N	BOUGHER 667	1	Y					1, 3	
KP279	57. <i>Gymnopilus purpuratus</i>	Cortinariaceae		MU	S	D W	N		4				Y		1, 3, 4, 5	
KP281	58. <i>Harknessia uromycoides</i>	Melanconidaceae	Tuart Nut Fungus	PS	S	D W	N		1, 2	Y	Y				2, 4, 5	
KP021	59. <i>Hemimycena cf. lactea</i>	Mycenaceae	Lemon Cap Mycena	MU	S	L	N	E9319 BOUGHER 771	3			Y			ALL	
KP282	60. <i>Henningsomyces candidus</i>	Schizophyllaceae	Miniature Chimney Pots	CY	S	D W	N	E9361	1, 2, 3, 4	Y	Y	Y	Y		all	
KP283	61. <i>Hexagonia vesparia</i>	Coriolaceae		BR	S	B	N		1	Y					1, 4	
KP234	62. <i>Hohenbuehelia</i>	Tricholomataceae		SH	S	D W	N	NLB 1394	5					Y	5	New

Taxon ID	Species	Family	Common Name	Form	Life Mode	Mic ro habitat	Nati ve /Exo tic	Voucher Code	2016 SITES	1	2	3	4	5	ALL YE ARS (200 9 - 2016)	New in 2016
	<i>petaloides</i>															
KP185	63. <i>Hymenoscyphus sp. orange then greenish</i>	Leotiaceae		CD	S	D W	N	NLB 732 NLB 1136	1	Y					1	
KP244	64. <i>Hymenoscyphus sp. stalked</i>	Leotiaceae		CD	S	D W	N	NLB 1441	3			Y			3	New
KP003	65. <i>Hyphodontia breviseta</i>	Hyphodermataceae		RE	S	D W	N	BOUGHER 512 BOUGHER 774	2, 3, 4		Y	Y	Y		2, 3, 4	
KP224	66. <i>Hyphodontia cf. coprosmae</i>	Hyphodermataceae		RE	S	D W	N	NLB 1381	3			Y			3	New
KP248	67. <i>Hyphodontia crustosa</i>	Hyphodermataceae		RE	S	D W	N		1	Y					1	New
KP286	68. <i>Hyphodontia sp. white, low tubercules</i>	Hyphodermataceae		RE	S	D W	N	BOUGHER 754 NLB 1444	1, 2, 3, 4	Y	Y	Y	Y		1, 2, 3, 4	
KP226	69. <i>Hypocrea gelatinosa</i>	Hypocreaceae		CU	S	D W	N	NLB 1396	1, 2	Y	Y				1, 2	New
KP150	70. <i>Hypoxylon ragbag</i>	Xylariaceae		FL	S	D W	N		2		Y				1, 2, 4	
KP251	71. <i>Inocybe emergens</i>	Inocybaceae		MU	M	L	N	NLB 1464	1	Y					1	New
KP177	72. <i>Inocybe fissurata</i>	Inocybaceae		MU	M	L	N	NLB 1120 NLB 1344 NLB 1433	5					Y	5	
KP178	73. <i>Inocybe sp false murrayana</i>	Inocybaceae		MU	M	L	N	NLB 1121	5					Y	5	
KP243	74. <i>Kurtia argillacea</i>	Corticiaceae		RE	S	D W	N	NLB 1443	3			Y			3	New
KP287	75. <i>Laccaria lateritia</i>	Tricholomataceae	Brick Red Laccaria	MU	M	L	N	E9446 NLB1473	4, 5				Y	Y	all	
KP077	76. <i>Lachnum virgineum</i>	Hyaloscyphaceae		CD	S	D W	N	NLB 1039	1, 2	Y	Y				1, 2, 4	
KP245	77. <i>Lanzia cf. prasina</i>	Sclerotiniaceae		CD	S	D W	N	NLB 1440	3			Y			3	New
KP227	78. <i>Lepiota booolola</i>	Lepiotaceae		MU	S	L	N	NLB 1398 NLB1399	1	Y					1	New
KP200	79. <i>Leucogyrophana pseudomollusca</i>	Hygrophoropsidaceae		RE	S	D W	E?	NLB 1158 NLN1159	5					Y	5	
KP232	80. <i>Licea kleistobolus</i>	Liceaceae		SL	S	D W	N		1	Y					1	New since 2009
KP290	81. <i>Limacella pitereka</i>	Amanitaceae	Slimacella	MU	S	L	N	E9351 NLB1025 NLB1148	1, 2, 4	Y	Y		Y		1, 2, 3, 4	
KP241	82. <i>Lycoperdon cf. perlatum</i>	Lycoperdaceae		PF	S	L	N		4				Y		4	New
KP069	83. <i>Macrohyporia dictyopora</i>	Unknown		RE	S	D W	N	BOUGHER 638 NLB 1383	2, 4, 5		Y		Y	Y	1, 2, 4, 5	
KP228	84. <i>Melanoleuca cf. fusca</i>	Tricholomataceae		MU	S	L	N	NLB 1397	1	Y					1	New
KP247	85. <i>Mollisia ragbag</i>	Dermataceae		CD	S	D W	N	NLB 1463	1	Y					1	New
KP292	86. <i>Mycena nargan</i>	Mycenaceae	Spotted Pixie Cap	MU	S	D W	N	BOUGHER 520 NLB 1022 NLB1024	1	Y					1, 2, 3, 4	
KP044	87. <i>Mycena ragbag, chlorine, in litter</i>	Tricholomataceae		MU	S	L	N		1, 2, 3	Y	Y	Y			1, 2, 3, 5	
KP101	88. <i>Mycena ragbag, no chlorine odour, in litter</i>	Tricholomataceae		MU	S	L	N		Y					Y	1, 2, 4, 5	
KP045	89. <i>Mycena ragbag, on wood</i>	Mycenaceae		MU	S	D W	N		1, 3	Y		Y			ALL	
KP009	90. <i>Mycena sp. black cap, hairy base, chlorine odour</i>	Mycenaceae		MU	S	D W	N		2		Y				1, 2, 3, 4, 5	
KP019	91. <i>Mycena sp. brown translucent-striate in litter</i>	Mycenaceae		MU	S	L	N		4				Y		2, 3, 4	
KP129	92. <i>Mycena tenerrima</i>	Mycenaceae		MU	S	L	N		2		Y				1, 2	
KP296	93. <i>Omphalotus nidiformis</i>	Tricholomataceae	Ghost Fungus	SH	S/P	D W/ B	N	E9423 NLB 1104	2, 4, 5		Y		Y	Y	ALL	

Taxon ID	Species	Family	Common Name	Form	Life Mode	Mic ro habitat	Nati ve/Exo tic	Voucher Code	2016 SITES	1	2	3	4	5	ALL YE ARS (2009 - 2016)	New in 2016
KP214	94. <i>Panaeolina foeniseccii</i>	Strophariaceae		MU	S	L	N	NLB 1343 NLB 1377	5					Y	5	New
KP333	95. <i>Panus fasciatus</i>	Polyporaceae	Hairy Panus	MU	S	D W	N		1, 2	Y	Y				1, 2	
KP124	96. <i>Parasola conopilus</i>	Psathyrellaceae		MU	S	D W	N	BOUGHER 996 NLB1347	5					Y	5	
KP172	97. <i>Perenniporia ochroleuca</i>	Polyporaceae		BR	S	DT	N	BOUGHER 729	1, 2	Y	Y				1, 2, 5	
KP206	98. <i>Peziza repanda</i>	Pezizaceae		CD	S	L	N	NLB 1176 NLB1351	4, 5				Y	Y	4, 5	
KP223	99. <i>Phanerochaete sp. mustard</i>	Phanerochaetaceae		RE	S	D W	N	NLB 1380	3			Y			3	New
KP239	100. <i>Phellinus sp. chunky</i>	Hymenochaetaceae		RE	S	D W	N	NLB 1431	4				Y		4	New
KP299	101. <i>Phellinus sp. extensive resupinate</i>	Hymenochaetaceae		RE	S	D W	N	E9454	2, 4		Y		Y		2, 3, 4, 5	
KP285	102. <i>Phellinus sp. ochre resupinate</i>	Hymenochaetaceae		RE	S	D W	N		1	Y					1, 2, 4	
KP300	103. <i>Phlebia ragbag</i>	Meruliaceae		RE	S	D W	N	BOUGHER 511	1, 3	Y		Y			1, 2, 3, 4	
KP343	104. <i>Phlebiopsis crassa</i>	Phanerochaetaceae	Violet Skin Fungus	RE	S	D W	N	BOUGHER 522	1	Y					1, 3, 4, 5	
KP301	105. <i>Pholiota communis</i>	Strophariaceae	Common Pholiota	MU	S	D W	N	NLB 1164	5					Y	4, 5	
KP078	106. <i>Pholiota highlandensis</i>	Strophariaceae		MU	S	BG	N	BOUGHER 647	5					Y	4	
KP053	107. <i>Phylloporus clelandii</i>	Boletaceae	Cleland's Gilled Bolete	MU	M	L	N	BOUGHER 646	3, 5			Y		Y	2, 3, 4, 5	
KP170	108. <i>Piloderma byssinum</i>	Atheliaceae		RE	S	D W	N	NLB 1122 NLB 1123	1, 2	Y	Y				1, 2	
KP142	109. <i>Piloderma cf. byssinum</i>	Atheliaceae		RE	S	L	N	NLB1050 NLB1097 NLB1098 NLB 1137 NLB 1429 NLB 1462	1, 4	Y			Y		1, 2, 3, 4	
KP302	110. <i>Piptoporus australiensis</i>	Coriolaceae	Curry Punk	BR	S	DT	N		3, 5			Y		Y	2, 3, 4	
KP159	111. <i>Pisolithus microcarpus</i>	Sclerodermataceae	Dog Poo Fungus	PF	M	L	N	NLB 1093 NLB1366	3, 5			Y		Y	ALL	
KP303	112. <i>Pisolithus ragbag</i>	Sclerodermataceae	Dog Poo Fungus	PF	M	L	N		2, 3		Y	Y		Y	ALL	
KP119	113. <i>Plicaria ragbag sessile, black</i>	Pezizaceae		CD	S	L	N	BOUGHER 910	1	Y					1, 4	
KP355	114. <i>Pluteus pauperculus</i>	Pluteaceae	Yellow Gilled Pluteus	MU	S	D W	N	E9352, BOUGHER 686	1	Y					1, 4	
KP330	115. <i>Poria s.l. ragbag</i>	Unknown		RE	S	D W	N	NLB 1382	1, 2, 4, 5	Y	Y		Y	Y	ALL	
KP213	116. <i>Psathyrella bipellis</i>	Psathyrellaceae		MU	S	L	N	NLB 1345	5					Y	5	New
KP217	117. <i>Psathyrella candolleana</i>	Psathyrellaceae		MU	S	D W	N	NLB 1348	5					Y	5	New
KP212	118. <i>Psathyrella cf. albidula</i>	Strophariaceae		MU	S	L	N	NLB 1342	5					Y	5	New
KP215	119. <i>Psathyrella cf. tetrophylla</i>	Psathyrellaceae		MU	S	L	N	NLB 1346	3, 5			Y		Y	3, 5	New
KP306	120. <i>Psathyrella ragbag, in litter</i>	Psathyrellaceae		MU	S	L	N	E9415	2, 5		Y			Y	ALL	
KP076	121. <i>Psathyrella ragbag, on wood</i>	Psathyrellaceae		MU	S	D W	N		4, 5				Y	Y	4, 5	
KP162	122. <i>Punctularia strigosozonata</i>	Corticiaceae		RE	S	D W	N	NLB 1099 NLB 1134	1, 2	Y	Y				1, 2	
KP307	123. <i>Pycnoporus coccineus</i>	Coriolaceae	Scarlet Bracket Fungus	BR	S	D W	N		ALL	Y	Y	Y	Y	Y	ALL	
KP308	124. <i>Ramaria gracilis</i>	Ramariaceae	Slender Coral Fungus	CO	M	L	N		1, 4	Y			Y		1, 2, 4	
KP037	125. <i>Ramaria sp. white</i>	Ramariaceae		CO	M	L	N	BOUGHER 745	1, 3	Y		Y			1, 3, 4	
KP254	126. <i>Resupinatus subapplicatus</i>	Tricholomataceae	Small Grey Anemone	SH	S	D W	N	E9379, E9422	1, 3	Y		Y			ALL	

