Fungal Network of New Zealand

New Zealand Mycological Society

Report: Fungal Foray

Rotorua 2023

This report was compiled by Adrienne Stanton, Mahajabeen Padamsee, Peter Johnston and Michael Bartlett. The report was reviewed by Jerry Cooper.

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Introduction

The Fungal Network of New Zealand (FUNNZ) is an independent non-profit incorporated mycological society open to anybody, more information can be found at funnz.co.nz. The objectives of the society are to share knowledge about and publicise the fungi of Aotearoa New Zealand, educate about fungi at primary to tertiary levels, stimulate and attract funding for mycological research, provide a cohesive group of amateur to professional people that share an interest in fungi, and to assist in cataloguing New Zealand's fungi and promote their conservation.

To advance these objectives the society organises an annual national fungal foray, where a different part of New Zealand is visited each year and surveyed for about a week. Sites proposed for surveys are selected to encompass a range of environments and vegetation types to maximise the likelihood of finding a wide range of fungi. Fungi are essential for ecosystem functioning, but very few of the estimated number of fungal species worldwide have been described. Investigating and cataloguing fungal diversity can help us to identify which fungi are present in New Zealand and understand their roles in different ecosystems.

The 1st NZ Fungal Foray was held in 1986, and FUNNZ maintains an archive of photos and documents collected since this first event (https://www.funnz.org.nz/forays). The 34 NZ Fungal Forays prior to 2023 have contributed greatly to the known diversity of fungi in New Zealand.

To identify fungi, FUNNZ need to collect specimens and use a variety of methods, including microscopy, DNA sequencing and culturing. To protect collected specimens into the future and place them where they can be of most value to scientific research, FUNNZ will transfer collections to either:

- The New Zealand Fungarium (Manaaki Whenua Landcare Research, Auckland)
- The Otago Regional Herbarium (University of Otago, Dunedin)
- The National Forestry Herbarium (Scion, Rotorua)

These collections are the foundation of research on fungal diversity in New Zealand. Occasionally, collections may be lent temporarily to other institutions, some overseas, to add to our knowledge about these specimens and find out how they are special.

FUNNZ endeavours to have minimal impact on the environment and fungal populations in each area. When fungal fruiting bodies are collected, only part of the fungus is removed from the environment while most of the fungus remains underground or in the substrate.

The 35th NZ Fungal Foray

This report presents the findings of the 35th NZ Fungal Foray held 21-27 May 2023 in Rotorua. There were 70 participants registered for the foray, including three international visitors. Participants met at the Netherlands Society Hall on the morning of Monday 21st May where they were welcomed with a whakatau to the area by Selwyn Insley (Ngāti Whakaue) and a karakia to open the event. Selwyn emphasised the connection and importance of the whenua to tangata whenua and the taonga status placed upon indigenous fungi.

After receiving information about the areas where we had permission and permits for surveying and collecting fungi, health and safety requirements and some housekeeping, participants were free to either begin surveying or attend a workshop for beginners held by David Whyte.

This year FUNNZ organised permits and permission to survey in the region around Rotorua from 11 areas on Public Conservation Land in addition to the Redwoods and Scion Research Park, reserves managed by the Rotorua District Council, and Hamurana Springs managed by Ngāti Rangiwewehi. In addition, access and permission to survey at Maungatautari Sanctuary Mountain was organised for Tuesday 22nd May 2023, with transport organised by FUNNZ.

Overall, 288 specimens were collected and deposited into collections, 236 specimens (171 from Rotorua and 65 from Maungatautari) were added to the NZ Fungarium (PDD) and are fully searchable online (https://scd.landcareresearch.co.nz/), 15 specimens were added to Scion's Forestry Herbarium (NZFRIM), and 37 to the Otago Regional Herbarium (OTA). A full list of all specimens collected is provided in Appendix 1.

Alongside collection of specimens, participants were encouraged to record observations using iNaturalist NZ. A total of 561 observations were recorded in the Rotorua area (Figure 1) and 168 were recorded at Maungatautari (Figure 2) these are fully searchable online (https://inaturalist.nz/projects/nz-fungal-foray).

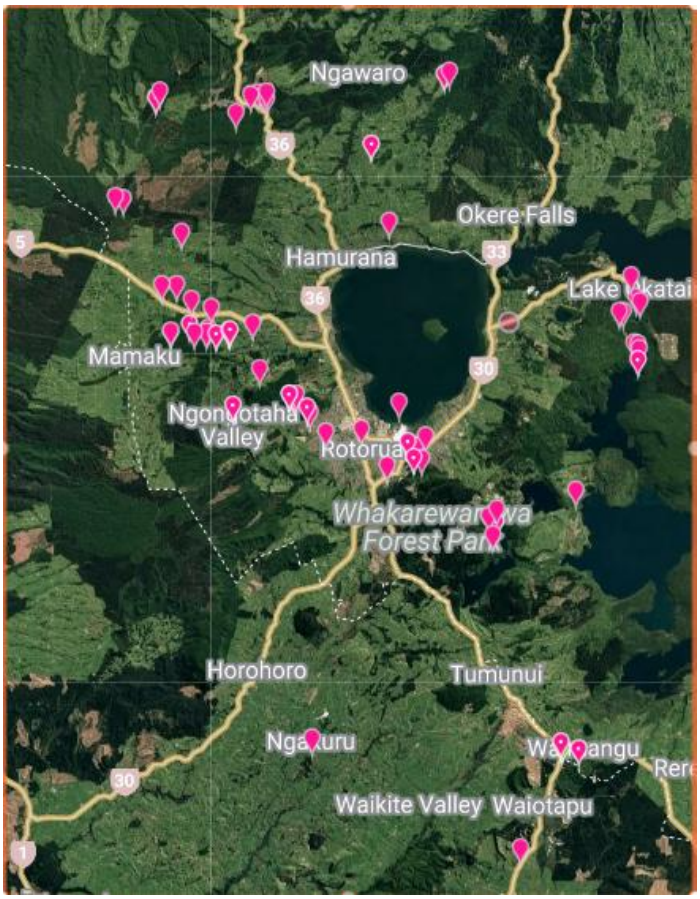

Figure 1: Map showing observations of fungi uploaded to iNaturalist as part of the NZ Fungal Foray project between 21-27th May 2023 in the Rotorua area, showing 561 observations made by 35 users.

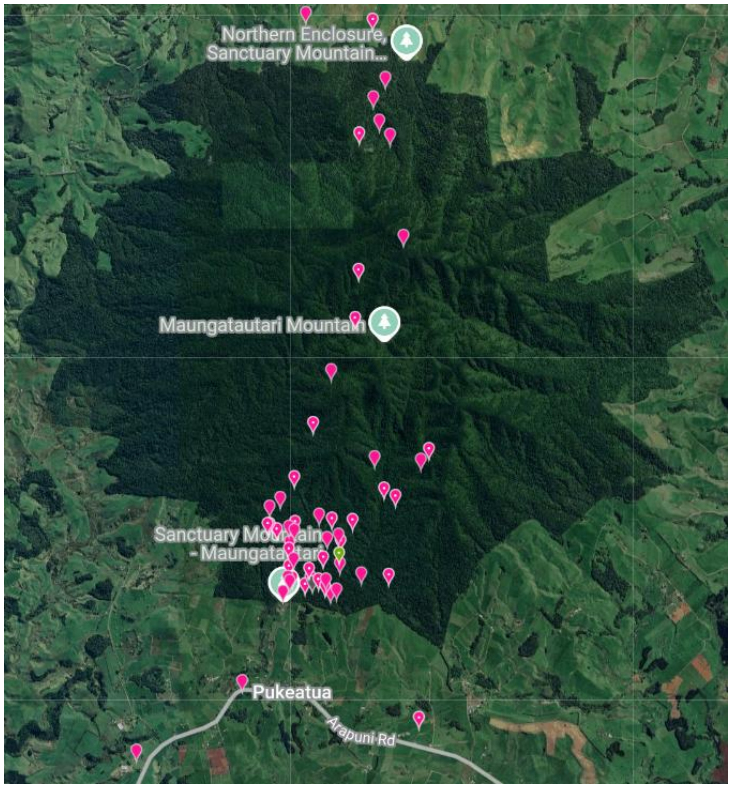

Figure 2: Map showing observations of fungi uploaded to iNaturalist as part of the NZ Fungal Foray project on 22nd May 2023 at Maungatautari Sanctuary Mountain, showing 168 observations made by 28 users.

Some interesting fungi

Beenakia dacostae was collected three times and recorded 14 times on iNaturalist. This fungus is on the IUCN red list as “near threatened” based on its rareness in Australia; however, under the DOC threat status criteria, *B. dacostae* would be listed as not threatened as it is common here in New Zealand. Nevertheless, the NZ Fungarium had less than 30 specimens from around Aotearoa, which makes these collections valuable.

Figure 3: *Beenakia dacostae*; Top ©synch_ and bottom ©Bryan Menger, some rights reserved (CC BY-NC) *https://inaturalist.nz/observations/163436428* and https://inaturalist.nz/observations/163742087

Pseudohydnum orbiculare was collected; these fruiting bodies are jelly-like, translucent white to pale grey or brown in colour.

Figure 4: *Pseudohydnum orbiculare*; ©rubenmita, some rights reserved (CC BY-NC). https://inaturalist.nz/observations/163062649

Phellodon nothofagi, a New Zealand endemic, was collected once.

Auriscalpium umbella, a toothed fungus which is usually associated with beech was found in Mangapapa conservation area.

Figure 5: *Auriscalpium umbella*.;Top ©David Orlovich and bottom ©David Whyte, some rights reserved (CC BY) *https://inaturalist.nz/observations/163571650* and https://inaturalist.nz/observations/163586777

The genus *Pseudomitrula*, previously known only from southern South America, was recognised for Aotearoa for the first time. Macromorphologically easily confused with *Microglossum rufum*, two specimens of the same species from Mangapapa were identified as this genus on the basis of ITS sequences. A later morphological comparison with other specimens in PDD originally identified as *Microglossum*, showed that this fungus is widespread in Nothofagus forests from Buller north.

Figure 6: *Pseudomitrula* sp.; ©rubenmita, some rights reserved (CC BY-NC) https://inaturalist.nz/observations/163067415

Paramyrothecium roridum was isolated from leaf spots on a kawakawa leaf (*Piper excelsum*) collected from Maungatautari sanctuary. This fungus is found around the world and commonly known to cause leaf spot and blight disease on a wide range of vegetables, ornamental plants, and economic crops. This is the second time *P. roridum* has been isolated from kawakawa in New Zealand, the other record being from the Buller district in 1994 (*https://scd.landcareresearch.co.nz/Specimen/PDD_64886*).

Figure 7: *Paramyrothecium roridum* isolated from leaf spots on a kawakawa leaf (*Piper excelsum*). ©Bevan Weir, some rights reserved (CC BY-NC).

