The 23rd NZ Fungal Foray, Waikanae, May 2009

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Introduction

The 23rd New Zealand Fungal Foray was held conjointly with the Australasian Mycological Society Conference 10–16 May 2009 at Waikanae on the Kapiti Coast, Wellington. Accommodation was at El Rancho Christian Holiday Camp and 33 people attended the foray. Visitors came from USA, Australia, Tasmania, Japan, England and Sweden.

Prior to European settlement the Kapiti coast consisted of bands of vegetation zones running north-south along the coastline. Adjacent to the coast there was a wide band of duneland colonised by grassland and shrublands. Further inland there was a narrow band of kohekohe (*Dysoxylum spectabile*)-karaka (*Corynocarpus laevigatus*)-ngaio (*Myoporum laetum*) coastal forest. Beyond this, on the alluvial flats right up to the edges of SH1, was a band of swamp forest containing kahikatea (*Dacrycarpus dacrydioides*), pukatea (*Laurelia novae-zelandiae*), maire tawaki (*Syzygium maire*) and ti kouka (*Cordyline australis*) (Gabites 1993).

On the inland side of what is now SH1, tawa (*Beilschmiedia tawa*), rewarewa (*Knightia excelsa*), hinau (*Elaeocarpus dentatus*), nikau (*Rhopalostylis sapida*), mapou (*Myrsine australis*), porokaiwhiri (*Hedycarya arborea*) and mahoe (*Melicytus ramiflorus*) entered the canopy. Beyond this again was a band of podocarp/broadleaf forest that extended right down the middle of the Wellington peninsula, predominantly tawa forest with emergent rimu (*Dacrydium cupressinum*) and northern rata (*Metrosideros robusta*). From around 400m kamahi (*Weinmannia racemosa*) and hinau replaced tawa in the canopy and red beech (*Nothofagus fusca*) and silver beech (*N. menziesii*) were prominent. Above 550 m northern rata, rimu and hinau were replaced by miro (*Prumnopitys ferruginea*) and Hall's totara (*Podocarpus cunninghamii*). Above 800 m there was a band of silver beech (Gabites, 1993).

Fig. 1. *Stereum ostrea*, Nikau Reserve, 11 May 2009. Photo: Petra White.

The European arrival saw rapid destruction of these vast forests for pastoral farming. Very little of these original forests now remain in the Wellington region, and they are mostly found in the hill country, predominantly beech. Much of the surviving original forest around Waikanae still stands because of the efforts of William ("Willie") Hughes Field, who once owned 3100 acres (1254.5 ha) of coastal plain in the area and was one of the founders, in 1903, of the Scenery Preservation Society, a small group of powerful men who advocated wherever possible the preservation of New Zealand's forest heritage throughout the country (White 2001).

This foray added 695 fungal records (representing 362 taxa) to the FUNNZ database, and 389 collections to the New Zealand Fungal and Plant Disease Herbarium (PDD). New records for New Zealand included *Leucopaxillus lilacinus*, *Omphalina pyxidata*, and *Sirobasidium rubrofuscum*. There were 65 records of 48 taxa listed as 'Data deficient' and one record of *Chalciporus aurantiaca*, which is currently listed as 'Nationally Critical', but probably needs reassessment. The sites with most collections were Rimutaka Forest Park (164), Lake Papaitonga (79) and Nga Manu Nature Reserve (75).

Monday 11 May, keeping it close

We decided to visit nearby reserves for the first day of foraying. After breakfast we traveled south on SH1 to Nikau Reserve. The reserve is dominated by kohekohe and nikau with tawa. Common fungi on wood were the introduced orange poreconch (*Favolaschia calocera*), sunset leatherbracket (*Stereum ostrea*, Fig.1) and artist's porebracket (*Ganoderma* cf. *applanatum*). By the edge of the track we found a group of earthstars (*Geastrum saccatum*).

We walked uphill to a grassy hilltop from which we could look down over Paraparaumu to Kapiti Island in the distance. The vegetation changed and tree daisy (*Olearia* sp.) became frequent. On the way down just off the track I found a colony of a cup fungus (*Cookeina colensoi*, Fig. 2) growing on wood.