Taxon ID	Species	Family	Common Name	Form	Life Mode	Mic ro habitat	Nati ve /Exo tic	Voucher Code	2016 SITES	1	2	3	4	5	ALL YE ARS (2009-2016)	New in 2016
KP305	127. <i>Royoporus badius</i>	Polyporaceae		BR	S	B	N		2		Y				2, 4, 5	
KP322	128. <i>Russula erumpens</i>	Russulaceae	Erupting Russula	MU	M	L	N	BOUGHER 615	2, 3		Y	Y			2, 3, 4	
KP164	129. <i>Russula marangania</i>	Russulaceae		MU	M	L	N	NLB 1103	5					Y	4, 5	
KP329	130. <i>Schizopora paradoxa</i>	Schizoporaceae	Split Pore Crust	RE	S	D W	N		2		Y				1, 2, 3, 4	
KP220	131. <i>Scleroderma areolatum</i>	Sclerodermataceae		PF	M	L	N	NLB 1365	5					Y	5	New since 2009
KP166	132. <i>Scleroderma cepa</i>	Sclerodermataceae	Onion Earthball	PF	M	L	N		1, 4, 5	Y			Y	Y	1, 4, 5	
KP204	133. <i>Scleroderma ragbag (not cepa)</i>	Sclerodermataceae	Earthballs	PF	M	L	N	NLB 1174	1, 5	Y				Y	1, 5	
KP112	134. <i>Sistotrema cream to ash grey</i>	Sistotremataceae		RE	S	D W	N	BOUGHER 773 BOUGHER 775	1	Y					1, 2, 3, 5	
KP103	135. <i>Sistotrema sp. grey paint on leaves</i>	Sistotremataceae		RE	S	D W	N	NLB 1054	1	Y					1, 4, 5	
KP249	136. <i>Sistotrema sp. yellow flaps</i>	Sistotremataceae		RE	S	D W	N		1	Y					1	New
KP318	137. <i>Stemonitis ragbag</i>	Stemonitidaceae		SL	S	D W	N		2		Y				1, 2	
KP349	138. <i>Suillus granulatus</i>	Suillaceae	Slippery Jack	MU	M	L	E	NLB1101	5					Y	5	
KP253	139. <i>Thelephora sp. not terrestris</i>	Thelephoraceae		RE	S	D W	N	NLB 1471 NLB 1472	5					Y	5	New
KP310	140. <i>Tomentella pilosa</i>	Thelephoraceae		RE	S	D W	N	BOUGHER 690 NLB 1056 NLB 1058	1, 2, 3, 4	Y	Y	Y	Y		1, 2, 4	
KP145	141. <i>Tomentellopsis echinospora</i>	Thelephoraceae		RE	S	D W	N	NLB 1049 NLB 1095 NLB1143	2		Y				1, 2, 4, 5	
KP252	142. <i>Trechispora cf. microspora</i>	Sistotremataceae		RE	S	D W	N	NLB 1461	1	Y					1	New
KP088	143. <i>Trechispora microspora</i>	Sistotremataceae		RE	S	D W	N	BOUGHER 687	1	Y					1	
KP319	144. <i>Tremella mesenterica group</i>	Tremellaceae	Yellow Brain Fungus	JE	S	D W	N	E9453	1, 2, 3	Y	Y	Y			all	
KP027	145. <i>Trichia decipiens var. olivacea</i>	Trichiaceae	Cute Baubles	SL	S	D W	N	E9477	2, 5		Y			Y	1, 2, 5	
KP183	146. <i>Tricholoma sp. large clustered</i>	Tricholomataceae		MU	M	L	N	NLB 1129	5					Y	5	
KP181	147. <i>Tricholoma sp. no odour</i>	Tricholomataceae		MU	M	L	N	NLB 1126	5					Y	5	
KP341	148. <i>Tubaria serrulata</i>	Crepidotaceae		MU	S	L	N	BOUGHER 521	3			Y			1, 4	
KP105	149. <i>Tubulicrinis calothrix</i>	Tubulicrinaceae		RE	S	D W	N	NLB 1430	4				Y		1, 4	
KP059	150. <i>Tylopilus fuscobrunneus</i>	Boletaceae		MU	M	L	N	BOUGHER 616 BOUGHER 645 NLB 1045 NLB 1410	5					Y	all	
KP189	151. <i>Undetermined agaric ragbag on wood</i>	Unknown		MU	S	L	N		1	Y					1	
KP022	152. <i>Undetermined ascomycete minute orange discs (lichen?)</i>	Unknown		CD	S	D W	N	E9365	4			Y	Y		1, 3, 4, 5	
KP065	153. <i>Undetermined mould ochraceous</i>	unknown		MO	S	D W	N	NLB1162	4				Y		1, 2, 5	
KP106	154. <i>Undetermined mould ragbag</i>	unknown		MO	S	D W	N		2, 3, 4		Y	Y	Y		1, 2, 3, 4	
KP073	155. <i>Undetermined resupinate mustard curtains</i>	unknown		RE	S	D W	N	BOUGHER 651	2		Y				2, 4	
KP086	156. <i>Undetermined resupinate ragbag</i>	unknown		RE	S	D W	N	NLB 1021 NLB 1027 NLB 1040 NLB1050 NLB	1, 3	Y		Y			all	

Taxon ID	Species	Family	Common Name	Form	Life Mode	Mic ro habitat	Nati ve /Exo tic	Voucher Code	2016 SITES	1	2	3	4	5	ALL YE ARS (200 9 - 2016)	New in 2016
								1442								
KP295	157. <i>Undetermined slime mould ragbag</i>	Unknown		SL	S	D W/ /L	N		5					Y	2, 3, 4, 5	
KP313	158. <i>Volvopluteus speciosus</i>	Pluteaceae	Common Rosegill	MU	S	L	N	NLB 1378	4, 5				Y	Y	4, 5	
KP357	159. <i>Xerula mundroola</i>	Tricholomataceae	Mundroola Rooting Shank	MU	S	L	N	E9451	3			Y			3	

Table 3: Taxonomic rank, life mode, habitat, and sites of fungi in Kings Park in 2016. Note: some fungi may have more than one life-mode type, and modes for most species have not been confirmed.

Category	No. species	Example species
Taxonomic ranks		
Species	159 (includes 23 ragbags)	
Genera	101 (+ 7 of unknown genus)	
Families	56 (+ 7 of unknown family)	
Ecology/Lifemode types		
Saprotrophic	128	<i>Cyathus olla</i>
Pathogenic	2	<i>Fomitipora robusta</i>
Mycorrhizal	29	<i>Inocybe fissurata</i>
Saprotropic or pathogenic	1	<i>Omphalotus nidiformis</i>
Main habitat types (+ 3 species with two or more habitats)		
B = Bark of living tree	3	<i>Hexagonia vesparia</i>
BG = Burnt ground/litter	1	<i>Pholiota hilandensis</i>
DT = Diseased or dying tree/plant	3	<i>Perenniporia ochroleuca</i>
DW = Dead wood/logs	84	<i>Kurtia argillacea</i>
L = Leaf litter or soil	108	<i>Inocybe emergens</i>
U = underground	0	
Survey Sites		
1	67 exclusive / 34 shared	<i>Coriopsis cf. merulinus</i>
2	46 / 10	<i>Schizopora paradoxa</i>
3	39/ 24	<i>Hymenoscyphus sp. stalked</i>
4	37/ 21	<i>Dichostereum rhodosporum</i>
5	61 / 23	<i>Hohenbuehelia petaloides</i>
Origin		
Native	157	<i>Clitopilus hobsonii</i>
Exotic	2	<i>Leucogyrophana pseudomollusca</i>

Discussion

Biodiversity

Fungi fruiting at Kings Park seemed to come to an abrupt end about 20th July, perhaps earlier than in some previous years. According to the Bureau of Meteorology, winter rainfall in 2016 was once again below the long-term average in Perth but it was Perth Metro's wettest winter for five years. Day-time and overnight temperatures were below average, and it was the coldest winter for at least two decades across Perth.

A total of 159 fungi were recorded in 2016 including the fungi identified to species level, the fungi identified to genus level only, and the undetermined and 'ragbag' records. 41 of the fungi in the current survey are considered as new records for Kings Park – 24% of the fungi recorded in 2016. The number of species recorded in the 2016 survey is similar to that of the previous year - 169 species in 2015, and greater than in earlier years - 123 (2012), 106 (2011), 108 (2010), 123 (2009). The field guide - *Kings Park Fungi [version 2.1] A visual guide to species recorded in surveys 2009 - 2012* (Bougher 2016b) once again proved to be a valuable tool in this season's field survey.