21st Mycology Colloquium

The 21st Mycology Colloquium was held on Wednesday 24th May 2023 at Scion's Te Papa Tipu campus. There were twelve presentations, and the session was chaired by FUNNZ President David Orlovich. FUNNZ is grateful to Scion for sponsoring catering for the day. The programme with abstracts is provided in Appendix 2.

Figure 8: Attendees at the Mycology Colloquium and Fungal Foray outside Scion's Te Wharenui o Tuteata

School visit and outreach

On Thursday 25th May 2023 FUNNZ visited Lynmore Primary School and investigated Waitawa bush, a small area of native forest on the school grounds, looking for and collecting fungi while talking to students about the important role that fungi play in our ecosystems. Later that afternoon, students visited the Netherlands Society Hall where they looked at how fungi are stored and preserved for study and up close at fungi under the microscope. About 90 students visited Waitawa bush and another 90 visited the hall in groups of 30. FUNNZ is grateful to Lynmore School teachers and parent volunteers for facilitating this year's school visit.

Appendix 1: Foray List

Table is sorted alphabetically by Location. Accession codes for collections: Manaaki Whenua Landcare Research - The New Zealand Fungarium (PDD); University of Otago - The Otago Regional Herbarium (OTA); Scion - The National Forestry Herbarium (NZFRIM). All names provided are provisional identifications and subject to change on the basis of additional evidence or taxonomic revision. The FUNNZ foray lists should not be taken as evidence for the presence of a taxon in New Zealand, please refer to https://biotanz.landcareresearch.co.nz/ for the most up to date information.

Accession Number	FUNNZ ID	Fungus Name	Determiner	Substrate	Host	Location	Collector	Collection Date
PDD 121600	2023/329	Entoloma canoconicum E. Horak	H.S. Chan			Dansey Road Scenic reserve	H.S. Chan	22/05/2023
PDD 121625	2023/1839	Plectania rhytidia (Berk.) Nannf. & Korf 1957	J.A. Cooper	dead wood		Dansey Road Scenic reserve	C. Costello	22/05/2023
PDD 121626	2023/1862	Austeria citrea (Berk.) Miettinen	P. Gloyn	broken branch		Dansey Road Scenic reserve	E. Kaiser	22/05/2023
PDD 121630	2023/1928	Gliophorus vidigris		Native forest floor		Dansey Road Scenic reserve	K. Jacobsen	22/05/2023
PDD 121698	2023/1780	Hygrocybe (Fr.) P. Kumm.	C. Costello	leaf litter		Dansey Road Scenic reserve	C. Costello	22/05/2023
NZFRIM6062	2023/0298	Pseudohydnum totarae (Lloyd) J.A. Cooper 2022	Cooper, J.	Fallen Tree	Sequoia sempervirens (D.Don) Endl.	Hamurana Springs	M.J. Bartlett	26/05/2023
NZFRIM6063	2023/0352	Psathyrella sp.		Soil		Hamurana Springs	M.J. Bartlett	26/05/2023
NZFRIM6065	2023/0358	Mycena sp.		Wood, standing tree		Hamurana Springs	M.J. Bartlett	26/05/2023
NZFRIM6066	2023/0364	Mycena sp.		Twig		Hamurana Springs	M.J. Bartlett	26/05/2023
NZFRIM6067	2023/1666	Hypholoma acutum (Cooke) E. Horak 1971	Cooper, J.	Fallen Tree	Sequoia sempervirens (D.Don) Endl.	Hamurana Springs	J. Alderton-Moss	26/05/2023
NZFRIM6069	2023/1684	Ascocoryne sp.		Growing on dead tree		Hamurana Springs	J. Alderton-Moss	26/05/2023

PDD 121183	2023/1718	Crocicreas Fr.	P.R. Johnston	dead frond, midrib	Dicksonia squarrosa (G.Forst.) Sw.	Kaharoa Forest and Onaia Ecological Area	P.R. Johnston	26/05/2023
PDD 121240	2023/1726	Clavulinopsis Overeem	P.R. Johnston	fallen bark		Kaharoa Forest and Onaia Ecological Area	R. Johansen	26/05/2023
PDD 121269	2023/1712	Lachnopsis Guatimosim, R.W. Barreto & Crous 2016	P.R. Johnston	dead frond	Dicksonia squarrosa (G.Forst.) Sw.	Kaharoa Forest and Onaia Ecological Area	P.R. Johnston	26/05/2023
PDD 121270	2023/1706	Lachnopsis Guatimosim, R.W. Barreto & Crous 2016	P.R. Johnston	dead frond, midrib	Dicksonia squarrosa (G.Forst.) Sw.	Kaharoa Forest and Onaia Ecological Area	P.R. Johnston	26/05/2023
PDD 121271	2023/1738	Erioscyphella Kirschst.	P.R. Johnston	dead frond	Cyathea smithii Hook.f.	Kaharoa Forest and Onaia Ecological Area	P.R. Johnston	26/05/2023
PDD 121540	2023/584	Tremellodendropsis (Corner) D.A. Crawford	M. Padamsee	humus between podocarp tree roots		Kaharoa Forest and Onaia Ecological Area	M. Padamsee, R. Johansen	26/05/2023
PDD 121542	2023/601	Tremellodendropsis (Corner) D.A. Crawford	M. Padamsee	in rimu duff from soil in bottom of depression	Dacrydium cupressinum Lamb.	Kaharoa Forest and Onaia Ecological Area	M. Padamsee	26/05/2023
PDD 121546	2023/634	Beenakia dacostae D.A. Reid	M. Padamsee	standing dead tree fern trunk	Cyatheales	Kaharoa Forest and Onaia Ecological Area	M. Padamsee, R. Johansen	26/05/2023
PDD 121549	2023/640	Lycoperdon	M. Padamsee	on dead branch		Kaharoa Forest and Onaia Ecological Area	M. Padamsee	26/05/2023
PDD 121550	2023/646	Xylaria Hill ex Schrank	M. Padamsee	bark and humus	Prumnopitys ferruginea (D.Don) de Laub.	Kaharoa Forest and Onaia Ecological Area	M. Padamsee	26/05/2023
PDD 121598	2023/289	Cladonia darwinii S.Hammer	M. Ford	Moss		Kaharoa Forest and Onaia Ecological Area	A. Mehta	22/05/2023
PDD 121599	2023/294	Hydnum crocidens Cooke		Moss by side of path		Kaharoa Forest and Onaia Ecological Area	A. Mehta	22/05/2023
PDD 121671	2023/996	Tremellochaete novozealandica	J.A. Cooper	fallen branch		Kaharoa Forest and Onaia Ecological Area	A.J. Stanton	26/05/2023

PDD 121687	2023/1139	Corticiales K.H. Larss.	M. Padamsee	piece of fallen tree fern trunk		Kaharoa Forest and Onaia Ecological Area	A.J. Stanton	26/05/2023
PDD 121219	2023/0028	Urnula campylospora (Berk.) Cooke 1892	P.R. Johnston	dead wood	Beilschmiedia tawa (A.Cunn.) Kirk	Lake Okataina Scenic Reserve	P. White	25/05/2023
PDD 121225	2023/0705	Microglossum Gillet 1879	P.R. Johnston	soil		Lake Okataina Scenic Reserve	L. Allison-Cooper	25/05/2023
PDD 121524	2023/473	Glutinoglossum glutinosum (Pers.) Hustad, A.N. Mill., Dentinger & P.F. Cannon	K. Jacobsen	rotten log		Lake Okataina Scenic Reserve	K. Jacobsen	25/05/2023
PDD 121525	2023/498	Humidicutis mavis (G. Stev.) A.M. Young	P. Kinney	ponga on ground	Cyathea	Lake Okataina Scenic Reserve	P. Kinney	25/05/2023
PDD 121526	2023/504	Hygrocybe lilaceolamellata (G. Stev.) E. Horak	K. Jacobsen	base of ponga	Cyatheales	Lake Okataina Scenic Reserve	K. Jacobsen	25/05/2023
PDD 121527	2023/510	Artomyces Jülich 1982 [1981]	J.A. Cooper	rotten log		Lake Okataina Scenic Reserve	K. Jacobsen	25/05/2023
PDD 121530	2023/534	Mycena subviscosa G. Stev.	K. Jacobsen	ponga	Cyathea	Lake Okataina Scenic Reserve	K. Jacobsen	25/05/2023
PDD 121533	2023/552	Gliophorus viridis (G. Stev.) E. Horak		Soil		Lake Okataina Scenic Reserve	J. Plowman	23/05/2023
PDD 121535	2023/570	Cuphophyllus austropratensis (A.M. Young) J.A. Cooper	J.A. Cooper	Soil		Lake Okataina Scenic Reserve	J. Plowman	23/05/2023
PDD 121554	2023/711	Hypomyces (Fr.) Tul. & C. Tul. 1860	L. Allison-Cooper		Geoglossum Pers. 1794	Lake Okataina Scenic Reserve	L. Allison-Cooper	25/05/2023
PDD 121561	2023/4	Metuloidea rhinocephala (Berk.) Miettinen	P. Gloyn	tawa	Beilschmiedia tawa (A.Cunn.) Kirk	Lake Okataina Scenic Reserve	P. Gloyn	25/05/2023
PDD 121575	2023/89	Pseudocyphellaria intricata (Delise) Vain.	M. Ford	windfall in tawa forest		Lake Okataina Scenic Reserve	M. Ford	25/05/2023
PDD 121577	2023/95	Parmotrema robustum (Degel.) Hale	M. Ford	windfall in tawa forest		Lake Okataina Scenic Reserve	M. Ford	25/05/2023