After lunch we went to nearby Paraparaumu Scenic Reserve, a 256 ha reserve accessed from SH1 via a covenant area. This reserve is dominated by kohekohe, tawa and mahoe. On the valley floor we found a huge old kohekohe and a tangle of supplejack (*Ripogonum scandens*) amongst wheki (*Dicksonia squarrosa*). There was not much in the way of fungi to be found, the most common being orange poreconch again. Growing from soil I found a

Fig. 2. *Cookeina colensoi*, Nikau Reserve, 11 May 2009. Photo: Jerry Cooper.

couple of scarlet pouch fungi (*Leratiomyces erythrocephalus*).

Next we went back north to Waikanae and visited the 330 ha Hemi Matenga Memorial Park Scenic Reserve. Here tall kohekohe were festooned with a jumble of supplejack. Once again the orange poreconch was everywhere, but very little else. The native fern poreconch (*Favolaschia cyatheae*) was found growing on *Cyathea* debris and wood-ear jelly (*Auricularia cornea*) was very common growing on wood.

Tuesday 12 May, heading north

Our first stop this day was to Nga Manu Nature Reserve. This is 15 ha of lowland swamp forest dominated by 400-year-old kahikatea. The reserve boasts 700 different native plant species, many of which are on the threatened list, including native grasses and ferns. There is a captive-breeding programme under way as well as revegetation and weed control. Mistletoe has been introduced into the reserve, the most successful species being *Ileostylus micranthus*. The idea of building a predator-proof fence around the reserve was rejected as it would involve the removal of too much native forest to make way for it.

A highlight of the visit was the finding of a club fungus, *Macrotyphula defibulata* (Fig. 3), growing on the decaying stems of NZ flax (*Phormium tenax*) at the edge of the boardwalk. Another species found on the flax, this time the leaves, was *Melanotus vorax*, currently only known from two other collections. On the way out, growing on the road reserve we found a dozen or so witch-hat waxgills (*Hygrocybe conica*) peeping through the grass. In the same area were several puffballs (*Bovista* sp.), some opened out to display the spore mass ready for dispersal.

After lunch we headed north to Waiopehu Scenic Reserve in Levin. The vegetation in this 9 ha reserve is tawa forest and turned out to be quite fruitful in terms of fungi. There were lots of fallen trees creating habitat for various wood-dwelling fungi. A jelly fungus (*Tremella* sp.) was quite common, as was wood-ear jelly and ivory conch (*Conchomyces bursiformis*). The introduced orange poreconch was present but not abundant. On a rotting log I found a group of three wineglass leatherbracket (*Podoscypha petalodes* subsp. *floriformis*, Fig. 4).

That day at Akataroa Saddle there were two collections made of *Pholiota malicola*, which had first been found at Westport in 2006, the first New Zealand record. These new collections were the first North Island records.

Wednesday 13 May, 8th NZ Fungal Foray Mycology Colloquium and 2009 Australasian Mycological Society Conference

Peter Johnston, Landcare Research, started the day with a talk on accumulating and managing the DNA sequence data for New Zealand fungi. In-house projects at Landcare Research are generating a lot of sequence data and users want access to that data. Information is delivered through the NZ Fungi database but it would be a much more powerful resource if we could add DNA information to the database. Such data for instance could benefit the Department of Conservation (DoC) data deficient fungi.

Professor Brandon Matheny, University of Tennessee, then spoke of the evolution of Australasian *Inocybaceae*. In the Paleogene, 65-24 million years ago, there was a dramatic climate change, a cooling down and eventual isolation of Australasia. Egon Horak described 17 species of *Inocybe*, but this genus deserves more work, as there are a lot more species than we think.

Kentaro Hosaka, from Japan's National Museum of Nature and Science, described some preliminary results from multigene analysis of truffle-like fungi (*Hysterangiales*) and earthstars (*Geastrales*), two of the four major groups within *Phallomycetidae*, to understand the comparative biogeography of closely related but ecologically distinct groups. Earthstars

Fig. 3. *Macrotyphula defibulata* growing on flax, Nga Manu Nature Reserve, 12 May 2009. Photo: Jerry Cooper.

grow above ground, are saprotrophic, and spores are wind-dispersed, whereas the truffle-like fungi grow below ground, are ectomycorrhizal, and small animals disperse the spores. The other two groups in *Phallomycetidae* are stinkhorns (*Phellales*) and coral and club fungi (*Gomphales*). Comparative biogeography of these four closely related groups will provide exciting insight into the fungal biogeography, still in a developing stage compared to plant and animal studies.