It is not possible to accurately estimate the number of fungi species known so far from Kings Park. Any estimate depends on the level of acceptance of unverified or unverifiable names as representing or not individual species, including those recorded before 2009 (Bougher 2010a, b) together with the undetermined and 'ragbag group' names recorded in surveys since 2009 (Bougher 2009a, 2010c, 2011b, 2012, 2015, current report). The figures indicated below could be reduced if taxonomic studies and collections necessitate the merging of names, but also could be increased where they include undetermined and 'ragbag' names representing as yet unresolved mixture of unknown numbers of species.

The surveys since 2009 at Kings Park have recorded:

- **355 different fungi** - this includes the fungi identified to species level, the fungi identified to genus level only, and the undetermined and 'ragbag' records.
- **213 fungi identified to species level.**

The all-time total of fungi identified to species level at Kings Park is 265:

i.e. 213 species names from the surveys since 2009, and 52 fungi assigned species names from pre-2009 that have not yet been found in the surveys since 2009.

The all-time total of different fungi identified and named to species level that have been recorded from Kings Park is comprised of:

- 122 named species recorded before 2009 (Bougher 2010a).
- 72 new records that were identified to species level from years 2009 and 2010 (Bougher 2011a).
- 12 of the 27 new records from the 2011 survey that were identified to species level and not recorded from Kings Park before 2011 (Bougher 2011b).
- 9 of the 29 new records from the 2012 survey that were identified to species level and not recorded from Kings Park before 2012 (Bougher 2012).
- 27 of the 46 new records from the 2015 survey that were identified to species level and not recorded from Kings Park before 2015 (Bougher 2015).
- 27 of the 38 new records from the 2016 survey that were identified to species level and not recorded from Kings Park before 2016 (current report).

The above tallies up to 269, but some of the species names assigned to the new records recently have been determined as representing the same species, hence adjusting the all-time total to 265.

Some notable fungi recorded at Kings Park in 2016

1. *Parasola conopilus* - carpeting areas of woodchips (Figure 7):

At Kings Park in 2016 this species formed large troops in wood chipped gardens and road verges, and it sometimes occurred in the bushland areas too, but then in fewer numbers. This species has become very common in wood chipped areas throughout Perth and often forms very large and crowded troops of many hundreds of fruit bodies. The fruit bodies are initially reddish-brown but in dry conditions rapidly become pale from their centre outwards. They may persist in their pale state for several weeks.



Figure 7: Colonies of *Parasola conopilus* fruit bodies (NLB 1347) in a wood chipped road verge along May Drive at Kings Park in 2016.

2. *Cyathus* (Birds Nest Fungi) - carpeting areas of woodchips (Figures 8, 9):

Three species of Birds Nest Fungi were confirmed at Kings Park in 2016 - *Cyathus olla*, *Cyathus stercoreus* (Figure 5), and *Cyathus striatus* (Figure 6). All of these species were observed as vast crowded colonies in woodchipped areas, particularly along in road verges. They had not been observed previously at Kings Park in such large colonies, perhaps because they may only flourish for a short time during favourable weather conditions and when woodchips of suitable age or type are available. These fungi occur widely throughout the Perth region in woodchipped areas.

Figures 8, 9: Some species of Birds Nest fungi abundant in woodchipped areas at Kings Park in 2016.



Figure 8: *Cyathus stercoreus* (NLB 1349).



Figure 9: *Cyathus striatus* (NLB 1367).

3. *Panaeolina foeniseccii* (Figures 10, 11):

Panaeolina foeniseccii occurs in tended/mowed grass parkland areas at Kings Park. Typically its fruit bodies are date brown in the moist conditions such as in the very early morning, but they rapidly become pale as conditions become drier. Macroscopically *P. foeniseccii* is indistinguishable to a number of other small brown mushrooms belonging to other brown-spored genera such as *Panaeolus* and *Psathyrella*. However microscopically this species is distinctive by having large coarsely ornamented spores.

Figures 10, 11: The two faces of *Panaeolina foeniseccii* at Kings Park in 2016.



Figure 10: *Panaeolina foeniseccii* (NLB 1377) fruit bodies with their date-brown colouration in moist conditions.



Figure 11: *Panaeolina foeniseccii* (NLB 1343) showing paler fruit bodies in drier conditions.

4. *Inocybe emergens* (Figures 12, 13):

Inocybe emergens was not previously known to occur in the Perth region. It was most commonly reported from the wheatbelt region of W.A. and also had been recorded along the southern coast east of Albany (Bougher *et al.* 2012). At Kings Park it was found in the vicinity of *Eucalyptus marginata*, *Allocasuarina fraseriana* and *Corymbia calophylla* - all possible ectomycorrhizal partners.

Seven named species of the genus *Inocybe* (the fibre cap fungi) have been confirmed at Kings Park so far:

1. *Inocybe clypeata* (see page 50, Bougher 2016b)
2. *Inocybe emergens* (current report)
3. *Inocybe sp. false murrayana* (see Figure 13, Bougher 2015; page 51 Bougher 2016b)
4. *Inocybe fissurata* (see Figure 12, Bougher 2015; page 50 Bougher 2016b)
5. *Inocybe froudistii* (see page 51, Bougher 2016b) [= in the 2012 season report (Bougher 2012) - *Inocybe fibrillosibrunnea* (Figure 1, Bougher 2012) and *Inocybe sp. nov. cf. BOU494* (Figure 2, Bougher 2012)].
6. *Inocybe isabellina* (see Figure 4, Bougher 2011b; page 51 Bougher 2016b)
7. *Inocybe violaceocaulis* (see page 51, Bougher 2016b)

There are two records of other *Inocybe* species at Kings Park, but no voucher specimens or notes were kept - *Inocybe sp.* 'brown' 13/06/1999 N.L. Bougher *et al.* (unpubl. foray data), and *Inocybe sp.* 'small fibrillose' 13/06/1999 N.L. Bougher *et al.* (unpubl. foray data). Yet more species of *Inocybe* may be expected at Kings Park.

Figures 12, 13: An unexpected finding of *Inocybe emergens* at Kings Park in 2016.



Figure 12: *Inocybe emergens* (NLB 1464).



Figure 13: Angular spores of *Inocybe emergens* (NLB 1464).

Conclusion and recommendations

In similarity with the previous surveys (2009 to 2015), this year's survey captured many new records for Kings Park (24% of the records in 2016). A total of 265 fungi have been named to species level so far at the park. Further collections and evaluations of the identities of fungi at Kings Park are required to accurately assess the diversity of fungi at the park. Many more species are likely to occur there, as indicated by the new records and the large number of records identified only to genus level or currently undetermined.

Recommendations include:

- **Surveys:** Annual surveys of fungi should be continued in order to adequately document the diversity of fungi at Kings Park, including with continuing support from staff and volunteers.
- **Taxonomic work:** Like at Bold Park, resolution of the identity of fungi at Kings Park will continue as a developmental process, with the identity of more species gradually resolved each year. Continued support of the Western Australian Herbarium will be critical to help facilitate taxonomic studies needed to resolve the identity of more of the records of fungi from Kings Park. Financial support targeted specifically for taxonomic studies would accelerate resolution of the identity of fungi at Kings Park. Particular financial support is needed for DNA sequencing to help expedite the identification of specimens.
- **Training:** Further education, training, and awareness of volunteers and staff would be desirable in order to recognize a greater array of fungi, particularly the less conspicuous types of fungi. This will help provide a more accurate assessment of the numbers of fungi species present at Kings Park.
- **Book:** Some of the fungi recorded so far in Kings Park are depicted in the on-line field book for fungi of the Perth region (Bougher 2009b). However it is recommended that an account of the fungi in Kings Park (and Bold Park) be produced, such as a colourful field book and/or pamphlets and posters. The initial basis for such a book was materialised in 2015 with the production of *Kings Park Fungi [version 1.1] A visual guide to species recorded in surveys 2009 - 2012*. This guide was updated in 2016 as *Kings Park Fungi [version 2.1]* (Bougher 2016b). This guide proved to be a valuable tool for participants in the field during this season's survey, and will be updated for future field surveys.

Acknowledgements

Since 2009, a total of 47 people (volunteers, students, and BGPA staff and trainees) have participated in the fungi survey days at Kings Park.

Thanks to the following 12 volunteers who donated their time and efforts to participate as members of the “collecting crew” for one or more of the fungi surveys days at Kings Park in 2016: Peter Broome, Yvonne Broome, Peter Davison, Peter Foss, Roz Hart, Val Preston, Kay Rae, Lyn Rowland, Adda Thompson, Kirsten Tullis, Pat Wenham, and Peter Wilshaw.

Six staff and trainees from the Botanic Gardens and Parks Authority (BGPA) assisted in the field on at least one of the survey days – Bronwyn Bader, Marty Brotherson, Ryan Glowacki, Sarah Robb, Melissa Smith, and Jordan Toner. Steve Easton (BGPA) advised and assisted with the selection of fungi survey sites, participating BGPA staff, and in the production of maps.

DNA sequences undertaken by Matt Barrett (BGPA) confirmed the identity of several fungi. Studies on *Inocybe* species in this report were undertaken in a collaborative project by the current author and Brandon Matheny (University of Tennessee, USA) supported by a research grant from the Australian Government’s Australian Biological Resources Study National Taxonomy Research Grant Program (grant no. RFL211–31) which includes some financial support from the Western Australian Naturalists’ Club Inc., and a research grant from the United States of America Government’s National Science Foundation (REVSYS grant no. DEB-0949517).

References quoted

- Barrett, R.L., and Tay, E.P. (2005). *Perth Plants. A field guide to the bushland and coastal flora of Kings Park and Bold Park, Perth, Western Australia*. Botanic Gardens and Parks Authority, Perth, Western Australia.
- Botanic Gardens & Parks Authority (2014). *Kings Park and Botanic Garden Management Plan 2014-2019*.
- Bougher, N.L. (2009a). Fungi survey 2009, and historical account of fungi studies and names – Kings Park and Botanic Garden. *Department of Environment and Conservation, and Perth Urban Bushland Fungi (PUBF)*. Report to the Botanic Gardens & Parks Authority. Client Report Department of Environment and Conservation, and Perth Urban Bushland Fungi Project.
- Bougher, N.L. (2009b). *Fungi of the Perth Region and Beyond*. Perth Urban Bushland Fungi, Perth, Western Australia. Western Australian Naturalists Club (Inc.), Perth, Western Australia. (Also at www.fungiperth.org.au).
- Bougher, N.L. (2010a). History of the study of fungi at Kings Park, Western Australia. *Western Australian Naturalist* **27**: 61-90.
- Bougher, N.L. (2010b). History of the study Kings Park’s fungi. *People & Plants* **70**: 20-21.
- Bougher, N.L. (2010c). Fungi survey Kings Park and Botanic Garden 2010. *Department of Environment and Conservation, and Perth Urban Bushland Fungi (PUBF)*. Report to the Botanic Gardens & Parks Authority. Client Report Department of Environment and Conservation, and Perth Urban Bushland Fungi Project.
- Bougher, N.L. (2011a). New records of fungi and slime moulds at Kings Park, Perth, Western Australia. *Western Australian Naturalist* **28**: 24–42.
- Bougher, N.L. (2011b). Fungi survey Kings Park and Botanic Garden 2011. *Department of Environment and Conservation, and Perth Urban Bushland Fungi (PUBF)*. Report to the Botanic Gardens & Parks Authority. Client Report Department of Environment and Conservation, and Perth Urban Bushland Fungi Project.