PDD 121579	2023/108	Sticta latifrons A.Rich.	M. Ford	corticolous on tawa	Beilschmiedia tawa (A.Cunn.) Kirk	Lake Okataina Scenic Reserve	M. Ford	25/05/2023
PDD 121581	2023/114	Pseudocyphellaria carpoloma (Delise) Vain.	M. Ford	windfall in tawa forest		Lake Okataina Scenic Reserve	M. Ford	25/05/2023
PDD 121584	2023/120	Sticta babingtonii D.J.Galloway	M. Ford	fallen tawa	Beilschmiedia tawa (A.Cunn.) Kirk	Lake Okataina Scenic Reserve	M. Ford	25/05/2023
PDD 121585	2023/126	Pannaria aff. minutiphylla	M. Ford	corticolous on tawa	Beilschmiedia tawa (A.Cunn.) Kirk	Lake Okataina Scenic Reserve	M. Ford	25/05/2023
PDD 121588	2023/155	Antrodiella citrea (Berk.) Ryvarden	B.S. Weir	very rotten small log	Beilschmiedia tawa (A.Cunn.) Kirk	Lake Okataina Scenic Reserve	L. Allison-Cooper	25/05/2023
PDD 121589	2023/159	Cuphophyllus austropratensis (A.M. Young) J.A. Cooper	H. S. Chan			Lake Okataina Scenic Reserve	H. S. Chan	25/05/2023
PDD 121590	2023/167	Peach Hygrocybe	L. Allison-Cooper	Soil	Beilschmiedia tawa (A.Cunn.) Kirk	Lake Okataina Scenic Reserve	L. Allison-Cooper	25/05/2023
PDD 121591	2023/186	Pterulicium Corner	H. S. Chan	Tree fern		Lake Okataina Scenic Reserve	H. S. Chan	25/05/2023
PDD 121595	2023/271	Physma chilense Hue	M. Ford	live tree		Lake Okataina Scenic Reserve	A. Mehta	23/05/2023
PDD 121597	2023/277	Sticta limbata (Sm.) Ach.	M. Ford	live tree branch		Lake Okataina Scenic Reserve	J. Plowman	23/05/2023
PDD 121602	2023/384	Pseudohydnum gelatinosum (Scop.) P. Karst.	M. Padamsee	rotten wood		Lake Okataina Scenic Reserve	A. da Silva	25/05/2023
PDD 121629	2023/1927	Microglossum rufum (Schwein.) Underw. 1896	K. Jacobsen	Rotting stump		Lake Okataina Scenic Reserve	K. Jacobsen	24/05/2023
PDD 121638	2023/1980	Humidicutis horakii J.A. Cooper 2023	B. Menger	Soil		Lake Okataina Scenic Reserve	B. Menger	25/05/2023
PDD 121639	2023/1986	Gliophorus viridis (G. Stev.) E. Horak	M. Padamsee	Soil		Lake Okataina Scenic Reserve	B. Menger	25/05/2023

PDD 121640	2023/1998	Cordyceps sinclairii Berk. 1855	B. Menger	cicada	Cicadidae	Lake Okataina Scenic Reserve	B. Menger	25/05/2023
PDD 121690	2023/1707	Pannaria araneosa (C.Bab.) Hue	M. Ford	windfall on tawa	Beilschmiedia tawa (A.Cunn.) Kirk	Lake Okataina Scenic Reserve	M. Ford	25/05/2023
PDD 121691	2023/1713	Psoromidium aleuroides (Stirt.) D.J.Galloway	M. Ford	corticolous at base of tawa	Beilschmiedia tawa (A.Cunn.) Kirk	Lake Okataina Scenic Reserve	M. Ford	25/05/2023
PDD 121692	2023/1719	Dictyonema sericeum (Sw.) Berk.	M. Ford	corticolous on tawa	Beilschmiedia tawa (A.Cunn.) Kirk	Lake Okataina Scenic Reserve	M. Ford	25/05/2023
PDD 121693	2023/1725	Megalospora gompholoma subsp. gompholoma	M. Ford	corticolous on tawa	broadleaf twa	Lake Okataina Scenic Reserve	M. Ford	25/05/2023
PDD 121694	2023/1731	Lecanora queenslandica C.Knight	M. Ford	windfall in tawa forest		Lake Okataina Scenic Reserve	M. Ford	25/05/2023
PDD 121193	2023/0672	Lachnopsis Guatimosim, R.W. Barreto & Crous 2016	P.R. Johnston	dead frond, midrib	Dicksonia squarrosa (G.Forst.) Sw.	Mangapapa Conservation Area	P.R. Johnston	22/05/2023
PDD 121198	2023/0702	Asterocalyx Höhn.	P.R. Johnston	dead frond	Dicksonia squarrosa (G.Forst.) Sw.	Mangapapa Conservation Area	P.R. Johnston	22/05/2023
PDD 121201	2023/0898	Ascocoryne J.W. Groves & D.E. Wilson	P.R. Johnston	decorticated wood		Mangapapa Conservation Area	A. Chinn	22/05/2023
PDD 121211	2023/0660	Pseudomitrula Gamundí 1980 [1979]	P.R. Johnston	rotten wood		Mangapapa Conservation Area	P.R. Johnston	22/05/2023
PDD 121212	2023/1070	Pseudomitrula Gamundí 1980 [1979]	P.R. Johnston	rotten fallen log		Mangapapa Conservation Area	A.J. Stanton	22/05/2023
PDD 121227	2023/0714	Xylaria Hill ex Schrank	P.R. Johnston	dead leaf	Astelia	Mangapapa Conservation Area	P.R. Johnston	22/05/2023
PDD 121241	2023/1732	Trichoglossum Boud. 1885	P.R. Johnston	litter		Mangapapa Conservation Area	R. Johansen	26/05/2023
PDD 121250	2023/0678	Lachnum Retz.	P.R. Johnston	dead leaf	Astelia	Mangapapa Conservation Area	P.R. Johnston	22/05/2023

PDD 121268	2023/0767	Lachnopsis Guatimosim, R.W. Barreto & Crous 2016	P.R. Johnston	dead frond	Dicksonia squarrosa (G.Forst.) Sw.	Mangapapa Conservation Area	P.R. Johnston	22/05/2023
PDD 121516	2023/407	Cladonia scabriuscula	M. Ford	terricolous		Mangapapa Conservation Area	M. Ford	22/05/2023
PDD 121517	2023/425	Cladonia cucullata	M. Ford	terricolous, heathy soil		Mangapapa Conservation Area	M. Ford	22/05/2023
PDD 121518	2023/4423	Rossbeevera pachydermis (Zeller & C.W. Dodge) T. Lebel	A. Chinn	Soil	Beech	Mangapapa Conservation Area	A. Chinn	24/05/2023
PDD 121521	2023/429	Phlebia scarlatina (P.K. Buchanan & Hood) J.A. Cooper 2023	A. Chinn	dead wood on living tree	Pseudopanax	Mangapapa Conservation Area	A. Chinn	24/05/2023
PDD 121537	2023/588	Tricholoma sp.Manapouri	N. Siegel	Soil or very well developed wood		Mangapapa Conservation Area	D. Hera	22/05/2023
PDD 121541	2023/600	Cortinarius viridipileatus?	D. Hera	Soil	Fuscospora fusca	Mangapapa Conservation Area	D. Hera	22/05/2023
PDD 121547	2023/636	Urnula campylospora (Berk.) Cooke 1892	J.A. Cooper	dead wood		Mangapapa Conservation Area	D. Hera	22/05/2023
PDD 121556	2023/785	Rossbeevera pachydermis (Zeller & C.W. Dodge) T. Lebel	B.S. Weir	Soil	Red beech	Mangapapa Conservation Area	B.S. Weir	22/05/2023
PDD 121557	2023/791	Clavulina sp. 'Blackball (PDD 107092)' J.A. Cooper ined. 2020	J.A. Cooper	Soil	Lophozonia menziesii (Hook.f.) Heenan & Smissen	Mangapapa Conservation Area	B.S. Weir	22/05/2023
PDD 121562	2023/12	Bunodophoron scrobiculatum (C.Bab.) Wedin	M. Ford			Mangapapa Conservation Area	M. Ford	22/05/2023
PDD 121569	2023/52	Russula Pers.	D. Whyte	duff	Nothofagaceae	Mangapapa Conservation Area	D. Whyte	25/05/2023
PDD 121570	2023/58	Clavulina J. Schröt.	J.A. Cooper	duff		Mangapapa Conservation Area	D. Whyte	25/05/2023

PDD 121572	2023/70	Inocybe (Fr.) Fr.	D. Whyte	wood, moss, leaves	Beech	Mangapapa Conservation Area	D. Whyte	25/05/2023
PDD 121574	2023/83	Hypotrachyna osseoalba	M. Ford	Corticolous	Pinus	Mangapapa Conservation Area	M. Ford	22/05/2023
PDD 121578	2023/96	Psathyrella cf.echinata	M. Padamsee	Rotting stump		Mangapapa Conservation Area	A.J. Stanton	22/05/2023
PDD 121603	2023/389	Cladonia verticilliata	M. Ford	terricolous		Mangapapa Conservation Area	M. Ford	22/05/2023
PDD 121604	2023/395	Cladonia humilis	M. Ford	Lignicolous		Mangapapa Conservation Area	M. Ford	22/05/2023
PDD 121606	2023/828	Laccaria proxima (Boud.) Pat.	J.A. Cooper	Roadside gravel		Mangapapa Conservation Area	B.S. Weir	22/05/2023
PDD 121607	2023/834	Leotia lubrica sensu NZ	B.S. Weir	Soil	Red beech	Mangapapa Conservation Area	B.S. Weir	22/05/2023
PDD 121608	2023/835	Hypotrachyna horrescens (Taylor) Krog & Swinscow	M. Ford	Corticolous on Pine	Pine	Mangapapa Conservation Area	M. Ford	22/05/2023
PDD 121609	2023/836	Clavulina sp.	N. Siegel	Soil		Mangapapa Conservation Area	A. Chinn	22/05/2023
PDD 121611	2023/848	Ceratobasidium D.P. Rogers	A. Chinn	log		Mangapapa Conservation Area	A. Chinn	22/05/2023
PDD 121612	2023/862	Entoloma distinctum E. Horak	S. Kerr	Moss	tea tree	Mangapapa Conservation Area	A. Chinn	22/05/2023
PDD 121616	2023/857	Tyromyces guttulatus sensu G. Cunn. 1965	P. Gloyn	Fuscospora fusca	Fuscospora fusca	Mangapapa Conservation Area	P. Gloyn	22/05/2023
PDD 121618	2023/897	Cladonia macilenta Hoffm.	M. Ford	terricolous, heathy soil		Mangapapa Conservation Area	M. Ford	22/05/2023
PDD 121641	2023/900	Geoglossaceae Corda 1838	P. Gloyn	Fuscospora fusca	Fuscospora fusca	Mangapapa Conservation Area	P. Gloyn	22/05/2023
PDD 121642	2023/903	Hypotrachyna sinuosa	M. Ford	Corticolous		Mangapapa Conservation Area	M. Ford	22/05/2023
PDD 121643	2023/909	Cladonia corniculata (L.) Hoffm.	M. Ford	Terricolous amongst moss Campylopus clavatus		Mangapapa Conservation Area	M. Ford	22/05/2023