Next was Judy Gardner from Scion, who described her work on stream baiting for *Phytophthora* spp. as a surveillance toll in New Zealand. The genus *Phytophthora* is an Oomycete, which was previously included in the fungal kingdom but is now in kingdom Chromista. *Phytophthora* spp., commonly known as water moulds, produce motile zoospores and require water for dispersal. They are responsible for some of the most destructive plant diseases known to man. Examples include European potato famine of the 19th century (caused by *P. infestans* and *P. cinnamomi*), sudden oak death (*P. ramorum*) in western USA, and kauri dieback in New Zealand (*P.* taxon *Agathis*). To enable the evaluation for conditions in New Zealand and investigate the presence of *Phytophthora* spp. a series of traps were set up in six streams on the Volcanic Plateau. During a 12-month period over 300 cultures were collected for further evaluation.

Katrin Walbert, also from Scion, described her work on ectomycorrhizal fungi (ECM) in plantation forests of New Zealand. ECMs increase root spread by more than 40 times so that there is more uptake of nutrients by plants. The presence of these fungi can reduce the need for fertiliser. An examination of a nursery and four *Pinus radiata* stands of varying age in Kaingaroa Forest revealed 18 ECM species growing above ground and 19 ECM species growing below ground. The overall species richness and diversity was found to be low compared to similar forests in the Northern Hemisphere but similar to other exotic plantations in the Southern Hemisphere. ECM species identified in the nursery survived the first year of outplanting but were found to be completely replaced by forest ECMs after seven years, with the first non-nursery species appearing after six months. An earthball, *Rhizopogon rubescens*, was the most persistent and abundant ECM species.

Benjamin Myles, University of Otago, then spoke about his molecular phylogenetic work on the genus *Menegazzia*, which he described as New Zealand's "holiest" (most perforated) lichen. *Menegazzia* is a genus of around 70 lichenised ascomycete species found throughout Australasia and South America. They are characterised by the easily noticeable

Fig. 4. *Podoscypha petalodes* subsp. *floriformis*, Waiopehu Scenic Reserve, 12 May 2009. Photo: Petra White.

perforations found throughout their upper thallus (apart from *M. eperforata*, which has none). They belong in the family *Parmeliaceae*, containing over 2000 species. There are 20 species in New Zealand, 12 being endemic. With Benjamin present our display tables were a little more diverse than usual with lichens appearing among the fungi.

Next Michael Lucas, University of Otago, presented work he and David Orlovich were doing on the genetic diversity of *Cortinarius rotundisporus* in Australia and New Zealand. *Cortinarius* is the most diverse ECM genus and very common in these two countries. *C. rotundisporus* has a blue-green pileus with a variable yellow central region and brown spores. It associates with *Eucalyptus*, *Casuarina*, *Leptospermum* and *Kunzea* spp. A study of genetic variation in *C. rotundisporus* (Sawyer et. al. 1999) found three phylogenetically distinct internal transcribed spacer (ITS) types (RFLP Types I, II and III), but the relationships of these ITS types to other described species was not investigated. Their preliminary results revealed 2 mostly Australian clades and 2 exclusively New Zealand ones in Type I, whereas Type II was related to *C. tessiae* and Type III was not related to the other two but rather to *Cortinarius* subgen. *Dermacybe*.

The next talk, entitled "The Time to Foray", was by David Ratkowsky, University of Tasmania. He told us that the Aborigines had a different idea of seasonology. They knew a lot about the edibility of fungi but did not necessarily used fungi as an indicator of seasons. In Tasmania they had three seasons – wegtellanyta (December-April), tunna (May-August) and pawenya peena (September-November). Lists of macrofungi species from three separate studies in the Warra long-term ecological research site in southern Tasmania, where fortnightly visits were made over a 12-month period, show that the majority of species recorded were during the

tunna season. David's conclusion was that tunna is the best season to foray for fungi, particularly May-June.