- Bougher, N.L. (2012). Fungi survey Kings Park and Botanic Garden 2012. *Department of Environment and Conservation*. Report to the Botanic Gardens & Parks Authority. Client Report Department of Environment and Conservation.
- Bougher, N.L. (2015). Fungi survey Kings Park and Botanic Garden 2015. *Department of Environment and Conservation*. Report to the Botanic Gardens & Parks Authority. Client Report Department of Environment and Conservation.
- Bougher, N.L. (2016a). Fungi surveys reveal new species in Kings Park. *For People & Plants* 94: 14-17. (Friends of Kings Park Quarterly Magazine).
- Bougher, N.L. (2016b). *Kings Park Fungi [version 2.1] A visual guide to species recorded in surveys 2009 - 2015*. Department of Parks and Wildlife. 119 pages.
- Bougher, N.L., Matheny, P.B., & Gates, G. M. (2012). Five new species and records of *Inocybe* (Agaricales) from temperate and tropical Australia. *Nuytsia* 22: 57-74.
- Robinson, R. & Bougher, N.L. (2003). The response of fungi to fire in jarrah (*Eucalyptus marginata*) and karri (*Eucalyptus diversicolor*) forests of south-west Western Australia. In: Fire in south-western Australian ecosystems: impacts and management. Fire responses of the biota. (Eds. I. Abbott & N. Burrows) Backhuys Publishers, Leiden. pp. 269-289

Appendix 1

The subset of fungi that were processed, described, & prepared as herbarium vouchers from Kings Park and Botanic Garden 2016. Vouchers lodged at the Western Australian Herbarium (PERTH).

<i>Genus</i>	<i>Species</i>	Collection No.	Descriptive Notes	<i>Plants</i>	Date
<i>Agaricus</i>	<i>campestris</i>	NLB 1427	Odour: mushroom. Spore print: snuff brown (Brit. Flora Chart No 17).		05/07/2016
<i>Bolbitius</i>	<i>titubans</i>	NLB 1352	This is a fairly large species (pileus up to 50 mm diam.; stipe up to 40x 8 mm), with a smooth (not reticulated) viscid pileus. Odour: none. Spore print: bay brown (reddish brown).		26/05/2016
<i>Bolbitius</i>	<i>titubans</i> var. <i>olivacea</i>	NLB 1353	Reticulated pileus (present in the button stage and persistent at maturity). Odour: none. Spore print: bay brown (reddish-brown).		26/05/2016
<i>Botryobasidium</i>	<i>subcoronatum</i>	NLB 1400	Fruit body fully resupinate and firmly attached, smooth to the eye, minutely felty under lens; margin not differentiated; rhizomorphs absent. Micro: confirmed ID: wide clamped hyphae branching at right angles; basidia uniform, 6-8 spored; spores navicular. Odour: none. Spore print: white.	Banksia.	21/06/2016
<i>Bovista</i>	<i>pulyggeodes</i>	NLB 1379	Characteristic features: (i) spherical fruit bodies up to 30 mm diam., white, smooth at first, soon smoke grey covered with fibrillose starfish-shaped whitish tufts, then finally brown and thin-walled/papery/collapsing with single central ragged ostiole up to 5 mm wide; (ii) base lacking stipe, and with sand-covered rhizomorph(s); (iii) gleba white, solid at first, becoming yellow, finally with spore powder chocolate brown. Odour: not distinctive or mushroom. Micro: Spores: when young hyaline, guttulate; when mature pale yellowish-brown; globose with long, narrow, persistent, cylindrical, or tapering pedicel up to 15 microns long; very finely asperulate (verruculose) with short verrucae; size e.g. 5.2; 5.4; 5.6; 5; 4.8 microns diam. Capillitium: Lycoperdon-type (not Bovista-type); 2.8 - 4.5 microns wide, unbranched, no septa, hyaline when young then later pale-yellow-brown, with thick undulating wall (up to 0.7 microns thick) bearing scattered more or less circular pores, smooth-walled but when mature may have some crystalline material on wall. When mature the becoming more abundant but still rarely branched but now including scattered narrower thinner-walled tapering hyphae.	Open woodland of Allocasuarina fraseriana (sheoak) and Corymbia calophylla (marri).	14/06/2016
<i>Calvatia</i>	<i>fusca</i>	NLB 1425	Characteristic features: (i) fruit body 53 mm wide x 40 mm tall; ovoid in section, then when old forming a flat saucer-like [depression?] which is brown and smooth underneath and supports a soft-powdery snuff-brown (Brit. Flora Chart No 17) spore mass; (ii) peridium with a pale cream inner layer 1 mm wide, and a thin chamois-like smooth outer layer which on the surface (and in section) is pinkish (near Clay Pink, Brit. Flora Chart No 30) forming paler fissures revealing the inner peridium with increasing maturity; (iii) young gleba white, without any sterile intrusions or base; (iv) fruit body with sand-covered white coarse rhizomorphs sprouting from the slightly puckered but otherwise undifferentiated base (the point of attachment is surrounded by a zone which is white). Micro: Capillitium: narrow (2.2 microns), thick-walled with many excavations, yellow-brown (hyaline in immature gleba) hyphae with constricted septa, sparsely branching. Spores: globose, 4.1-4.6 microns diam., minutely verruculose (short isolated pegs up to 0.3 microns tall), yellow-brown in KOH, short peg-like apiculus visible on only a few spores. Exoperidium: hyphal, no clamps. Endoperidium: cellular. Odour: none.	Woodland of tuart, banksia, dryandra, sheoak.	05/07/2016
<i>Calvatia</i>	<i>fusca</i>	NLB 1426	Same species as NLB 1425 (See those notes). In this collection, note: size 100 mm wide x 55 mm tall; dehiscence is by irregular cracking and peeling back of the peridium which in this collection is dark reddish-brown with tessellate ridges; gleba just prior to full maturity appears to be bright yellowish-ochre (but later after dehiscence becomes snuff brown). Micro: Capillitium: narrow (2.2 microns), thick-walled with many excavations, yellow-brown (hyaline in immature gleba) hyphae with constricted septa, sparsely branching. Spores: globose, 4.1-4.6 microns diam., minutely verruculose (short isolated pegs up to 0.3 microns tall), yellow-brown in KOH, short peg-like apiculus visible on only a few spores. Exoperidium: hyphal, no clamps. Endoperidium: cellular. Odour: none.	Tuart (Eucalyptus gomphocephala).	05/07/2016
<i>Clitocybe</i>	<i>cf. clitocyboides</i>	NLB 1384	Characteristic features: (i) pileus becoming infundibuliform, surface smooth greasy wax-like appearance when moist; (ii) lamellae crowded subdecurent; (iii) stipe often flattened, finely longitudinally silky-fibrillose but easily and often mostly removed to reveal a watery drab coloured stipe surface; (iv) base without rhizomorphs, binding soil, sometimes with a small tuft of strigose white hairs. Odour: musty mushroom or slightly spermatic.	Allocasuarina fraseriana (sheoak).	14/06/2016
<i>Conocybe</i>	<i>apala</i> var. <i>apala</i>	NLB 1341	Characteristic features: (i) hemispherical to conico-convex pileus up to 15 mm diam., pale yellowish-brown with pale tan centre, smooth, only obscurely translucent-striate, not noticeably hygrophorous; (ii) narrow white stipe up to 45 x 2 mm, with abruptly (but not emarginate) bulbous base widened up to 5 mm, densely cystidiate in upper half (fine long hairs, as seen under lens); (iii) lamellae loosely adnexed to 2 mm deep, crowded, edge not cystidiate (or very finely so) fulvous, not anastomosing. Odour: not distinctive. Spore print: brown. Micro: Spores: ellipsoid to subamygdaliform, some slightly angular in distal half evident in face view, smooth/thick-walled; with central germ pore, small apiculus, bright orange-brown in KOH, size e.g. : 14.3 x 7.7; 14.8 x 8.5; 13.6 x 7.6; 13.1 x 8.2 microns. Basidia: sphaeropedunculate, 4-spored, e.g. 20 x 11.9 microns. Cheilocystidia: lecythiform with short cylindrical neck and globose head, size e.g. 21 x 8.8 microns. Pleurocystidia: absent. Clamps: present. Pileipellis: palisade of sphaeropedunculate, pyriform, vesiculose terminals, e.g. 25 x 14, 16 x 12 microns (and up to 35 microns wide), also present are scattered sinuous, sometimes tapering-fusoid elements infrequently with slightly capitate apex, refractive oily orange-brown contents. Upper stipe: with filiform (often sinuous) caulocystidia with utriform or fusoid swollen base, e.g. 110 microns long (neck 3.5, base 10 microns wide). Also clavate elements in a palisade (these are rather broad at their base and there are no basidia present), e.g. 17.5 x 9.2; 15.8 x 8.7; 21.4 x 8.5 microns.	Eucalyptus botryoides.	26/05/2016
<i>Coprinopsis</i>	<i>lagopus</i>	NLB 1350	Characteristic features: (i) young pilei adorned with whitish hairs; (ii) rapidly evanescent. Odour: not distinctive. Spore print: black (slight purplish tinge). Micro: Spores 12.7-14 x 8.5-9 microns, ellipsoid with truncate central germ pore, smooth-walled. Hymenial cystidia mostly collapsed but a partial one was seen - vesiculose subglobose, 50 x 45 microns. Veil on pileipellis of clamped, cylindrical hyphae in tapering bundles.		26/05/2016
<i>Coprinopsis</i>	<i>cf. stanglianus</i>	NLB 1424	This appears to be the usual large WA magpie fungus (<i>C. cf. stanglianus</i>) but note the following: (1) The veil remnants on the pileus are very block-like without any intervening appressed fibrils rather than more contiguous in larger patches as is more usually seen; (2) The base of the stipe has a membranous pale brown collar; (3) This collection had many (ca 12) fruit bodies together in a tight cluster, rather than the usual solitary or scattered habit more typical of <i>C. cf. stanglianus</i> . Odour: none or grassy. Spore print: black.		05/07/2016