PDD 121645	2023/922	Auriscalpium umbella Maas Geest.	J.A. Cooper	Soil	Fuscospora fusca	Mangapapa Conservation Area	A. Chinn	22/05/2023
PDD 121646	2023/923	Parmotrema mellissii (C.W.Dodge) Hale	M. Ford	Windfall (corticolous)		Mangapapa Conservation Area	M. Ford	22/05/2023
PDD 121648	2023/932	Cortinarius tessiae Soop	C. Domnauer			Mangapapa Conservation Area	C. Domnauer	25/05/2023
PDD 121649	2023/956	Leotia lubrica (Scop.) Pers. 1797	A. Chinn			Mangapapa Conservation Area	C. Domnauer	25/05/2023
PDD 121650	2023/994	Tricholoma leptosperma	N. Siegel	Litter	Kunzea	Mangapapa Conservation Area	M. Padamsee	22/05/2023
PDD 121672	2023/999	Pterulaceae Corner	M. Padamsee	rotten twig		Mangapapa Conservation Area	M. Padamsee	22/05/2023
PDD 121673	2023/1000	Cordyceps tenuipes (Peck) Kepler, B. Shrestha & Spatafora 2017	B.S. Weir	insect?	Insect?	Mangapapa Conservation Area	M. Padamsee	22/05/2023
PDD 121674	2023/1005	corticioid	M. Padamsee	dead standing trunk		Mangapapa Conservation Area	M. Padamsee, A.J. Stanton	22/05/2023
PDD 121675	2023/1011	Corticiales K.H. Larss.	M. Padamsee	dead twig		Mangapapa Conservation Area	M. Padamsee, A.J. Stanton	22/05/2023
PDD 121676	2023/1012	Cortinarius (Pers.) Gray 1821	J.A. Cooper	Litter	Kunzea	Mangapapa Conservation Area	M. Padamsee	22/05/2023
PDD 121677	2023/1017	Calostoma rodwayi Lloyd	M. Padamsee	Soil amongst bryophytes	Fuscospora fusca	Mangapapa Conservation Area	A.J. Stanton	22/05/2023
PDD 121678	2023/1024	Clavulina sp. 'Blackball (PDD 107092)' J.A. Cooper ined. 2020	J.A. Cooper	Litter mound		Mangapapa Conservation Area	M. Padamsee	22/05/2023
PDD 121679	2023/1030	Gliophorus	M. Padamsee	On litter on dead standing tree		Mangapapa Conservation Area	M. Padamsee	22/05/2023
PDD 121680	2023/1042	Gymnopilus penetrans (Fr.) Murrill	B.S. Weir, J.A. Cooper	rotten log	Pinus	Mangapapa Conservation Area	B.S. Weir	22/05/2023
PDD 121681	2023/1058	Collybia	M. Padamsee	leaf litter	Fuscospora fusca	Mangapapa Conservation Area	A.J. Stanton, M. Ford	22/05/2023

PDD 121682	2023/1064	Cortinarius sp. 'Old Coach Road'	J.A. Cooper	humus, rotting log		Mangapapa Conservation Area	M. Padamsee, A.J. Stanton	22/05/2023
OTA 73584	2023/0916	Cortinarius sp.	A. Chinn	Soil	Nothofagus	Mangapapa Conservation Area	A. Chinn	22/05/2023
OTA 73592	2023/0007	Ascocoryne sp.	P. Johnston	Wood	Mixed beech and tea tree	Mangapapa Conservation Area	D. Orlovich	25/05/2023
OTA 73593	2023/0001	Cortinarius sp.	D. Orlovich	Soil	Mixed beech and tea tree	Mangapapa Conservation Area	D. Orlovich	25/05/2023
OTA 73594	2023/0038	Cortinarius sp.	D. Orlovich	Soil	Mixed beech and tea tree	Mangapapa Conservation Area	D. Orlovich	25/05/2023
OTA 73595	2023/0032	Leotia sp.	D. Orlovich	Soil	Mixed beech and tea tree	Mangapapa Conservation Area	D. Orlovich	25/05/2023
OTA 73596	2023/0039	Laccaria masoniae	D. Orlovich	Soil	Mixed beech and tea tree	Mangapapa Conservation Area	D. Orlovich	25/05/2023
OTA 73597	2023/0033	Cortinarius dulciolens	D. Orlovich	Soil	Mixed beech and tea tree	Mangapapa Conservation Area	D. Orlovich	25/05/2023
OTA 73598	2023/0045	Laccaria sp.	D. Orlovich	Soil	Mixed beech and tea tree	Mangapapa Conservation Area	D. Orlovich	25/05/2023
OTA 73599	2023/0080	Inocybe sp.	D. Orlovich	Soil	Mixed beech and tea tree	Mangapapa Conservation Area	D. Orlovich	25/05/2023
OTA 73600	2023/0074	Cortinarius sp.	D. Orlovich	Soil	Mixed beech and tea tree	Mangapapa Conservation Area	D. Orlovich	25/05/2023
OTA 73601	2023/0068	Inocybe sp.	D. Orlovich	Soil	Mixed beech and tea tree	Mangapapa Conservation Area	D. Orlovich	25/05/2023
OTA 73602	2023/0761	Auriscalpium umbella	D. Orlovich	Soil	Mixed beech and tea tree	Mangapapa Conservation Area	D. Orlovich	25/05/2023
OTA 73603	2023/0755	Clavaria sp.	D. Orlovich	Soil	Mixed beech and tea tree	Mangapapa Conservation Area	D. Orlovich	25/05/2023
OTA 73604	2023/0749	Cortinarius sp.	D. Orlovich	Soil	Mixed beech and tea tree	Mangapapa Conservation Area	D. Orlovich	25/05/2023

OTA 73605	2023/0743	Agaricales	D. Orlovich	Wood	Mixed beech and tea tree	Mangapapa Conservation Area	D. Orlovich	25/05/2023
OTA 73606	2023/0737	Inocybe sp.	D. Orlovich	Soil	Mixed beech and tea tree	Mangapapa Conservation Area	D. Orlovich	25/05/2023
OTA 73607	2023/0731	Auriscalpium umbella	D. Orlovich	Soil	Mixed beech and tea tree	Mangapapa Conservation Area	D. Orlovich	25/05/2023
OTA 75730	2023/0725	Cortinarius tessiae	D. Orlovich	Soil	Mixed beech and tea tree	Mangapapa Conservation Area	D. Orlovich	25/05/2023
PDD 121213	2023/0085	Helotiales Nannf. 1932	P.R. Johnston	soil under	Nothofagus	Mangorewa Ecological Area	D. Whyte	26/05/2023
PDD 121220	2023/0123	Phaeohelotium confusum (Dennis) Baral & P.R. Johnst.	D. Whyte	duff and roots	Nothofagus	Mangorewa Ecological Area	D. Whyte	26/05/2023
PDD 121567	2023/46	Trichoglossum Boud. 1885		leaf litter		Mangorewa Ecological Area	D. Whyte	26/05/2023
PDD 121568	2023/51	Cortinarius (Pers.) Gray 1821	D. Whyte	duff	beech	Mangorewa Ecological Area	D. Whyte	25/05/2023
PDD 121576	2023/91	Auriscalpium umbella Maas Geest.	D. Whyte	Soil		Mangorewa Ecological Area	D. Whyte	26/05/2023
PDD 121580	2023/111	Auriscalpium umbella Maas Geest.	D. Whyte	duff under beech and broadleaf		Mangorewa Ecological Area	D. Whyte	26/05/2023
PDD 121582	2023/117	Hygrophoraceae Lotsy	D. Whyte	beech and broadleaf duff		Mangorewa Ecological Area	D. Whyte	26/05/2023
PDD 121605	2023/401	Pulchrocladia retipora	A. Bradshaw	dirt (terricolous)		Mangorewa Ecological Area	A. Bradshaw	22/05/2023
PDD 121628	2023/1925	Auriscalpium umbella Maas Geest.	D. Whyte	Duff under beech	beech	Mangorewa Ecological Area	D. Whyte	26/05/2023
PDD 121647	2023/927	Geoglossum Pers. 1794	C. Domnauer			Mangorewa Ecological Area	C. Domnauer	22/05/2023
NZFRIM6059	2023/0397	Lycoperdon compactum G. Cunn. 1926 [1927]	Cooper, J.	Soil		Maungatautari	M.J. Bartlett, D. Herron	23/05/2023
NZFRIM6060	2023/0340	Crinipellis procera G. Stev. 1964	Hood, I.A.	Twig		Maungatautari	M.J. Bartlett, D. Herron	23/05/2023

NZFRIM6061	2023/0415	Rhizocybe albida (G. Stev.) J.A. Cooper 2015	Bartlett, M.J.	Fallen branch/wood		Maungatautari	M.J. Bartlett	23/05/2023
NZFRIM6075	2023/0326	Mikronegeria fuchsiae P.E. Crane & R.S. Peterson 2007	Bartlett, M.J.	living leaf	Fuchsia excorticata (J.R.Forst. & G.Forst.) L.f.	Maungatautari	M.J. Bartlett	23/05/2023
NZFS 5682	2023/0334	Paramyrothecium roridum (Tode) L. Lombard & Crous 2016	K. Dobbie	Living leaf, leaf spots	Piper excelsum G.Forst.	Maungatautari	M.J. Bartlett & D. Herron	23/05/2023
PDD 120786	2023/338	Plectania rhytidia (Berk.) Nannf. & Korf 1957		dead wood		Maungatautari	C. Costello	23/05/2023
PDD 120787	2023/269	Hericium Pers. 1794				Maungatautari	H. S. Chan	23/05/2023
PDD 120788	2023/344	Favolaschia pustulosa (Jungh.) Kuntze 1898	C. Costello	dead wood and moss		Maungatautari	C. Costello	23/05/2023
PDD 120789	2023/405	Geastrum Pers.	A. Chinn	Soil		Maungatautari	A. Chinn	23/05/2023
PDD 120790	2023/411	Rhizocybe albida (G. Stev.) J.A. Cooper	A. Chinn	log and tree fern trunk	Cyatheales	Maungatautari	A. Chinn	23/05/2023
PDD 120791	2023/454	Cookeina colensoi (Berk.) Seaver 1913	R. Johansen	twig		Maungatautari	R. Johansen	23/05/2023
PDD 120792	2023/475	Conchomyces bursiformis (Berk.) E. Horak	B. Menger	log		Maungatautari	B. Menger	23/05/2023
PDD 120793	2023/496	Strophariaceae Singer & A.H. Sm.	M. Padamsee	wood chip		Maungatautari	W. McLenachan	23/05/2023
PDD 120794	2023/530	Pseudohydnum orbiculare J.A. Cooper 2022		dead tree		Maungatautari	J. Alderton-Moss	23/05/2023
PDD 120795	2023/553	Clitocybe wellingtonensis G.M. Taylor & G. Stev.	N. Siegel	fern base	Pneumatopteris pennigera	Maungatautari	E. Kaiser	23/05/2023
PDD 120872	2023/563	Rhizocybe Vizzini, G. Moreno, P. Alvarado & Consiglio	R. Johansen	wood		Maungatautari	R. Johanson	23/05/2023
PDD 120873	2023/575	Entoloma ?latericolor	R Johansen	Soil		Maungatautari	R. Johanson	23/05/2023
PDD 120874	2023/661	Favolaschia pustulosa (Jungh.) Kuntze 1898	M. Padamsee	mossy log		Maungatautari	M. Padamsee	23/05/2023