After lunch Rytas Vigalys, Duke University, talked about the work he did probing fungal diversity using DNA sequence libraries, which revealed a diverse community of eukaryotic microorganisms in soils from southeastern USA Peidmont forests. These communities are dominated by fungi, but also include protistan, chorophyte and metazoan lineages. Using phylogenetic analysis and ITS sequences from basidiome surveys and environmental sources, identification to species level was possible for many common Agaricomycetes such as *Russula*, *Suillus*, *Mycena* and *Gymnopus*. This sequence data is being used to study how fungal communities respond to environmental perturbation. Examples include study of community shifts in response to CO_2 enrichment and community response to long-term land use histories with different recover histories.

Then Teresa Lebel from the Royal Botanic Gardens, Melbourne spoke on the demise of the sequestrate genus *Endoptychum*, truffle-like forms of *Agaricales* where the spore mass is enclosed. This genus is now known to be an assemblage of species that are not closely related. The type *E. agaricoides* was found to be more closely related to the genus *Chlorophyllum* and is now listed as *C. agaricoides*. *Endoptychum depressum* was found to be more closely related to *Agaricus* and is now known as *A. inapertus*. Finally *Chlorophyllum* was conserved against the name *Endoptychum*, which left several European and all Australian species of *Endoptychum* in nomenclature limbo. Examination of hundreds of collections revealed the presence of eight Australian species, which analysis of DNA sequences suggests has affinities with several lineages of Agaricaceae, including *Macrolepiota*, *Agaricus* and *Chlorophyllum*.

Dee Carter, University of Sydney, gave a talk on the basidiomycete yeast genus *Cryptococcus*, a true fungal pathogen acquired from the environment and established first in the lungs. The fungus is not returned to the environment unless the host dies. It is capable of causing life-threatening diseases in mammals, including humans. *Cryptococcus neoformas*, found in high numbers in pigeon guano, causes a severe form of meningitis and meningo-encephalitis in people with AIDS. *Cryptococcus gattii* affects otherwise healthy people, is more restricted in distribution and is associated with decaying wood.

The next talk, from Bevan Weir, Landcare Research, concerned the ascomycete genus *Colletotrichum* (teleomorph: *Glomerella*), a plant pathogen affecting cereals, grasses, legumes, vegetables and fruit. Typical disease symptoms are characterised by sunken necrotic lesions with orange conidia. *Colletotrichum gloeosporioides* causes quince (*Cydonia oblonga*) and apple (*Malus domestica*) bitter rot, anthracnose on many fruit and vegetable species such as mango (*Mangifera indica*) or cultivated plants like St. John's wort (*Hypericum perforatum*), and rubber leaf spot on *Hevea brasiliensis*. Multiple gene sequences from a global collection of vouchered specimens were used to identify genetically distinct groups within *C. gloeosporioides*. He concluded that multiple gene sequences, appropriately analysed, can be used in conjunction with other characteristics to define biologically meaningful species and subspecies.

Pam Catcheside, Flinders University, then told us how she and her husband David had 10 years previously started to document the fungi of South Australia, including Kangaroo Island. A number of "fungal hotspots" (high species diversity, high numbers of fruiting bodies, fungi of conservation importance) have been identified from surveys in parks in seven regions of the State since 1997. One hotspot, Stringybark Walking Trail in Deep Creek Conservation Park, has remnant vegetation of Australian oak (*Eucalyptus obliqua*) and an understory of tufted grass tree (*Xanthorrhoea semiplana* subsp. *semiplana*). The number and diversity of fungal species in this small area exceeds that at all other locations surveyed, with the exception of the much larger and ecologically more diverse Flinders Chase National Park on Kangaroo Island. Australia lags behind other countries in assessing the conservation status of fungi. A recent study (Grgurinovic and Simpson 2001) assessed 443 fungi for rarity but this was based only on the collections of J. B. Cleland. The Catchesides want to get fungi on the threatened species lists for South Australia. One example is *Mucronella pendula*, which is only known from one rotting log.

Genevieve Gates, University of Tasmania, followed with a talk entitled "A Bunch of No-Good Rotters." Sustainable forestry in Tasmania aims to retain all elements of a natural forest cycle in its management plan. In the wet Australian oak forests of southern Tasmania, wildfire at different intervals has produced a mosaic of multi-aged stands with a successional climax of temperate rainforest after 400 years in the absence of fire. There are several heart rot polypores (*Fomes hemitephrus*, *Australoporus tasmanicus*, *Phellinus wahlbergii*) found in these forests that appear to be either host-specific or confined to fruiting on large diameter eucalypts. Such trees are found in the older forests (>250 years) or as legacies of wildfire disturbance in the younger stands. The logging of old growth forests, the silviculture treatment of clearfell, burn and sow, and current rotation lengths of 80-100 years will see the loss of large diameter trees and the consequent risk of local disappearance of these polypores.