Genus	Species	Collection No.	Descriptive Notes	Plants	Date
<i>Coriolorpsis</i>	<i>cf. merulinus</i>	NLB 1458	Characteristic features: (i) fully resupinate on burnt wood, firmly attached, elongate bright orange patches on burnt wood; (ii) hymenium poroid with minute circular to irregular pores (4-5 per mm); tubes 1 mm long, concolorous with pores - bright orange (near Brit. Flora Chart No. 47 - 'Apricot', near Methuen 9E8), often multi-layered with a white narrow border between the current season's tubes and one or several layers of darker reddish-brown tubes (near Brit. Flora Chart No. 22 - 'Purplish Date', near Methuen 6A8 to 7A8) in a layer up to 2 mm thick a dull drab narrow waxy layer is below the lowest tuber separating them from the wood; (iii) margin with an appressed densely matted-fibrillose yellowish border up to 1 mm broad; (iv) hymenium when old dark reddish-purple (near Brit. Fl. Chart No. 19 - 'Bay' to 20 - 'Dark Brick', near Methuen 8E8). Micro: Monomitic. Orange pigment as extracellular globules and encrusting/adhering on hyphal walls. Hyphae hyaline, septate, clamped. Basidia small, 4-spored. No cystidia. Tube hyphae thick-walled, septate, unbranched. Mucilage evident with hymenium. No Bovista-type binding hyphae seen. No spores seen (spore print attempt just yielded oil globs on the slide.) Odour: none. 3% KOH on hymenium: turns dark reddish.	Open woodland of jarrah, sheoak, banksia.	19/07/2016
<i>Corticium s.l.</i>	<i>sp.</i>	NLB 1442	Fully resupinate, dirty whitish, under lens with dense arrangement of erect projecting hairs. Odour: none. Spore print: white (poor print). Micro: very small suballantoid smooth hyaline spores; projecting cystidia multi-septate (no clamps), cylindrical with non-swollen apex, thin-walled, no crystals.	Allocasuarina fraseriana - eucalypt woodland.	12/07/2016
<i>Cortinarius</i>	<i>sp.</i>	NLB 1395	Characteristic features: (i) pileus 15-40 mm diam., smooth slightly greasy, orange-brown (near Methuen 6D8) obscurely translucent-striate at margin, becoming obscurely concentrically zonate with age (centre often the palest); (ii) lamellae distinctly bright orange-brown, i.e. fulvous; edge smooth and entire; closely spaced; (iii) stipe up to 30 x 10 mm diam., cylindrical often with ellipsoid to globose bulb (up to 15 mm wide), longitudinally silky fibrillose, without annular zone evident; (iv) flesh cream dulling after cut especially in the pileus. Odour: not distinctive. Spore print: fulvous brown.	Eucalyptus.	21/06/2016
<i>Cyathus</i>	<i>stercoreus</i>	NLB 1349	This occurs in very large crowded colonies in many parts of Kings Park where woodchips have been laid. Note the gregarious nature and shaggy exterior of the nests. Odour: not distinctive.	Vast colonies in roadside woodchipped areas	26/05/2016
<i>Cyathus</i>	<i>striatus</i>	NLB 1367	Lined/ridges interior of the nests; gregarious habit; shaggy brown exterior. Odour: not distinctive.	Large colonies in woodchips and woody humus	03/06/2016
<i>Dichostereum</i>	<i>rhodosporum</i>	NLB 1428	Characteristic features: (i) fully resupinate, very thin and firmly attached and contiguous spreading growths with undifferentiated margin and no rhizomorphs; (ii) surface smooth to the eye, minutely felty under lens; dull pinkish-beige (near Methuen 5B4) brown, fading when older, with conspicuous oily exudate droplets scattered over surface. Micro: appears to be sterile. All that's visible are dendroid structures. Odour: none.	Allocasuarina fraseriana.	05/07/2016
<i>Exidiopsis</i>	<i>sp.</i>	NLB 1459	Characteristic features: (i) small discrete patches, dry tough consistency, thin firmly attached with white minutely fimbriate (dense white hairs seen under lens) undulating-folding and often effuso-reflexed margin; (ii) hymenium smooth and undulating to the eye, minutely glistening under lens, warm cream to pale tan with some parts as richly coloured as Methuen 5B5 - Greyish orange; (iii) under surface of upturned margin minutely matted-fibrillose, pale brownish. Micro: basidia (hypobasidia?) with very long sterigma (epibasidia?), ovoid when young; clamped spores cylindro-allantoid, smooth-walled, quite large, hyaline, with two large guttules, not septate. Hyphae mostly hyaline but some yellowish thick-walled clamped hyphae also seen (positional origin not known yet). Hairs on rim of fruit body hyaline, cylindrical, apex not swollen Odour: none. 3% KOH on hymenium: no reaction. Spore print: white.	Open woodland of jarrah, sheoak, banksia.	19/07/2016
<i>Galerina</i>	<i>marginata</i>	NLB 1409	Characteristic features: (i) pileus up to 50 mm diam., obscurely translucent-striate at margin, soon strongly hygrophanous eventually entirely pale cream brown; (ii) stipe with membranous superior annulus when young but usually not conspicuous at maturity; tending to become streaked dirty drab and watery with age. Odour: grassy? Spore print: brown.	Eucalyptus marginata, Acacia, Pinus.	27/06/2016
<i>Geastrum</i>	<i>triplex</i>	NLB 1330	Characteristic features: (i) thick-fleshed collar present when mature; (ii) peristome pale, felty; (iii) large size (up to 70 mm wide incl. arms); (iv) immature fruit bodies globose with beaked apex, scaly-areolate surface, thick-tough walled (4-5 mm thick); (v) base saucer-like, sessile (some with small tuft of whitish mycelium and adhering sand. Odour: mushroom.	Various planted trees and understorey plants, e.g. Lepidozamia peroffskyana.	14/04/2016
<i>Gymnopilus</i>	<i>junonius</i>	NLB 1432	Characteristic features: (i) robust large (e.g. pileus up to 130 mm diam.) fruit bodies growing in a cluster; (ii) stipe often tapering at base, and with superior membranous brown (spore-stained) annulus. Odour: not distinctive. Spore print: bright rusty brown.	Eucalyptus citriodora x maculata hybrid.	05/07/2016
<i>Hohenbuehelia</i>	<i>petaloides</i>	NLB 1394	Pileus: fan-shaped often narrow-elongate and irregularly wavy and/or strongly lobed, up to 120 mm wide x 100 mm long, margin smooth/entire not translucent-striate, surface greasy smooth except sometimes with dense covering of soft erect strigose hairs 1 mm tall extending up to the distance from the stipe, warm tan brownish (near 'Buff', British Flora Chart) sometimes with grey tinges nearest to the stipe. Thin-fleshed at margin. Pellis can be peeled off the underlying flesh. Pileus margin thin and not in-rolled or in-curved. Lamellae decurrent, closely spaced, without any anastomosed or bifurcations, pale cream unchanging with age except infrequently staining reddish in some larger specimens; edge smooth and entire on the lamellae that are closer to the pileus margin but the lamellae nearer the stipe often edged with hairs similar to (but a bit shorter than) the hairs on the stipe and pileus. Stipe up to 50 mm long x 30 mm wide, often distorted or flattened/compressed due to tight clustering of the fruit bodies, solid; surface dull drab tending to become watery, with dense covering of soft white strigose hairs up to 1 mm tall (tapering and sharp-pointed but soft), base with white rhizomorphic mycelium binding humus. Flesh: dull whitish but tending to become watery and then dull/drab; thin-fleshed at the pileus margin; rather cartilaginous in the stipe. Odour: farinaceous (cheap soap). Spore print: white.	Eucalyptus.	21/06/2016
<i>Hymenoscyphus</i>	<i>sp.</i>	NLB 1441	The genus <i>Lambertella</i> should be considered for NLB 1441 due to the brown mature spore deposit. Characteristic features: (i) stipe white, tapering up to 10 mm tall, smooth to the eye, minutely longitudinally silky fibrillose (white fibrils) as seen under the lens; (ii) receptacle funnel-shaped, up to 5 mm diam., concave at first but may eventually become flat, bright yellow when young dulling later to pale tan; rim smooth/entire (minutely fringed under lens), outside surface matted fibrillose (continuation of stipe fibrils) Micro: Spores: ellipsoid-fusoid, smooth-/thin-walled, hyaline in KOH with a large glassy guttule occupying most of the spore, brown when mature at least in Melzers revealing fine punctation? or possibly a loosening perisporium? over whole spore, smooth/thin-walled, size e.g. 17.3 x 6.3; 13.8 x 7.1; 17.6 x 6.2; 14.4 x 6.7; 15.3 x 7.4 microns. Asci: cylindrical, with rounded apex, 8-spored, pore pale blue in Melzers, size e.g. 220 x 9.8 microns. Paraphyses: abundant in crowded bundles, projecting just beyond the asci or not, narrow cylindrical-filiform (2 - 3 microns wide), unbranched, sparsely septate, apex unswollen/unbent, not reactive in Melzers. Hymenium: all hyaline in KOH. Odour: none.	Allocasuarina fraseriana - eucalypt woodland.	12/07/2016
<i>Hyphodontia</i>	<i>sp.</i>	NLB 1444	Fully resupinate, pure white, densely covered very short mostly round-tipped pegs; margin and young areas appressed densely arachnoid. Odour: none. Spore print: white (poor print).	Allocasuarina fraseriana - eucalypt woodland.	12/07/2016