PDD 120875	2023/667	Cerrena zonata (Berk.) H.S. Yuan		mossy log		Maungatautari	D. Park, M. Padamsee	23/05/2023
PDD 120876	2023/669	Hohenbuehelia Schulzer 1866	N. Siegel	large stick, rotten		Maungatautari	L. Allison-Cooper	23/05/2023
PDD 120877	2023/681	Trametes versicolor (L.) Lloyd	B.S. Weir	solid log	Beilschmiedia tawa (A.Cunn.) Kirk	Maungatautari	L. Allison-Cooper	23/05/2023
PDD 120878	2023/685	Hypoxylon cinnabarinum (Henn.) Y.M. Ju & J.D. Rogers 1996	P. Gloyn	decorticated mossy stump		Maungatautari	M. Padamsee	23/05/2023
PDD 120879	2023/691	Mycena (Pers.) Roussel 1806	M. Padamsee	dead tree fern stump	Cyatheales	Maungatautari	M. Padamsee	23/05/2023
PDD 120880	2023/762	Ramariopsis (Donk) Corner	J.A. Cooper	Soil		Maungatautari	D. Whyte	23/05/2023
PDD 120881	2023/810	Tremellodendropsis (Corner) D.A. Crawford	P. Gloyn	Soil		Maungatautari	P. Gloyn	23/05/2023
PDD 120882	2023/1085	Geastrum Pers.	A.J. Stanton	Soil		Maungatautari	A. J. Stanton	23/05/2023
PDD 120883	2023/1097	Scutellinia (Cooke) Lambotte 1887	M. Padamsee	wood		Maungatautari	M. Padamsee	23/05/2023
PDD 120884	2023/1979	Typhula?	A.J. Stanton	fallen leaves	Knightia excelsa	Maungatautari	A. J. Stanton	23/05/2023
PDD 121195	2023/0181	Lachnopsis Guatimosim, R.W. Barreto & Crous 2016	P.R. Johnston	dead frond	Dicksonia squarrosa (G.Forst.) Sw.	Maungatautari	P.R. Johnston	23/05/2023
PDD 121197	2023/0133	Lachnopsis Guatimosim, R.W. Barreto & Crous 2016	P.R. Johnston	dead frond	Dicksonia squarrosa (G.Forst.) Sw.	Maungatautari	P.R. Johnston	23/05/2023
PDD 121200	2023/0175	Lachnopsis sp. "circular hymenium" P.R. Johnst.	P.R. Johnston	dead frond, midrib	Dicksonia squarrosa (G.Forst.) Sw.	Maungatautari	P.R. Johnston	23/05/2023
PDD 121203	2023/0145	Hamatocanthoscypha Svr ek	P.R. Johnston	dead frond	Dicksonia squarrosa (G.Forst.) Sw.	Maungatautari	P.R. Johnston	23/05/2023
PDD 121205	2023/0157	Erioscyphella Kirschst.	P.R. Johnston	dead frond	Cyathea medullaris (G.Forst.) Sw.	Maungatautari	P.R. Johnston	23/05/2023

PDD 121207	2023/0127	Trichopeziza Fuckel	P.R. Johnston	dead frond	Dicksonia squarrosa (G.Forst.) Sw.	Maungatautari	P.R. Johnston	23/05/2023
PDD 121214	2023/0695	Crocicreas Fr.	P.R. Johnston	dead leaf	Collospermum hastatum (Colenso) Skottsb.	Maungatautari	P.R. Johnston	23/05/2023
PDD 121218	2023/0006	Trichoglossum Boud. 1885	P.R. Johnston	leaf litter		Maungatautari	M. Ford	23/05/2023
PDD 121222	2023/0484	Trichoglossum Boud. 1885	P.R. Johnston	soil		Maungatautari	R. Johansen	23/05/2023
PDD 121223	2023/0625	Microglossum Gillet 1879	P.R. Johnston	dead tree stump		Maungatautari	B. Burgess	23/05/2023
PDD 121224	2023/0675	Trichoglossum Boud. 1885	P.R. Johnston	soil		Maungatautari	L. Allison-Cooper	23/05/2023
PDD 121519	2023/423	Pseudocercospora aristoteliae (Cooke) Deighton	K. Dobbie	leaf	Aristotelia serrata (J.R.Forst. & G.Forst.) W.R.B.Oliv.	Maungatautari	M. Bartlett	23/05/2023
PDD 121520	2023/447	Akanthomyces Lebert	B.S. Weir	moth	Lepidoptera	Maungatautari	J. Alderton-Moss	23/05/2023
PDD 121523	2023/462	Akanthomyces Lebert	B.S. Weir	moth	Lepidoptera	Maungatautari	L. Allison-Cooper	23/05/2023
PDD 121545	2023/622	Geoglossum sp.	M. Padamsee	Mossy tree fern stump		Maungatautari	M. Padamsee	23/05/2023
PDD 121552	2023/679	Entoloma canoconicum E. Horak	M. Padamsee	on tree roots		Maungatautari	M. Padamsee	23/05/2023
PDD 121558	2023/815	Cordyceps tenuipes (Peck) Kepler, B. Shrestha & Spatafora 2017	B.S. Weir	Insect	Insecta	Maungatautari	B.S. Weir	23/05/2023
PDD 121559	2023/823	Cordyceps Fr. 1818	B.S. Weir	Insect	Insecta	Maungatautari	B.S. Weir	23/05/2023

PDD 121560	2023/827	Gliophorus sp. 'Tongariro (PDD 113608)' J.A. Cooper ined. 2021	J.A. Cooper	Soil		Maungatautari	B.S. Weir	23/05/2023
PDD 121563	2023/15	Clavulinopsis persicina (R.H. Petersen) J.A. Cooper 2023	J.A. Cooper	Soil		Maungatautari	B.S. Weir	23/05/2023
PDD 121583	2023/119	Beauveria bassiana (Bals.-Criv.) Vuill.	N. McKenzie	cricket	Orthoptera	Maungatautari	N. McKenzie	23/05/2023
PDD 121586	2023/142	Cordyceps / Ophiocordyceps	A. Chinn	rotten wood	Caterpillar	Maungatautari	A. Chinn	23/05/2023
PDD 121644	2023/911	Geastrum Pers.	D. Whyte	Duff, rotten wood		Maungatautari	D. Whyte	23/05/2023
PDD 121683	2023/1091	Typhula ?	A.J. Stanton	fallen leaf	Beilschmiedia tawa (A.Cunn.) Kirk	Maungatautari	A.J. Stanton	23/05/2023
PDD 121684	2023/1109	Hygrocybe julietae #1	J.A. Cooper	Litter		Maungatautari	M. Padamsee	23/05/2023
PDD 121695	2023/1737	Coenogonium luteum (Dicks) Kalb & Lücking	M. Ford	corticolous / lignicolous on tree fern base	Cyatheales	Maungatautari	M. Ford	23/05/2023
PDD 121696	2023/1743	Coenogonium lutescens (Vzda & Malcolm) Malcolm	M. Ford	corticolous / lignicolous on tree fern base	Cyatheales	Maungatautari	M. Ford	25/05/2023
PDD 121699	2023/23	Crinipellis procera G. Stev.	B.S. Weir	fallen twigs		Maungatautari	B.S. Weir	23/05/2023
PDD 121700	2023/27	Peniophorella subpraetermissa aff.	J.A. Cooper	rotten wood		Maungatautari	B.S. Weir	23/05/2023
PDD 121701	2023/48	Protubera Möller	P.R. Johnston	duff		Maungatautari	N. McKenzie	23/05/2023
PDD 121702	2023/88	Cladonia darwinii S.Hammer	M. Ford	tree fern base		Maungatautari	M. Ford	23/05/2023
PDD 121703	2023/94	Heterodermia leucomela (L.) Poelt	M. Ford	Windfall (corticolous)		Maungatautari	M. Ford	23/05/2023
PDD 121704	2023/100	Cladonia glebosa S.Hammer	M. Ford	corticolous at tree fern base	Cyatheales	Maungatautari	M. Ford	23/05/2023
PDD 121705	2023/106	Cladonia chlorophaea agg.	M. Ford	disturbed soil at fence base		Maungatautari	M. Ford	23/05/2023

PDD 121707	2023/113	Entoloma (Fr.) P. Kumm. 1871	J.A. Cooper	soil/duff		Maungatautari	N. McKenzie	23/05/2023
PDD 121708	2023/163	Penzigia	P.R. Johnston	dead wood		Maungatautari	R. Johansen	23/05/2023
PDD 121709	2023/164	Mutinus sp. 'Golden (PDD 113693)' J.A. Cooper ined. 2020	J.A. Cooper	ground		Maungatautari	R. Mita	23/05/2023
PDD 121710	2023/169	Orbilia Fr. 1836	P.R. Johnston	dead wood		Maungatautari	R Johansen	23/05/2023
PDD 121711	2023/182	Hygrocybe astatogala (R. Heim) Heinem.		ground		Maungatautari	R. Mita, I. Tollestrup	23/05/2023
PDD 121712	2023/195	Cyclocybe parasitica (G. Stev.) Vizzini				Maungatautari	H. S. Chan	23/05/2023
PDD 121713	2023/209	Stereopsis hiscens (Berk. & Ravenel) D.A. Reid	P. Gloyn	moss bank		Maungatautari	K. Novak	23/05/2023
PDD 121714	2023/240	Clavogaster virescens (Massee) J.A. Cooper				Maungatautari	C. Domnauer	23/05/2023
OTA 73585	2023/0833	Clavulinopsis sp.	D. Orlovich	Soil	Mixed native forest	Maungatautari	D. Orlovich	23/05/2023
OTA 73586	2023/0726	Hygrocybe miniata	D. Orlovich	Soil	Mixed native forest	Maungatautari	D. Orlovich	23/05/2023
OTA 73587	2023/0732	Crinipellis sp.	D. Orlovich	Soil	Mixed native forest	Maungatautari	D. Orlovich	23/05/2023
OTA 73588	2023/0738	Rhizocybe albida	D. Orlovich	Wood	Mixed native forest	Maungatautari	D. Orlovich	23/05/2023
OTA 73589	2023/0744	Galerina patagonica	D. Orlovich	Wood	Mixed native forest	Maungatautari	D. Orlovich	23/05/2023
OTA 73590	2023/0750	Gloioxanthomyces sp.	D. Orlovich	Soil	Mixed native forest	Maungatautari	D. Orlovich	23/05/2023
OTA 73591	2023/0756	Entoloma sp.	D. Orlovich	Soil	Mixed native forest	Maungatautari	D. Orlovich	23/05/2023