The last speaker for the day was Peter Johnston, Landcare Research. He was getting together a

revised list of threatened fungi that he hoped to have compiled by the end of the year and then published. The initial list of 2002 only had macrofungi. Lichens were not included in the threatened species list. The previous year the DoC had asked for an update but nothing eventuated except one submission from Pat Leonard.

Thursday 14 May, Rimutaka Forest Park

This day we drove to Rimutaka Forest Park, where we were greeted by a forest of hard beech (*Nothofagus truncata*). The introduced scarlet flycap (*Amanita muscaria*) was common by the edge of the track, some with quite large fruiting bodies. Other common species on the forest floor were the common basket stinkhorn (*Ileodictyon cibarium*) and crimson helmet (*Mycena ura*). Common fungi on wood included *Fomes hemitephrus* and a *Laetiporus*. A new species of *Russula* was found. We found *Cortinarius ophryx*, a rare species that had only been recorded several times before in the South Island, and I found a seldom-collected species, *Hygrophorus umbriceps*.

Friday 15 May, Otaki Forks

The last day of foraying was a bit of a disaster day for us. We traveled north again, to Otaki Forks, an area of regenerating lowland to low montane scrub and podocarp/broadleaved forest. It began to rain as we started our foray and got heavier and heavier. Not much was found. Fungal finds of note included *Cortinarius rotundisporus*, *Galerina patagonica*, *Insiticia roseoflava*, *Leratiomyces erythrocephalus*, *Podoserpula petaloides* subsp. *floriformis*, and several fruiting bodies of *Crepidotus praecipuus* (Fig. 5). We cut the foray short and made our way back to the vehicle.

Fig. 5. *Crepidotus praecipuus*, collected at Otaki Forks, 15 May 2009, and laid out on the display table. Photo: Petra White.

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http://www.funnz.org.nz
http://nzfungi2.landcareresearch.co.nz/
http://www.hiddenforest.co.nz/index.htm
http://www.effnz.co.nz/
http://www.nzbrn.org.nz/
http://www.ngamanu.co.nz/

23rd Fungal Foray species list

Legend

*	Exotic
?	Identification uncertain
AS	Akatarawa Saddle
CW	Cambourne Walkway Porirua
ER	El Rancho Camp
HM	Hemi Matenga Scenic Reserve
LP	Lake Papaitonga
LR	Lake Reserve, Waikanae Rivermouth
MH	Mount Holdsworth
NM	Nga Manu Nature Reserve
MW	Mangaone Walkway
NR	Nikau Reserve
OF	Otaki Forks
OV	Orongorongo Valley
PP	Peka Peka Beach
PSR	Paraparaumu Scenic Reserve
RFP	Rimutaka Forest Park
WB	Waikanae Beach
WR	Waikawa Stream Reserve
WSR	Waiopehu Scenic Reserve
WT	Waiotauru Track