Genus	Species	Collection No.	Descriptive Notes	Plants	Date
<i>Hypodontia</i>	<i>crustosa</i>	NLB 1460	Small patches fully resupinate, thin white, densely covered with short erect spines. Odour: none. Spore print: white. This matches <i>Basidirodulium crustosum</i> (Pers.Zimtr) [Nom. inval., so the name <i>Hypodontia</i> is currently used by ALA. NLB 1460 is the first record of this species for Western Australia. (i) fruit bodies odontoid with minute aculei (less than 1 mm tall); (ii) fruit bodies in small patches; (iii) absence of capitate cystidia; (iv) presence of scattered aculeate-fusoid thin-walled hyaline/glassy cystidia; (v) spores ellipsoid-subcylindric, smooth/thin-walled, Melzers negative, 5.5-6 x 3.3-3.6 microns; (vi) loosely arranged narrow subiculum of clamped hyphae. Micro: Hyphal system: monomitic, all tissues hyaline in KOH and not reactive in Melzers. Abundant crystals loosely associated with all tissues. Basidia: cylindrical, 4-spored, clamped; e.g. 20 x 4-4.5 microns. Cystidia: scattered usually singly, not greatly projecting, fusoid/tapering, thin/smooth-walled, hyaline/glassy, e.g. 42 x 3.3; 25 x 4 microns. Apex usually quite sharply tapering, but sometimes with a swelling. Subiculum: thin layer of loosely arranged clamped hyaline smooth/thin-walled hyphae 1.8 - 3.3 microns wide. Spores: ellipsoid to subcylindric, smooth/thin-walled, hyaline, Melzers negative, not guttulate (seen from the spore print mounted in Melzers), small apiculus, e.g., 5.5 x 3.6; 5.7 x 3.4; 5.5 x 3.6; 5.6 x 3.3 microns.	Open woodland of jarrah, sheoak, banksia.	19/07/2016
<i>Hypocrea</i>	<i>gelatinosa</i>	NLB 1395	Note, this collection is fruiting on top of an old pored resupinate fungus.	<i>Banksia menziesii</i> .	21/06/2016
<i>Inocybe</i>	<i>fissurata</i>	NLB 1344	Another collection of this species, noting this fruiting in May, the sweet odour, and robust size/form capability of this species, pale lamellae, coarsely radially fibrillose and splitting pileus. Odour sweet. Spore print: brown.	<i>Eucalyptus botryoides</i> .	26/05/2016
<i>Inocybe</i>	<i>fissurata</i>	NLB 1433	This collection shows the very pale young lamellae which are very crowded and somewhat convoluted/wrinkly. This is probably due to the hard compacted soil and lawn which impedes the expansion of the fruit bodies. Some fruit bodies occur here which eventually fully emerge but are a bit distorted, or in extreme cases only a portion of the fruit body manages to fully emerge. Odour: not distinctive.	<i>Eucalyptus botryoides</i> .	05/07/2016
<i>Inocybe</i>	<i>emergens</i>	NLB 1464	This is only a single, rather old specimen, but collection is vouchered as this species not found before at Kinga Park, and this species - <i>Inocybe emergens</i> - was not previously known to occur in the Perth region. Pileus: 20 mm diam., pale brown, finely appressed radially silky-fibrillose; margin deeply splitting in several places. Lamellae: adnexed, pallid, edge finely cystidiate. Stipe: 25x4 mm, cylindrical without swollen base, pallid finely pruinose along entire length. Context: white, unchanging when exposed. odour: none. Micro: Spores: angular-nodulose, elongate-oblong, size e.g. 9.9 x 4.4; 9.7 x 4.9; 10.2 x 4.6; 11.3 x 5; 8.3 x 4.9 microns. Cheilocystidia: abundant, lageniform to fusiform with apical crystals, pale yellowish with thick wall (up to 4 microns), size e.g. 70 x 15; 59 x 13 microns, amid crowded abundant short clavate paracystidia. Pleurocystidia: similar to cheilocystidia.	Open woodland of jarrah, sheoak, banksia.	19/07/2016
<i>Kurtia</i>	<i>argillacea</i>	NLB 1443	Fully resupinate dull whitish growth with wet? areas of ochre rather discontinuous and scattered; surface under lens appears densely covered with short erect glistening hairs. Micro: Immature - only a few spores seen. Cystidia: (1) arising from the hymenium and projecting well beyond it are abundant smooth/thin-walled cystidia large lageniform or tapering with rounded apex (not acute) often with long pedicel (up to 12 microns long); size e.g. 106 x 9.7; 89 x 10 microns; (2) scattered shorter cylindrical to ventricose capitate (up to 14 microns wide) thin/smooth-walled hyaline cystidia. No encrusting crystals observed on any cystidia in KOH or in Melzers. Spores: ellipsoid with depressed adaxial, smooth/thin-walled, finely granular contents (in KOH), conspicuous apiculus, not amyloid. Basidia: clavate when young then cylindrical-constricted, not pleural, clamped, 4-spored, e.g. 30 x 6 microns. Subiculum: hyaline clamped hyphae 3-4 microns wide. Hyphal system: monomitic, clamps present. Odour: none.	<i>Allocasuarina fraseriana</i> - eucalypt woodland.	12/07/2016
<i>Laccaria</i>	<i>lateritia</i>	NLB 1473	This fungus often occurs in extensive crowded troops of hundreds of fruit bodies in the sand under and near planted eucalypts in the Kulbarri rehabilitation area. The fruiting is usually continuous over several months long every autumn/winter. Odour: not distinctive.	Rehabilitated area planted with eucalypts and acacias.	25/07/2016
<i>Lanzia</i>	<i>cf. prasina</i>	NLB 1440	NLB1440 seems related to <i>Lanzia prasina</i> by virtue of its small ascospores, and ectal excipulum with clavate terminals. However differences include micro features such as the terminal elements of ectal excipulum thin-walled and hyaline - not brown encrusted as in NLB1440. Therefore, NLB1440 (and E9307 - PERTH8474265) may well represent a unique perhaps new species of <i>Lanzia</i> occurring on the fruits of <i>Corymbia</i> such as <i>C. calophylla</i> . Characteristic features: (i) stipe dark reddish-brown to black near base, up to 2 mm tall x 0.5 mm wide, tapering slightly only surface minutely furfuraceous when dry, base not inserted into the substrate. No sclerotized development on surface of substrate; (ii) receptacle funnel-shaped, up to 1.5 mm diam., slightly concave; rim smooth/entire; orange/tan upper surface, slightly darker outer surface which is smooth; (iii) receptacle surface may be 'hyrophonous' becoming mottled yellow as drying out. Micro: Spores: cylindrical to subfusoid, not flattened on one side, hyaline in KOH, smooth/thin-walled, with numerous small guttules, not amyloid, size e.g. 8.2 x 3.7; 8.3 x 8.6; 6.9 x 3.1; 8.3 x 3.2; 8.5 x 3.4 microns. Hymenium: all hyaline in KOH, densely packed, not reactive in Melzers. Subhymenium: of brown hyphae 2.5 - 6.5 microns wide, some encrusted and similar to the ectal e excipulum hyphae. Asci: cylindrical or widening towards apex, with conical apex, 8-spored, not reactive in Melzers, with clamp-like (crozier present) unswollen unbranched base, size e.g. 79 x 7; 87 x 7 microns. Paraphyses: not projecting, abundant, very narrow filiform (1.3 - 3 microns wide), unbranched, sparsely septate, apex unswollen/unbent, not reactive in Melzers. Medullary excipulum: of thick-walled (pale yellowish glassy wall up to 2 microns thick), polygonal and elongate cells up to 30 x 16 microns. Outer ectal excipulum: of brown clavate or fusoid encrusted end cells up to 17 x 11 microns.	<i>Allocasuarina fraseriana</i> - eucalypt woodland.	12/07/2016
<i>Lepiota</i>	<i>boolooloa</i>	NLB 1398	Same species as NLB 1399, collected on the more-recently burnt side of Maggie Path. See micro notes for that collection. Characteristic features: (i) pileus up to 28 mm diam.; appanate at maturity, with coarse very dark red-brown (almost black) appressed squamules; (ii) lamellae free, white, closely spaced, edge cystidiate (concolorous with face of lamellae); not bruising; (iii) stipe up to 30x2 mm, with conspicuous upwards flanging membranous annulus which is cream on its upper side and dark reddish-brown on its lower side; base of stipe enlarged into an ellipsoid to globose bulb up to 5 mm wide; (iv) flesh pale unchanging. Micro: micro features confirm con-specificity with NLB1399. Odour: none. Spore print: white.	Open woodland of marri, jarrah, banksia.	21/06/2016
<i>Lepiota</i>	<i>boolooloa</i>	NLB 1399	This is the same species of <i>Lepiota</i> as NLB 1398 (see macro notes for that collection). odour: none. Spore print: white. Micro: Spores: ellipsoid-ovoid in side view, ovoid to subcylindrical in face view, smooth/thick-walled, hyaline in KOH or water, strongly dextrinoid, no germ pore evident, size e.g.: 6.7 x 4.3; 6.2 x 4.3; 7.1 x 4.6; 7.3 x 4.3; 6.9 x 4.6 microns. Cheilocystidia: abundant (but gill edge not completely sterile as some basidia are present), highly variable - such as fusoid, ventricose sometimes ventricose-rostrate (with mucronate apex), sometimes pedicellate, hyaline, smooth/thin-walled, size e.g.: 31 x 8; 32 x 9; 36 x 10; 34 x 10; 37 x 9; 38 x 9; 42 x 8 microns. Basidia: clavate, 2 to 4-spored, granular contents, e.g. 21 x 7 microns. Pleurocystidia: absent. Clamp connections: absent.	Open woodland of marri, jarrah, banksia.	21/06/2016
<i>Macrohyporia</i>	<i>dictyopora</i>	NLB 1383	This is a young specimen of this species with only small patches of orange coloration. Odour: none.	<i>Banksia</i> .	14/06/2016
<i>Melanoleuca</i>	<i>cf. fusca</i>	NLB 1397	Characteristic features: (i) pileus 85 mm diam.; dark grey with a slightly purplish tinge, covered entirely with a fine 'frost' of appressed mat of whitish-pale grey (glistening under lens) matted fibrils which are easily removed upon touch; (ii) lamellae adnate, quite shallow (only up to 5 mm deep), crowded, pale cream, not bruising; edge very minutely densely cystidiate (under lens); (iii) stipe 35x10 mm; longitudinally streaked; (iv) flesh mottled/streaked brownish in stipe, paler and not mottled in pileus. Micro: Spores: ellipsoid, verrucose, strongly amyloid, with conspicuous suprahilar plage, size e.g. 7.4 x 6.2; 7.5 x 6; 8 x 5.7; 8 x 5.6 microns. Basidia: slender clavate, 4-spored, size e.g. 37 x 9 microns. Cheilocystidia and pleurocystidia: scattered singly, utricleiform of the excisissa-type i.e. with tapering-aculeate terminal cell often with apical cluster of narrow crystals (most disappear when mounted in KOH and coverslip tapped down), and with medial septum; size e.g. 55 x 6.9 microns. Clamps: absent. odour: not distinctive. Spore print: white.	Open woodland, and near fallen sugar gum (<i>Eucalyptus cladocalyx</i>) log.	21/06/2016