NZFRIM6068	2023/0330	Geastrum sp.	Bartlett, M.J.; Herron, D.	Soil and leaf litter		Ngongotahā Scenic reserve	M.J. Bartlett, D. Herron	22/05/2023
NZFRIM6078	2023/0427	Trametes velutina (Pers.) G. Cunn. 1965	Hood, I.A.	Dead log/wood		Ngongotahā Scenic reserve	M.J. Bartlett, D. Herron	22/05/2023
PDD 121204	2023/0719	Mollisiaceae Rehm 1871	P.R. Johnston	dead frond	Cyathea smithii Hook.f.	Ngongotahā Scenic reserve	P.R. Johnston	25/05/2023
PDD 121226	2023/0713	Xylaria Hill ex Schrank	P.R. Johnston	dead leaf	Astelia	Ngongotahā Scenic reserve	P.R. Johnston	25/05/2023
PDD 121242	2023/1812	Dermatea fumosa Cooke & W. Phillips	P.R. Johnston	fallen large log		Ngongotahā Scenic reserve	L. Allison-Cooper	26/05/2023
PDD 121272	2023/1801	Hymenoscyphus Gray 1821	P.R. Johnston	fallen petiole	Pseudopanax	Ngongotahā Scenic reserve	P.R. Johnston	25/05/2023
PDD 121528	2023/511	Geoglossum	B. Menger	Soil		Ngongotahā Scenic reserve	B. Menger	26/05/2023
PDD 121529	2023/523	Cordyceps tenuipes ?	B. Menger	silver fern	Cyathea dealbata (G.Forst.) Sw.	Ngongotahā Scenic reserve	B. Menger	26/05/2023
PDD 121531	2023/544	Geoglossum Pers. 1794	J.A. Cooper	Soil		Ngongotahā Scenic reserve	J. Alderton-Moss	25/05/2023
PDD 121532	2023/550	Clavogaster virescens (Massee) J.A. Cooper	J.A. Cooper	soil / leaf litter		Ngongotahā Scenic reserve	J. Alderton-Moss	25/05/2023
PDD 121534	2023/556	Gliophorus viridis (G. Stev.) E. Horak	J. Alderton-Moss	base of dead tree fern	Cyatheales	Ngongotahā Scenic reserve	J. Alderton-Moss	25/05/2023
PDD 121564	2023/19	Cerrena zonata (Berk.) H.S. Yuan	B.S. Weir	dead rotten log		Ngongotahā Scenic reserve	B.S. Weir	25/05/2023
PDD 121565	2023/26	Trametes Fr.	P. Gloyn	tawa	Beilschmiedia tawa (A.Cunn.) Kirk	Ngongotahā Scenic reserve	P. Gloyn	25/05/2023
PDD 121566	2023/37	Armillaria novae-zelandiae (G. Stev.) Herink	B.S. Weir	end of fallen rotten log		Ngongotahā Scenic reserve	B.S. Weir	25/05/2023
PDD 121601	2023/351	Oudemansiella australis G. Stev. & G.M. Taylor		tawa	Beilschmiedia tawa (A.Cunn.) Kirk	Ngongotahā Scenic reserve	A. Chinn	26/05/2023

PDD 121620	2023/1782	Lachnaceae Raitv. 2004	P.R. Johnston	large log	Beilschmiedia tawa (A.Cunn.) Kirk	Ngongotahā Scenic reserve	L. Allison-Cooper	26/05/2023
PDD 121621	2023/1788	Akanthomyces Lebert	Bevan Weir	moth on large mamaku	mamaku	Ngongotahā Scenic reserve	L. Allison-Cooper	26/05/2023
PDD 121622	2023/1794	Hypocreales Lindau 1897	B.S. Weir	cicada nymph	Cicadidae	Ngongotahā Scenic reserve	L. Allison-Cooper	26/05/2023
PDD 121623	2023/1806	Hypoxylon Bull. 1791	L. Allison-Cooper	dead branch	Beilschmiedia tawa (A.Cunn.) Kirk	Ngongotahā Scenic reserve	L. Allison-Cooper	26/05/2023
PDD 121633	2023/1956	Clavulinopsis Overeem		fallen tree fern	Cyatheales	Ngongotahā Scenic reserve	B. Menger	26/05/2023
PDD 121635	2023/1968	Polyporus nigrocristatus E. Horak & Ryvarden	J.A. Cooper	rotten mahoe	Melicytus ramiflorus J.R.Forst. & G.Forst.	Ngongotahā Scenic reserve	B. Menger	26/05/2023
PDD 121637	2023/1974	Trichocoma paradoxa Jungh.	B. Menger	rotten fallen tree trunk		Ngongotahā Scenic reserve	B. Menger	26/05/2023
PDD 121686	2023/1133	Crinipellis substipitaria G. Stev.	B.S. Weir, J.A. Cooper	fallen leaves	Beilschmiedia tawa (A.Cunn.) Kirk	Ngongotahā Scenic reserve	A.J. Stanton	25/05/2023
PDD 121697	2023/1770	Xylaria castorea Berk.	L. Allison-Cooper	large stick		Ngongotahā Scenic reserve	L. Allison-Cooper	26/05/2023
NZFRIM6070	2023/0920	Trametes coccinea (Fr.) Hai J. Li & S.H. He 2014	Gloyn, P.	Tree stump		Redwoods Forest and Scion tree research park	M.J. Bartlett	26/05/2023
NZFRIM6071	2023/0514	Flammulina velutipes (Curtis) P.Karst. ex Singer 1951 [1949]	Bartlett, M.J.	Wood/stump		Redwoods Forest and Scion tree research park	M.J. Bartlett	25/05/2023
PDD 121538	2023/592	Tremellodendropsis pusio (Berk.) D.A. Crawford	M. Padamsee	Sequioa duff	Sequoia	Redwoods Forest and Scion tree research park	M. Padamsee	25/05/2023

PDD 121539	2023/598	Mycena (Pers.) Roussel 1806	M. Padamsee	Sequioa duff	Sequoia	Redwoods Forest and Scion tree research park	M. Padamsee	25/05/2023
PDD 121543	2023/604	Mycena subviscosa G. Stev.	J.A. Cooper	Sequioa duff	Sequoia	Redwoods Forest and Scion tree research park	M. Padamsee	25/05/2023
PDD 121544	2023/610	Gliophorus lilacipes	M. Padamsee	Sequioa duff	Sequoia	Redwoods Forest and Scion tree research park	M. Padamsee	25/05/2023
PDD 121548	2023/641	Beenakia dacostae D.A. Reid	D. Hera	Living tree fern	Dicksonia squarrosa (G.Forst.) Sw.	Redwoods Forest and Scion tree research park	D. Hera	24/05/2023
PDD 121551	2023/647	Beenakia dacostae D.A. Reid	D. Hera	Living tree fern	Dicksonia squarrosa (G.Forst.) Sw.	Redwoods Forest and Scion tree research park	D. Hera	24/05/2023
PDD 121553	2023/709	Hygrocybe (Fr.) P. Kumm.	M. Padamsee	Sequioa duff	Sequoia	Redwoods Forest and Scion tree research park	M. Padamsee, A. Chinn	25/05/2023
PDD 121573	2023/82	Truncospora ochroleuca (Berk.) Pilát ex S. Ito	P. Gloyn	wood, branch		Redwoods Forest and Scion tree research park	D. Whyte	24/05/2023
PDD 121592	2023/190	Geoglossum Pers. 1794	A. Chinn		Sequoia	Redwoods Forest and Scion tree research park	A. Chinn	25/05/2023
PDD 121593	2023/102	Clavulina	N. Siegel	Litter		Redwoods Forest and Scion tree research park	R. Johansen	22/05/2023
PDD 121610	2023/845	Stereum Pers.	P. Gloyn	wood		Redwoods Forest and Scion tree research park	P. Gloyn	22/05/2023
PDD 121613	2023/872	Pseudohydnum orbiculare J.A. Cooper 2022	A. Chinn	Sequoia log	Sequoia	Redwoods Forest and Scion tree research park	A. Chinn	25/05/2023

PDD 121614	2023/875	Samsoniella Mongkols., Noisrip., Thanakitp., Spatafora & Luangsa-ard	B.S. Weir	Bag moth cocoon	Liothula omnivora	Redwoods Forest and Scion tree research park	P. Gloyn	23/05/2023
PDD 121617	2023/896	Russula amoenolens Romagn.	A. Chinn	Soil	red oak	Redwoods Forest and Scion tree research park	A. Chinn	23/05/2023
PDD 121619	2023/891	Usnea angulata	M. Ford	Corticolous on Pinus	Pinus	Redwoods Forest and Scion tree research park	M. Ford	22/05/2023
PDD 121627	2023/1924	Beenakia dacostae D.A. Reid	J.A. Cooper	Living tree fern	Dicksonia squarrosa (G.Forst.) Sw.	Redwoods Forest and Scion tree research park	D. Hera	24/05/2023
OTA 73573	2023/0853	Favolaschia claudopus	D. Orlovich	Wood	Mixed exotic and native forest	Redwoods Forest and Scion tree research park	D. Orlovich	22/05/2023
OTA 73574	2023/0859	Pholiota sp.	D. Orlovich	Soil	Eucalyptus regnans	Redwoods Forest and Scion tree research park	D. Orlovich	22/05/2023
OTA 73575	2023/0865	Descolea gunnii	D. Orlovich	Soil	Eucalyptus regnans	Redwoods Forest and Scion tree research park	D. Orlovich	22/05/2023
OTA 73576	2023/0871	Laccaria sp.	D. Orlovich	Soil	Eucalyptus regnans	Redwoods Forest and Scion tree research park	D. Orlovich	22/05/2023
PDD 121571	2023/60	Polycephalomyces sp. nov.	B.S. Weir	cicada	Cicadidae	Rotorua, Rainbow Mountain	B. Burgess	24/05/2023
PDD 121596	2023/576	Hydnum crocidens Cooke	M. Padamsee	Soil	Kanuka	Rotorua, Rainbow Mountain	R. Johansen	22/05/2023
PDD 121624	2023/1810	Austroboletus niveus (G. Stev.) Wolfe	B.S. Weir, J.A. Cooper	mossy bed under manuka	Leptospermum scoparium J.R.Forst. & G.Forst.	Rotorua, Rainbow Mountain	R. McDougal	25/05/2023
OTA 73572	2023/0885	Humidicutis luteovirens	S. Kerr	Soil and moss	Manuka/kanuka	Rotorua, Rainbow Mountain	A. Nilsen	22/05/2023