Species	Sites Recorded
Ascomycota	
Bactrodesmium abruptum	OF
Bertia moriformis	AS
Beverwykella sp. 'Erua Forest"	NM
Biatorella sp.	OF
Biscogniauxia sp.	NM
Bisporella citrina	AS, OV
Bolbitius muscicola (=*Pluteolus muscicola*)	OV
Candelabrum microsporum	NM
Cercophora ambigua	LP, WR
Cercophora solaris	WSR
Chaetosphaeria talbotii	HM
Chalarodes bisetis	LP
Chlorociboria aeruginascens	AS
Clathrosporium intricatum	NM
Coccomyces radiatus	LP
Colensoniella torulispora	LP
Colletotrichum lupini	WB
Cookeina colensoi	LP, NR, WSR
Cordyceps bassiana	OF, OV
Coronospora novae-zelandiae	LP, NM
Crocicreas sp.	LP, WB
Daldinia sp.	LP, NR, WSR
Diaporthe sp.	LP
Diatrype sp.	LP
Dictyochaeta fertilis	NR
Dictyosporium sp.	NR
Dicyma pulvinata	RFP
Ellisembia sp.	NR
Endomeliola dingleyae	AS
Geoglossum glutinosulpm	OV
Hypocrea spp.	LP, NM, WSR
Hypocrea sulphurea	NR
Hypoderma cordylines	LP
Hypoxylon bovei	AS, OR
Isaria sp.	MH
Isaria sinclairii	OF
Lasiosphaeria sorbina	WR
Leotia lubrica	AS, MH, WT, Waiotauru Rd.
Lophodermium agathidis	LP
Lophodermium sp.	WB
Lophodermium culmigenum	WB
Moellerodiscus microcoprosmae	AS
Mycosphaerella coacervata	AS
Nectria pseudotrichia	NM
Orbilia sp.	LP
Paurocotylis pila	AS, LP
Passalora (=*Cercosporidium*) *graminis* *	Waikanae River
Periconiella phormii	NM
Pestalotiopsis sp.	LP, OF
Phaeoisaria clematidis	NR
Phoma sp.	NM
Phomopsis sp.	WB
Phragmocephala atra var. *stenophora*	NR
Phyllachora setariicola *	LP
Urnula (=*Plectania*) *campylospora*	RFP
Pseudaegerita cf. *conifera*	NM
Pseudocercospora aristoteliae	Reikorangi Rd. Waikanae
Rosellinia sp.	LP
Rosellinia gisbornia	WR
Rosellinia rhopalostylidicola	NR
Scutellinia sp.	NR
Seimatosporium sp.	WB

Sporidesmium flagellatum	LP
Stachybotrys freycinetiae	LP, NM
Stachylidium bicolor	NM
Stictis sp.	WB
Strossmayeria basitricha (=*Pseudospiropes simplex*)	LP
Terriera minor	AS
Trematosphaeria crassiseptata	LP
Trichocladium novae-zelandiae	NR
Tuber sp.	LR
Xylaria hypoxylon	NR

Basidiomycota

Aecidium myopori	Waikanae Lagoon
Agaricostilbum sp.	LP
Agaricus sp.	LP
Agaricus subperonatus *	Carter Observatory
Agrocybe sp.	WSR
Agrocybe parasitica	NR
Aleurodiscus berggrenii	OV
Aleurodiscus parmuliformis	OF, WT
Amanita sp.	ER
Amanita muscaria	Ngarara Cemetery, NM
Anthracoidea heterospora	NM
Antrodiella sp.	LP
Antrodiella zonata	WSR
Armillaria sp.	OV
Armillaria limonea	MH, OV, RFP
Armillaria novae-zelandiae	LP, NR
Athelopsis sp.	LP
Auricularia cornea	HM, LP, NM, NR, OF, OV, WSR
Bauerago gardneri	NM
Bertrandia astatogala	OF
Bjerkandera adusta	OF
Bolbitius titubans * (=*B. vitellinus*)	ER
Boletopsis nothofagi	RFP
Botryobasidium vagum	LP
Bovista sp.	LR, NM, OV
Calocera sp.	NM, NR, OV
Calostoma rodwayi	OV, WT
Calvatia craniiformis	RFP
Calvatia sp.	NM
Camarophyllus apricosus	OF
Camarophyllus aurantiopallens	OF, OV
Camarophyllus pratensis var. *gracilis*	OV
Campanella sp.	LP, NM
Cantharellus wellingtonensis	OV
Chalciporus aurantiacus	OV
Chalciporus piperatus *	Ngarara Cemetery, OV
Clavaria sp.	HM, OF
Clavogaster novozelandicus	AS, NM, WT
Clitopilus (=*Rhodocybe*) sp.	OV
Clitocybe clitocyboides	OV
Clitopilus dingleyae (=*Rhodocybe dingleyae*)	RFP
Clitocybe nebularis	LP, NR, RFP
Clitocybe sp.	LP, NM
Clitopilus sp.	LP
Coleosporium senecionis *	Reikorangi Rd
Collybia sp.	NM, OV
Conocybe (=*Pholiotina*) sp.	NM
Gymnopus incarnatus (=*Collybia incarnata*)	OF, OV
Conchomyces bursiformis	NM, OV, WSR
Coprinellus sp.	LR
Coprinellus micaceus *	WSR
Cortinarius spp.	AS, MH, OV, RFP, WR, Waiotauru Rd
Cortinarius armiae ined.	AS, MH
Cortinarius aurantioferreus	WT
Cortinarius cardinalis	OV
Cortinarius caryotis	OV
Cortinarius castaneiceps	OV
Cortinarius chalybeus	AS, OV
Cortinarius cucumeris	AS, WT
Cortinarius dulciolens	OV
Cortinarius dulciorum	OV
Cortinarius gemmeus	MH
Cortinarius ignellus	OV
Cortinarius leiochrous ined.	OV
Cortinarius myxenosma	AS
Cortinarius ophryx	OV
Cortinarius paraxanthus	AS, OV
Cortinarius peraureus	MH
Cortinarius perelegans	OV
Cortinarius rhipiduranus	OV
Cortinarius rotundisporus	OF, OV
Cortinarius saturniorum	OV, RFP
Cortinarius subcastanellus	OV, RFP
Cortinarius tessiae	AS, WT
Cortinarius vernus *	ER