Genus	Species	Collection No.	Descriptive Notes	Plants	Date
<i>Mollisia</i>	<i>sp.</i>	NLB 1463	Sessile flat discs, minute (less than 0.3 mm diam.), ranging from pale cream to dark greyish-blue or sometimes 2-tone (cream at centre, bluish at rim). Odour: none. Spores: cylindrical-fusoid, often broader at one end (clavate), smooth/thin-walled, non-septate, hyaline in KOH and not reactive in Melzers, size e.g. 8.3 x 2; 9.2 x 1.7; 8.6 x 1.8 microns. Asci: cylindrical to slightly ventricose and then narrowing at apex, faintly amyloid at apex, 8-spored, size e.g. 53 x 6 microns. Paraphyses: abundant, not projecting, narrow cylindrical, apex unswollen/unbent, width e.g. 2 - 2.5 microns. Ectal excipulum: a dark brown epithelium of clavate/spaeropedunculate terminal cells.	Open woodland of jarrah, sheoak, banksia.	19/07/2016
<i>Panaeololina</i>	<i>foeniseeii</i>	NLB 1343	Characteristic features: (i) pileus convex-hemispherical (including at maturity), smooth but under lens distinctly uneven-wrinkled and glistening, up to 20 mm diam., dull clay to drab becoming concentrically zoned due to hygrophanous, not translucent-striate; (ii) lamellae adnexed, quite deep (e.g. 5 mm), date brown, obscurely mottled, with finely cystidiate edge; (iii) stipe long-narrow (up to 65 x 2 mm), pale, shiny, smooth except pruinose at apex, odour: not distinctive. Spore print: purplish black. Micro: Brown amygdaliform coarsely ornamental spores with germ-pore.	Eucalyptus botryoides.	26/05/2016
<i>Panaeololina</i>	<i>foeniseeii</i>	NLB 1377	This collection shows <i>P. foeniseeii</i> fruit bodies in their moist date-brown condition. This contrasts with NLB 1343 where they had become hygrophanous and pale. Pileus: 8-20 mm diam., convex-campanulate (never hemispherical) from young age (with strongly incurved margin) broadening but never applanate at maturity, sometimes with a blunt umbo and then developing shallow pits, undulations, and wrinkles with maturity; smooth, dry, minutely glistening (under lens), very dark date brown (Brit. Flora Chart) remaining so in wet conditions but eventually reluctantly hygrophanous becoming fawn from the centre outwards. Lamellae: loosely adnexed, to 4 mm deep, often ventricose, pale brown at first becoming cigar brown (Brit. Flora Chart), coarsely mottled with paler cystidiate margin; lamellules abundant. Stipe: long, narrow, easily broken (longitudinally); up to 70x3 mm, cylindrical; base not swollen and without mycelium or hairs; pale off cream, minutely pruinose over entire length but pruina are easily rubbed off; no annulus. odour: not distinctive. Spore print: fuscous black (black with slight purple or brown tinge). Micro: Spores: amygdaliform, with central germ pore, verrucose; orange-brown in KOH, size e.g. : 15 x 8.7; 15.1 x 7.1; 16.2 x 9.1; 13.1 x 6.3 microns. Basidia: cylindroclavate with short pedicel, 4-spored, e.g. 21 x 10.5; 30 x 10.9 microns. Cheilocystidia: crowded, lageniform, hyaline, smooth/thin-walled (some thickening towards base), with or without swollen apex, size e.g. 35 x 7.5 microns. Pleurocystidia: absent.	Mowed grass.	14/07/2016
<i>Parasola</i>	<i>conopilus</i>	NLB 1347	This species has a red-brown almost cylindrical button, then finely translucent-striate bluntly conic brown pileus which is strongly hygrophanous and eventually entirely pale. It is very common in wood chipped areas throughout Perth and often forms very large and crowded troops of many hundreds of fruit bodies which persist in their pale stage for quite some time. At Kings Park it is very common in wood chipped gardens and road verges, and it sometimes occurs in the bushland areas too, but then in fewer numbers. Odour: not distinctive. Spore print: black.	Woodchip garden beds and roadside edges.	26/05/2016
<i>Peniophora</i>	<i>cf. coprosmae</i>	NLB 1381	Characteristic features: (i) fully resupinate, thin but contiguous and not easily removable; pale grey; (ii) smooth with some long tubercles (glistening under lens); (iii) margin with a very narrow paler fimbriate fringe. Odour: not distinctive. Spore print: white. Micro: Cystidia: abundant but confined to the hymenial region projecting thick-walled hyaline tapering-conical metuloids (lamprocystidia), with pedicel, crystals not dissolving in KOH, size e.g. 52 x 8; 65 x 9 microns. No gloeocystidia seen (need to re-check) Basidia: immature, small clavate, not clamped. Hyphae: monomitic although thick-walled hyphae are present but these have septa, sometimes can be seen giving rise to basidia-like terminals, and branching at right angles. Large oil globules floating around (in KOH).	Allocasuarina fraseriana.	14/06/2016
<i>Peziza</i>	<i>repanda</i>	NLB 1351	Micro: spores 18 - 20 microns long.		26/05/2016
<i>Phanerochaete</i>	<i>sp.</i>	NLB 1380	Characteristic features: (i) fully resupinate, not easily removed growth about 70 x 30 mm on heart wood below the bark; (ii) surface contiguous smooth but with many tubercles (some up to 1.5 mm wide x 1 mm tall), minutely glistening under hand lens; predominantly 'mustard' (about near Methuen p.4, maybe tinges of DC8 to 4D8 and some more orange to reddish tints in parts; (iii) margin appressed up to 2 mm wide, minutely fimbriate at extreme edge, whitish; (iv) no rhizomorphs seen. Odour: not distinctive. Spore print: white. Micro: A yellow pigment dissolves out when dried tissue is mounted in KOH (probably from the dissolving crystals). Tissue darkens when mounted in Melzers. Cystidia type 1: projecting beyond hymenium, fusoid to subulate, some with constricted aculeate apex, smooth-thin walled, glassy in KOH, some girdled with brown crystals (in water or Melzers) e.g. 45 x 9; 40 x 5.6; 40 x 5 microns. Cystidia type 2: scattered in the subiculum, hyphoid cylindrical, thin-walled, adorned apically with fine dense dark brown crystals (dissolved in KOH but visible in water or Melzers). Basidia: cylindrical - flexuous to narrowly clavate, 4-spored, e.g. 30.5 x 4.4; 41 x 4.9 microns, terminal (not pleural). Spores: cylindrical to narrow ellipsoid, not adaxially depressed, smooth/thin-walled, most with large guttule in KOH but not in Melzers, not amyloid or faintly so?, size e.g. 4.8 x 2.3; 5.1 x 2.6; 5.2 x 2.6; 5.6 x 2.3; 4.5 x 2.5 microns. Subhymenium: short septate hyphae 3 - 5 microns wide. Not gelatinised. Subiculum: hyaline and oily-yellowish (in KOH) to brown (in water and in Melzers) tightly arranged (almost parallel) hyphae 3 - 7 microns wide, some thick-walled, no clamps seen, branching at right angles. Not gelatinised. Clusters of angular pigments free-floating. In KOH there are scattered dark brown oily smooth-walled cylindrical cystidia (with crystals when seen in water).	Corymbia calophylla (marri).	14/06/2016
<i>Phellinus</i>	<i>sp.</i>	NLB 1431	Characteristic features: (i) context up to 6 cm thick, rusty brown, tough woody, obscurely zonate; (ii) hymenium of greyish-brown minute pores (4-5 per mm); (iii) KOH drops instantly turn context and hymenium black; (iv) micro: broad ellipsoid spores; no setae observed as being present. Odour: none.	Allocasuarina fraseriana.	05/07/2016
<i>Piloderma</i>	<i>cf. byssinum</i>	NLB 1429	Same as KP 142 (NLB 1097) with snowy white soft resupinate fruit bodies, easily and cleanly removable from the wood. Micro: Narrow angular crystal present on hyphae. Loose hymenium. No clamps. No cystidia. Hyphal system is monomitic. Spores: very small, subglobose, smooth/thin-walled, hyaline with a large guttule. odour: none. Spore print: white.	Banksia.	05/07/2016
<i>Piloderma</i>	<i>cf. byssinum</i>	NLB 1462	Soft white thin, easily removed patches. This matches KP142 formerly referred to as 'undet. resupinate grey soft' - NLB 1050, NLB 1097 etc. (Sample kept for DNA sequencing). Note: some pale yellowish stains in some parts of this collection. Micro: loosely arranged hyphae with sharp angular crystals observed. Odour: none.	Open woodland of jarrah, sheoak, banksia.	19/07/2016
<i>Pisolithus</i>	<i>microcarpus</i>	NLB 1366	Characteristic features: (i) cylindrical fruit bodies up to 90 mm tall x 15 mm wide often without swollen head but may be swollen in some up to 35 mm wide and then somewhat turbinate; (ii) gleba chocolate brown (not rusty) (near Methuen 7E7); (iii) flesh dense, hard to cut, dull yellowish but reddening slowly after cut; (iv) peridium dull yellowish-brown bruising black in parts; (v) base of stem lacking substantial rhizomorph development - some with a few thick short rhizomorphs. Odour: not distinctive.		03/06/2016
<i>Poria</i>	<i>sp.</i>	NLB 1382	Characteristic features: (i) fully resupinate, white when young, may be dull brownish-grey when old; (ii) small pores which may become curtain-like in some orientations; in section the tubes seem to be pale brown, no subiculum evident; (iii) margin not differentiated with pores present at the very edge of the fruit bodies. Micro: Basidia: small, cylindrical to utriform, e.g. 12 x 4 microns, 4-spored. Spores: small narrow cylindrical-suballantoid, not amyloid, size e.g. 5 x 1.8; 5.6 x 1.6; 4.8 x 1.5 microns. Cystidia: absent, terminals of the thick-walled hyphae are cylindrical. Hyphal system: Dimitic all hyphae are hyaline. Need to check for clamps. Odour: none. Spore print: white (maybe with faint pinkish tinge).	Eucalyptus cladocalyx.	14/06/2016