OTA 73577	2023/0877	Entoloma distinctum	S. Reekies	Soil and moss	Manuka/kanuka	Rotorua, Rainbow Mountain	D. Orlovich	22/05/2023
OTA 73578	2023/0883	Hydnum crocidens	S. Reekies	Soil and moss	Manuka/kanuka	Rotorua, Rainbow Mountain	D. Orlovich	22/05/2023
OTA 73579	2023/0889	Descolea phlebophora	S. Reekies	Soil and moss	Manuka/kanuka	Rotorua, Rainbow Mountain	D. Orlovich	22/05/2023
OTA 73580	2023/0895	Agaricales		Soil and moss	Manuka/kanuka	Rotorua, Rainbow Mountain	D. Orlovich	22/05/2023
OTA 73581	2023/0901	Geoglossum sp.	D. Orlovich	Soil and moss	Manuka/kanuka	Rotorua, Rainbow Mountain	D. Orlovich	22/05/2023
OTA 73582	2023/0907	Pisolithus sp.	D. Orlovich	Soil	Manuka/kanuka	Rotorua, Rainbow Mountain	D. Orlovich	22/05/2023
OTA 73583	2023/0913	Cortinarius sp.	A. Nilsen	Soil and moss	Manuka/kanuka	Rotorua, Rainbow Mountain	A. Nilsen	22/05/2023
NZFRIM6064	2023/1694	Pholiota glutinosa (Massee) E. Horak 1971	Gloyn, P.	Wood		Tarawera	S. Tana	26/05/2023
PDD 121688	2023/1600	Phellodon nothofagi McNabb 1971		wood		Tarawera	A. Tana	26/05/2023
PDD 121689	2023/1699	Paurocotylis pila Berk.	A. Tana	Soil		Tarawera	A. Tana	26/05/2023
PDD 121172	2023/1807	Asterocalyx Höhn.	P.R. Johnston	dead frond	Dicksonia squarrosa (G.Forst.) Sw.	Tikitapu reserve and conservation area	P.R. Johnston	25/05/2023
PDD 121179	2023/1813	Lachnopsis sp. "circular hymenium" P.R. Johnst.	P.R. Johnston	dead frond, midrib	Dicksonia squarrosa (G.Forst.) Sw.	Tikitapu reserve and conservation area	P.R. Johnston	25/05/2023
PDD 121202	2023/1819	Crocicreas cf.	P.R. Johnston	dead frond	Dicksonia squarrosa (G.Forst.) Sw.	Tikitapu reserve and conservation area	P.R. Johnston	25/05/2023
PDD 121206	2023/1714	Trichopeziza Fuckel	P.R. Johnston	dead frond, midrib	Dicksonia squarrosa (G.Forst.) Sw.	Tikitapu reserve and conservation area	P.R. Johnston	25/05/2023
PDD 121249	2023/0193	Asterocalyx Höhn.	P.R. Johnston	dead frond	Dicksonia squarrosa (G.Forst.) Sw.	Tikitapu reserve and conservation area	P.R. Johnston	25/05/2023

PDD 121267	2023/0701	Lachnopsis Guatimosim, R.W. Barreto & Crous 2016	P.R. Johnston	dead frond	Dicksonia squarrosa (G.Forst.) Sw.	Tikitapu reserve and conservation area	P.R. Johnston	25/05/2023
PDD 121522	2023/461	Isaria sinclairii	P. Kinney	Soil		Tikitapu reserve and conservation area	P. Kinney	26/05/2023
PDD 121587	2023/147	Podoserpula tristis (D.A. Reid) J.A. Cooper 2023	P. Gloyn			Tikitapu reserve and conservation area	H.S. Chan	25/05/2023
PDD 121631	2023/1945	Pleurotus parsonsiae G. Stev.	D. Hera	Tree fern		Tikitapu reserve and conservation area	S. da Silva	23/05/2023
PDD 121632	2023/1953	Stereum sp.	P. Gloyn	rotten wood		Tikitapu reserve and conservation area	S. da Silva	23/05/2023
PDD 121634	2023/1959	Schizophyllum commune Fr.	P. Gloyn	rotten branch		Tikitapu reserve and conservation area	P. Kinney	23/05/2023
PDD 121636	2023/1970	Inocybe sidonia	N. Siegel	Side of the track/moss		Tikitapu reserve and conservation area	N. Siegel	23/05/2023
PDD 121685	2023/1123	Mycena ura Segedin	A.J. Stanton	fallen leaves		Tikitapu reserve and conservation area	A.J. Stanton	25/05/2023

Appendix 2: Mycology Colloquium programme

Wednesday 24th May 2023
21st Mycology Colloquium Program

Time	Speaker	Title
9:00–9:10	Michael Bartlett	Welcome and housekeeping
9:10–9:30	Noah Siegel	Exploring the unknown: making the case for more mycological data collections
9:30–9:50	Rebecca McDougal	Genomic, effector protein and culture-based analyses of *Cyclaneusma minus* in New Zealand provide further evidence for multiple morphotypes
9:50–10:10	Michael Howard	Update on medical mycology: the good, the bad and the “Last of Us”
10:10–10:30	David Orlovich	Mapping ectomycorrhizal fungi using eDNA
10:30–11:00		**Morning Tea**
11:00–11:20	Andy Nilsen	Convergent evolution of sequestrate fungi: the utility of dsiRNA in testing hypotheses in *Coprinopsis cinerea*
11:20–11:40	Ruben Mita	Effects of medium pH and UV-C exposure on fungal melanin production in *Fusarium oxysporum*
11:40–12:00	Marley Ford	New Zealand’s amazing diversity of lichens! An overview of our lichen flora
12:00–12:50		**Lunch**
12:50–1:00		**Foray photo**
1:00–1:20	Bevan Weir	The fungal strain behind the 2019 kākāpō aspergillosis outbreak
1:20–1:40	Kiryn Dobbie	Oomycete pathogens associated with declining taonga species
1:40–2:00	Alexander Bradshaw	Phylogenomic expansion of the “magic mushroom” genus *Psilocybe* reveals new insights into the structure of the psilocybin producing gene cluster
2:00–2:20	David Hera	Beyond the single individual: intraspecific variation in fungi matters
2:20–2:40	Darryl Herron	Untangling the mycelia: exploring mycological marvels and challenges when working with *Fusarium*
2:40–3:10	**Afternoon Tea**	

Abstracts[2]

Exploring the unknown: making the case for more mycological data collections

Noah Siegel[1], Jerry A Cooper[2]

[1]Royalston, MA USA; [2]Manaaki Whenua, Landcare Research, Lincoln, New Zealand

Many of New Zealand's fungi lack diagnostic field photographs, and multiple described species are poorly known, unphotographed and subject to conflicting concepts. Tasked with getting high resolution, diagnostic field photographs, collections, and barcoding sequences of macro fungi from New Zealand, this study finds a high percentage of undescribed species, and solidifies species concepts. Here we report and highlight interesting trends based on the results of 950+ collections.

Genomic, effector protein and culture based analyses of *Cyclaneusma minus* in New Zealand provide further evidence for multiple morphotypes

M Tarallo[1], K Dobbie[2], L Nunes Leite[2,3], T Waters[2], K Gillard[2], D Sen[2], RL McDougal[2], CH Mesarich[4], RE Bradshaw[1]

[1]School of Natural Sciences, Massey University, Palmerston North 4410, New Zealand; [2]Scion, Titokorangi Drive, Private Bag 3020, Rotorua 3046, New Zealand; [3]New Zealand Ministry of Primary Industries, PO Box 2095, Auckland 1140, New Zealand; [4]School of Agriculture and Environment, Massey University, Palmerston North 4410, New Zealand.

Cyclaneusma needle cast, caused by *Cyclaneusma minus*, affects *Pinus* species around the world. Previous studies suggested the presence of two distinct morphotypes in New Zealand, 'verum' and 'simile'. Traditional mycological analyses revealed a third morphotype with clear differences in colony morphology and cardinal growth rates at varying temperatures. Genome sequencing of eight *C. minus* isolates provided further evidence of the existence of a third morphotype, now named 'novus' in this study. To further analyse these morphotypes, we predicted candidate effector proteins for all eight isolates, and characterized a cell death eliciting effector family, Ecp32, which is also present in other pine phytopathogens. In concordance with their distinct classification into three different morphotypes, the number of Ecp32 family members differed between morphotypes, with patterns of pseudogenization and some family members being found exclusively in some morphotypes. We also showed that proteins belonging to the Ecp32 family triggers cell death responses in non-host *Nicotiana* species. Understanding the geographical range and variations in virulence and pathogenicity of these morphotypes will provide the better understanding of pine needle diseases as well as enabling the development of more durable methods to control this disease.

[2] For multi-authored talks, the presenting author is underlined.

Update on medical mycology: the good, the bad and the “Last of Us”

Michael Howard, MD PhD

Emergency Specialist, Molecular Immunologist; Te Tai Tokerau

Understanding emerging infections and their risk to human health has been the focus of microbiologists and immunologists scanning the world for flora (bacteria), fauna (parasites) and funga of concern. Fungal disease in humans are a major cause of morbidity and mortality worldwide, particularly among those living with immunocompromise or persons hospitalized with severe underlying illnesses. We will review recent literature focused on how human activity and climate change may play a role in epidemiologic changes we are witnessing in fungal infections. To counter the darkness inherent in the topic, the second part of our review will focus on recent advances in bringing “mycomedicinals” into the realm of acceptance in modern medical use.

Mapping ectomycorrhizal fungi using eDNA

David A Orlovich[1], Laura G van Galen[1], Ashleigh G Stanners[1], Sam A Lynskey[1], Sam T Lasham[1], Andy R Nilsen[1], Matthew J Larcombe[1], Janice M Lord[1], Tina C Summerfield[1], Chris M Brown[2]

[1]Department of Botany, University of Otago, PO Box 56, Dunedin 9054; [2]Department of Biochemistry, University of Otago, PO Box 56, Dunedin 9054.

Ectomycorrhizal fungi are ecologically important and diverse, for example in New Zealand, ca 50% of all mushroom species are associated with *Nothofagus*, and half of those fungal species are ectomycorrhizal. While taxonomic research to describe new fungal species progresses, the ephemeral nature of fungal fruit bodies and the irregularity of fruiting means that distribution of most ectomycorrhizal fungal species is poorly known. New ways to determine species distributions are required, and environmental DNA (eDNA) offers a promising way forward. We used data from > 4,000 hyphal ingrowth bags buried in soil at 81 sites dominated by *Nothofagus* across the South Island of New Zealand. We sequenced the internal transcribed spacer 2 (ITS2) region from the bags using Illumina MiSeq DNA sequencing. We made provisional, preliminary identifications of each amplicon sequence variant (ASV) using UNITE and used FUNGuild to extract the ectomycorrhizal taxa. The most diverse ectomycorrhizal fungal genus *Cortinarius* was found readily in the DNA sequence data from the hyphal ingrowth bags. By constructing rigorous phylogenies combining ASV sequences and reference DNA barcode sequences from herbarium collections, including type specimens, we can accurately identify and map the distribution of species from the hyphal ingrowth bags, in addition to discovering undescribed and novel taxa. This talk will demonstrate how the combination of eDNA and traditional specimen based collections will add much needed distributional information for problematic data-deficient fungi.