Genus	Species	Collection No.	Descriptive Notes	Plants	Date
<i>Psathyrella</i>	<i>cf. albidula</i>	NLB 1342	Characteristic features: (i) pileus campanulate, 5-10 mm diam., obscurely translucent-striate, surface smooth (glistening when viewed close up), dusky grey-brown, darkest at centre when moist, hygrophanous (becoming pale from centre outwards). (ii) stipe long-narrow, up to 60 x 1 mm, pale, pruinose at apex; (iii) lamellae loosely adnexed, dull dark grey to vinaceous brown, with minutely cystidiate paler edge. Odour: not distinctive. Spore print: black. Micro: Spores: narrow ellipsoid, thick/smooth-walled; with wide central truncate germ pore, dark brown in KOH; size e.g. 12.5 x 6.7; 12.3 x 6.6; 12.4 x 6.5; 11.8 x 6.7 microns. Cheilocystidia: abundant/crowded; lageniform, apex unswollen - size: e.g. 41 x 7.5; 50 x 10.4; 37 x 8.3; 28 x 6.7 microns; also shorter clavate forms - size e.g. 16 x 5; 11 x 6 microns. Basidia: spaeopedunculate, 4-spored, clamps at base, size e.g. 21 x 10; 22 x 11 microns.	Eucalyptus botryoides.	26/05/2016
<i>Psathyrella</i>	<i>bipellis</i>	NLB 1345	Characteristic features: (i) pileus red-brown when young, soon duller and markedly hygrophanous (pale from centre outwards) eventually entirely pale drab, conspicuously translucent-striate, up to 35 mm diam., when young with white appressed velar fibrils in band at the pileus margin; (ii) stipe up to 50 x 3 mm; pale shiny, finely longitudinally silky-fibrillose, apex pruinose; no annular zone evident; (iii) lamellae broadly adnexed, not particularly deep (up to 3 mm), pale at first, soon greyish, finally dark date / vinaceous brown. Note: pileus and lamellae are very easily broken when handled. Odour: not distinctive. Spore print: black (slight purplish tinge).	Eucalyptus botryoides.	26/05/2016
<i>Psathyrella</i>	<i>cf. tetrophylla</i>	NLB 1346	Characteristic features: (i) pileus when young bright orange-brown, soon dulling and strongly hygrophanous, finely translucent-striate, smooth, up to 25 mm diam., (ii) lamellae loosely adnexed, white in button, later dull greyish with paler finely cystidiate edge, crowded; (iii) stipe fragile, up to 50 x 30 mm, pale shiny smooth except pruinose at apex. Odour: not distinctive. Spore print: purplish-black. Micro: Spores: ellipsoid in profile, ovoid to triangular sometimes angular/6-sided in face view, smooth/slightly thick-walled; with central truncate germ pore sometimes protruding, greyish brown in KOH; size e.g. 7.6 x 5.8; 8.2 x 5.4; 7.7 x 4.8; 7.5 x 5.2; 7.8 x 4.9; 7.7 x 5.6 microns. Cheilocystidia: crowded; lageniform to utriform, some cylindrical, clavate. Pleurocystidia: scattered singly, lageniform to utriform with blunt apex, size: e.g. 44.3 x 10.4 microns. Basidia: e.g. 17 x 8.4 microns. Hyphae: clamped. Upper stipe: with a few isolated clusters of cystidia similar to the cheilocystidia.	Open woodland, with Marri, Acacia.	26/05/2016
<i>Psathyrella</i>	<i>candolleana</i>	NLB 1348	A robust-sized collection (pileus up to 80 mm diam.), with conspicuous white veil remnants on the pileus margin, and cream-coloured pileus. The stipe is hollow and easily broken upon handling. Odour: none. Spore print: purplish-date. Micro: Spores: ellipsoid with truncate germ pore, pale brown in KOH; size e.g. 7.1 x 4.4; 7.5 x 4.7; 7.7 x 4.4; 7.7 x 4.7 microns. Cheilocystidia: crowded, cylindrical to utriform, some apices slightly swollen, size e.g. 50 x 10.9; 43 x 16 microns. Veil from pileus margin: cylindrical hyphae 4 - 14 microns wide, smooth-walled - some with yellowish (in KOH) intra-wall pigment, clamps present but only on some septa.	Wood chipped road verge.	26/05/2016
<i>Scleroderma</i>	<i>areolatum</i>	NLB 1365	Fruitbodies: small - only up to 25x15 mm, ellipsoid, with a short but wide (e.g. up to 5 mm) cylindrical solid stalk (less than 5 mm tall) with a tuft of soil-encased white rhizomorphs below. peridium: thin (less than 1 mm wide), surface with small almost regularly-spaced brown flat scales on a paler yellowish-brown background. Gleba white, then deep purple with some dendritic (marble-like) whitish intrusions throughout (near 8F5 Methuen). The fruit bodies do not seem to fully dehisce and only partially rupture irregularly. Many unruptured fruit bodies have a powdery mature gleba, and therefore the fruitbodies with their rather thin peridium are quite soft/pliable when at that stage. Flesh: reddening slowly when cut, but this may fade after a few minutes. Odour: strong. Micro: spores globose, spinose with spines narrow sharp-pointed sometimes - a bit flexuous up to 2.5 microns long, size e.g. 10.8, 11.5, 12.7 microns diameter. Clamps absent.	Various planted trees (no eucalypts nearby).	03/06/2016
<i>Thelephora</i>	<i>sp.</i>	NLB 1471	Forming cushion-shaped densely coral-like growths up to 50 mm wide x 20 mm tall, without a substantial base. Young branches remain unbranched for most of their length then near the apex branch vertically into at least 5 (often 10) very crowded tips which are sometimes white at the extreme apex. Lower parts black and wrinkled, upper parts or most of length cocoa brown and minutely felt (under lens). When older entire branch lengths black, less tips are now white, and the upper branches flattened but each no more than 1 mm wide, many developing tapering sharp-pointed (though always soft texture) tips. No conspicuous mycelium below the fruit bodies. Odour: not distinctive. Spore print: brown? (poor print). 3% KOH instantly turns black. Probably belongs in <i>Thelephora</i> series <i>Palmatae</i> . Micro: Spores: ellipsoid in side view, triangular-lobed in face view, with isolated sparse sharp warts up to 0.7 microns tall; pale brown in KOH, apiculus prominent and tapering but pale, size e.g. 8.6 x 6.7; 9.2 x 6.6 microns. Basidia: long cylindrical often contorted, 4-spored with large sterigmata up to 10 microns long, size e.g. 36 x 8; 40 x 8.1 microns, clamped some with brownish or greenish-blue contents. Clamps: present on all septa. Cystidia: absent. Hyphae: greenish-bluish, some near black in KOH, not thick-walled, parallel walls (not inflated).	<i>Keraudrenia hermannifolia</i> .	25/07/2016
<i>Thelephora</i>	<i>sp.</i>	NLB 1472	Likely to be the same species as NLB 1471 (see notes for that) but with a different host plant. But note flatter, browner growth form. Same fungus was also observed today in nursery pots with each of the following plants: <i>Thomasia</i> sp., <i>Melaleuca</i> sp. Probably belongs in <i>Thelephora</i> series <i>Palmatae</i> . Micro: largely immature (very few spores); cyanescent hyphae and basidia (in KOH) similar to those in NLB 1471.	<i>Acacia sessilis</i> .	25/07/2016
<i>Trechispora</i>	<i>cf. microspora</i>	NLB 1461	Fully resupinate extensive sheets, very thin, white; surface minutely farinose under lens; no differentiated margin (just thin out); no rhizomorphs; not easily removed. NLB matches <i>Trechispora</i> e.g. some septa are ampullate; spores verrucose-spinose, non-reactive in Melzers. Possibly aligned with <i>T. microspora</i> : (i) fruit body thin, but note that NLB 1461 is not easily removed and doesn't look like it macroscopically (e.g. image, p 125, <i>Fungi of Switzerland</i> , Vol 2.); (ii) spores densely ornamented, small sized; (iii) ampullate septa present; (iv) narrow angular crystals present. Compare NLB 1461 with BOU 687 (PERTH 8565600) also affiliated with <i>T. microspora</i> and collected from the same location 6 years earlier. BOU 687 differs from NLB 1461 by having: (a) easily removed softer fruit body with rhizomorphs; (b) larger spores and basidia; (c) larger and more abundant crystals. Micro: Spores: broad ellipsoid to subglobose, hyaline, non reactive in Melzers, thin-walled, densely verrucose/spinose with spines up to 0.5 microns tall; size e.g. 3.6 x 3; 3.5 x 2.6; 3.5 x 2.3 microns. Basidia: short cylindrical (some slightly centrally constricted), 4-spored, e.g. 10 x 4 microns. Cystidia: absent. Hyphal system: monomitic, all hyaline thin-walled, 2-3.5 microns wide, clamps on all septa, most septa unswollen but some ampullate; Crystals: narrow sharp, dissolving in KOH. Conidia: none observed.	Open woodland of jarrah, sheoak, banksia.	19/07/2016
<i>Tubulicrinis</i>	<i>calothrix</i>	NLB 1430	Characteristic features: (i) grey farinose fully resupinate, glistening under lens; (ii) lycocystidia and elongate spores confirmed under microscopes. Odour: none.	<i>Allocasuarina fraseriana</i> .	05/07/2016
<i>Tylophilus</i>	<i>fuscobrunneus</i>	NLB 1410	Characteristic features: (i) hymenium pale greenish, instantly turning reddish when bruised then becomes intensely red-brown after a few minutes; (ii) flesh white but quickly dulls when cut and reddens and then develops very dark brown stains (flesh in stipe and pileus similar); (iii) pileus pale greyish with vinaceous tinge when young, then darker cigar brown (Brit. Flora Chart) still with vinaceous tinge evident in some mature specimens; (iv) stipe smooth, pale (bruises dark brown), without any vinaceous tinge evident in these specimens. Odour: not distinctive. Spore print: date brown (Brit. Flora Chart No. 24.)	Eucalyptus.	27/06/2016
<i>Volvopluteus</i>	<i>gloiocephalus</i>	NLB 1378	This is likely to be <i>V. gloiocephalus</i> even though characteristic features: (i) habit in grass; comparatively small size - pileus 50-65 mm diam., stipe 80-100 x 6-9 mm. Micro: Spores: ellipsoid, smooth/thick-walled size e.g. 14 x 7.9; 15 x 8.2; 14.5 x 8.1; 16 x 9 microns. Cheilocystidia: highly variable in shape - mainly clavate to fusoid to vesiculose sometimes with apical mucro, also can be cylindrical, smooth/thin-walled, hyaline, size e.g. 60 x 30 microns. Basidia: ventricose, 4-spored, granular-oily contents, size e.g. 38 x 13; 45 x 15 microns. Clamp connections: absent. Odour: grassy. Spore print: pinkish-brown (near Methuen 8D7).	Mowed grass.	14/06/2016