Convergent evolution of sequestrate fungi: the utility of dsiRNA in testing hypotheses in *Coprinopsis cinerea*

Andy R Nilsen[1], David T Chyou[2], Chris M Brown[2], Tina C Summerfield[1], Jonathan Plett[3], David A Orlovich[1]

[1]Department of Botany, University of Otago, Dunedin, New Zealand; [2]Department of Biochemistry, School of Biomedical Sciences, University of Otago, Dunedin, New Zealand; [3]Hawkesbury Institute for the Environment, University of Western Sydney, Australia

Sequestrate or 'truffle like' fungi have evolved enclosed spore bearing tissue making them heavily reliant on animals for dispersal. The transition from a mushroom to a truffle like morphology is believed to have been caused by past aridification events and selective pressures from animals. Moreover, the transition is irreversible. In the mushroom forming order of the Agaricales, sequestrate species have frequently and independently evolved from a mushroom-like ancestor. In just nine families of the Agaricales, there are no less than sixty instances of such transitions. Because there have been so many independent transitions, it is thought that relatively few gene are responsible. While the direction and some of the selective pressures are known, very little is understood of the underlying genetic basis for these transitions. To understand the genetic basis for these transitions, we compared the genomes from taxa in the Strophariaceae to identify genes that are missing from sequestrate taxa. Genes that are missing may have been involved in the morphological change. We aim to test these genes by knocking down the expression of these genes in the model mushroom *Coprinopsis cinerea*. We are currently trialling the use of exogenous applied dsiRNA to knock down genes. Here I will discuss some of our preliminary results and candidate genes of interest. I will also present some of the challenges with working with dsiRNA.

Effects of medium pH and UV-C exposure on fungal melanin production in *Fusarium oxysporum*

Ruben Mita

School of Biological Sciences, Victoria University of Wellington

The dark pigment melanin has been shown to play an important role in many aspects of fungal vitality, due to its role as a defence against multiple environmental stressors. In a Directed Individual Study paper supervised by Dr Nicola Day as part of my Postgraduate Diploma, I cultured the common pathogenic soil fungus *Fusarium oxysporum* on media of varying pH values, and also subjected cultures to UV-C radiation for varying amounts of time. Growth rate and colour were both measured. This project is ongoing until June 2023, and I will be presenting preliminary results as they are available at the time of this talk.

New Zealand's amazing diversity of lichens! An overview of our lichen flora

Marley Ford

Private Consultant

Lichens are a conspicuous part of New Zealand's ecosystems, but a group not well known by many. Working towards curing 'lichen blindness' this talk offers an introduction into the symbiotic world of fungi. From mountains to in the sea, lichen can survive anywhere…even space? In New Zealand we have 10% of the world's lichen diversity with more than 2050 species. Many more are undescribed or unreported. Of our currently recognised species over half are classed as "Data Deficient"—meaning we know little about their distribution, abundance, and ecology. Further, New Zealand currently has no full-time lichenologists and only a handful of people working on them at all. From sexy pavement lichen to one after Jacinda Ardern namesake– these enigmas are all around us! Find out what a lichen is, what they do and how you can go about identifying them, plus an outline where to find the best and most current lichen resources in New Zealand.

The fungal strain behind the 2019 kākāpō aspergillosis outbreak

David J Winter[1,2,10], Bevan S Weir[3], Travis Glare[4], Johanna Rhodes[5], John Perrott[6], Matthew C Fisher[5], Jason E Stajich[7], Kākāpō Aspergillosis Research Consortium, Andrew Digby[9], Peter K Dearden[2,8], Murray P Cox[1,2]

[1]School of Natural Sciences, Massey University, Palmerston North, New Zealand; [2]Genomics Aotearoa, University of Otago, Dunedin, New Zealand; [3]Manaaki Whenua – Landcare Research, Auckland, New Zealand; 4Department of Wine, Food & Molecular Bioscience, Lincoln University, Lincoln, New Zealand; [5]MRC Centre for Global Infectious Disease Analysis, Imperial College School of Public Health, Imperial College London, South Kensington, London SW7 2BX, UK; [6]School of Environmental Science, Faculty of Health and Environmental Science, Auckland University of Technology, Auckland, New Zealand; [7]Department of Microbiology and Plant Pathology, University of California, Riverside, Riverside, Riverside, CA, USA; [8]Department of Biochemistry, University of Otago, Dunedin, New Zealand; [9]Kakapo Recovery, Department of Conservation, Invercargill, New Zealand; [10]Present address: Institute of Environmental Science and Research, Wellington, New Zealand

Kākāpō are a critically endangered flightless parrot endemic to New Zealand, with only 201 individuals remaining on five predator-free offshore islands. They are subject to intensive management, particularly during breeding, which occurs every 2–3 years. During an unprecedentedly large breeding event in 2019, 21 adult females, chicks and juvenile kakapo were infected with the fungal pneumonia Aspergillosis on Whenua Hou/Codfish Island. Nine of the affected individuals died; the remainder were returned to the wild after intensive treatment. This only previous recorded case of Aspergillosis in kākāpō was in 2012, when a juvenile male died of the disease. Our objectives were to understand the fungal pathogen causing this disease, the identity, genetic diversity, and possible origins. *Aspergillus* isolates were obtained from 9 dead birds from the 2019

outbreak, and from the first case in 2012. *Aspergillus* isolates were also received from kākāpō nesting material, soil, and swab samples from island infrastructure. Historic *Aspergillus* cultures from the ICMP culture collection, and from kiwi nest samples were used in comparison with the kākāpō isolates. Genomes sequences were obtained from 24 fungal isolates using the Illumina platform. Initial gene sequences confirmed the fungi associated with disease as *Aspergillus fumigatus*. Three species *A. fumigatus*, *A. flavus*, and *A. niger* were isolated from kākāpō nests. An analysis of the genomic data including SNP differences between the isolates will be presented.

Oomycete pathogens associated with declining taonga species

K Dobbie[1], P Johnston[2], T Withers[1]

[1]Scion, Titokorangi Drive, Private Bag 3020, Rotorua 3046, New Zealand; [2]Manaaki Whenua – Landcare Research, Auckland

Over the last few years, pathologists have received reports of various native trees, including pōhutukawa, puriri, taraire and tōtara, declining in various parts of New Zealand. In the case of taraire, it is thought that the large die-offs we are seeing was brought on by drought. However, the trees have not recovered and continue to decline despite soil moisture returning to normal. It appears that the problem is more complex than drought, with other factors contributing to the decline of these trees. Several previous studies by Scion have sought to identify the biotic factors associated with our declining natives, including visiting the East Cape of the North Island in early 2021 with Raukūmara Pae Maunga Restoration Project to observe declining pōhutukawa and puriri; work on Waiheke Island with Peter Johnston (Manaaki Whenua) to assess the severe decline of taraire; and work on declining tōtara at the invitation of the Northland Totara Working Group over the past two years. Isolations from soil baiting of the rhizosphere around the declining trees yielded a number of oomycete species, including *Phytophthora multivora* and *Phytophythium vexans*. Given the consistent relationship of *P. multivora* and *Pp. vexans* with these declining hosts, a trial was planned to assess the pathogenicity of these oomycete pathogens on seedlings of two native host species, pōhutukawa (*Metrosideros excelsa*) and tōtara (*Podocarpus totara*).

Phylogenomic expansion of the “magic mushroom” genus *Psilocybe* reveals new insights into the structure of the psilocybin producing gene cluster

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The mushroom genus *Psilocybe* contains approximately 300 described species worldwide and is best known as the core group of psychedelic mushrooms. *Psilocybe* mushrooms have immense cultural value and have been used for centuries in indigenous Mesoamerica. In more recent years, *Psilocybe* spp. and their psychoactive compounds, psilocybin and psilocin, have been targeted as a promising therapeutic for a growing mental health crisis. Nevertheless, a thorough understanding of the diversity, taxonomy, and general biology of *Psilocybe* is very incomplete. To date, molecular diversity studies of the *Psilocybe* genus are severely lacking, and much of the known diversity has no evolutionary context. In this work, we set out to improve the predictive power to investigate questions about the evolution of *Psilocybe* spp. and their psychoactive chemistry by generating a more representative and highly supported phylogeny than has been available previously. We sequenced the metagenomes of 72 fungarium specimens vouchered as *Psilocybe*, including 23 types, expanding the diversity of *Psilocybe* genomic data nearly twentyfold. Further, using phylogenomic analysis of 2,983 single copy genes, we produced a robust phylogeny with all branches receiving strong statistical support. Our results largely confirm the two major clades previously recognized and provide new data on species relationships not previously known. Utilizing ab initio gene predictions, our results also reveal two distinct gene orders within the psilocybin biosynthetic gene cluster that show both phylogenetic and ecological correlations. This new information will be useful for a formal, molecular phylogenetic-based classification of *Psilocybe* and can help guide the search for new therapeutic chemicals and biosynthetic genes that can lead to improved human well-being.

Beyond the single individual: intraspecific variation in fungi matters

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Intraspecific variation plays an important role in evolution as a driver of natural selection, as well as artificial selection for breeding and food production. Likewise, interactions of fungi with biotic and abiotic factors are governed by individuals, not by a species as a whole. However, many studies on fungi treat a single individual as representative of a species, unlike most research on animals and plants. Edible mushrooms serve as excellent model organisms to explore this topic because mushrooms are relatively easy to cultivate and their production relies on trait variation in artificial selection, for example for enhanced yield or low spore load. To investigate the magnitude of intraspecific variation in fungi and how variation differs across functional traits (any features that affect fitness of an organism), I cultivated 106 genetic individuals of five *Pleurotus* species from Aotearoa New Zealand in the same conditions in pine sawdust substrate bags and quantified within- and between-species variation in several traits. My data indicate that vegetative growth traits (such as substrate mass loss and mycelial growth rate) are highly variable within species, but reproductive traits (such as time until fruiting) vary more between species. Overall, my results underscore

the need to account for within-species variation when studying fungi and provide insights into natural and artificial selection of *Pleurotus* in Aotearoa New Zealand.

Untangling the mycelia: exploring mycological marvels and challenges when working with *Fusarium*

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“Wherever you look, you are likely to find a *Fusarium* species.” The genus *Fusarium* represents an entangled group of fungal species. These species are globally distributed and have gained attention due to their ecological and economic impact. Not only are some *Fusarium* species notorious as important plant pathogens, causing devastating diseases in a wide range of crops, but they are also known to cause animal and human health issues through opportunistic infection and the production of mycotoxins. They are not all bad, however. Some species have a commercial use and are cultivated for their use as a nutritious mycoprotein, consumed by humans. These fungi are incredibly complex. For more than 200 years, scientists have been unravelling its intricate threads, trying to make sense of their taxonomy, biology, epidemiology, and more. Each discovery only reveals the depth of our knowledge gap, underscoring the perpetual quest to uncover the hidden secrets of *Fusarium*.