Cortinarius vitreopileatus	OV
Crepidotus spp.	AS, LP, MW, OF
Crepidotus dilutus	RFP
Crepidotus fuscovelutinus	OV
Crepidotus gilvidus	NR
Crepidotus praecipuus	OF
Crinipellis procera	LP, OF, NR, WSR
Crucibulum laeve	AS, HM, LP, NM, NR, OF
Cyathus sp.	ER
Cyathus stercoreus *	ER
Cystoderma sp.	AS
Dermocybe sp.	OV
Dermocybe alienata (=*Cortinarius alienatus*)	OV
Dermocybe canaria	RFP
Dermocybe cardinalis	OV
Dermocybe (=*Cortinarius*) *vinicolor*	AS
Descolea sp.	WT
Descolea gunnii	ER, NM, RFP, WB
Descolea phlebophora	ER
Descomyces albellus	RFP
Deconica (=*Melanotus*) *vorax*	NM
Entoloma sp.	RFP
Entoloma asprelloides	AS, OF
Entoloma distinctum	OV
Entoloma melanocephalum	NM
Entoloma nothofagi	AS, ER
Entoloma procerum	AS, OV
Exidia glandulosa	AS, LP
Favolaschia cyatheae	HM, OV
Favolaschia calocera *	AS, HM, LP, NM, NR, OV, PSR, WR
Favolaschia pustulosa	LP
Flagelloscypha pseudopanax	LP
Flammulina velutipes	NM, OV
Fomes hemitephrus	OV
Galerina sp.	Clouston Park, WSR
Galerina patagonica	HM, LP, NM, OF, OV, WSR
Gallacea eburnea	OV
Ganoderma sp.	NM, NR
Ganoderma cf. *applanatum*	OV, WSR
Ganoderma australe	WT
Geastrum sp.	HM, LP, PP
Geastrum saccatum	NR
Geastrum triplex	LP, RFP
Geastrum velutinum	LP, NM
Gliophorus chromolimoneus	MW, OV
Gliophorus lilacipes	WT
Gliophorus luteoglutinosus	AS, OF
Gliophorus sulfureus	AS
Gliophorus viridis	AS
Gloiocephala sp.	AS
Gloiocephala nothofagi	RFP
Gloiocephala phormiorum	NM
Grifola sordulenta	OV
Gymnomyces fuscus	OV
Gymnopilus allantopus	OV, WT
Gymnopilus crociphyllus	RFP
Gymnopilus crociphyllus	RFP
Gymnopus sp.	NM, RFP
Gymnopus ceraceicola (=*Micromphale* sp. "Erua Forest")	RFP
Gymnopus hakaroa (=*Micromphale* sp. ”Kennedy's Bush”)	RFP
Hamaspora australis	OV
Hebeloma sp.	ER
Heimiomyces neovelutipes	WSR
Helicogloea lagerheimii	OV
Helminthosporium palmigenum	NM
Hericium coralloides	LP, OV
Heterotextus miltinus	Waiotauru Rd.
Hohenbuehelia sp.	WSR
Hohenbuehelia cyphelliformis *	NM, RFP
Hohenbuehelia luteohinnulea	HM, RFP
Hohenbuehelia luteola	LP
Hohenbuehelia nothofaginea (=*H. tristis*)	WR
Hohenbuehelia podocarpinea	NR
Hohenbuehelia tristis	WSR
Humidicutis mavis	AS, OV
Humidicutis pura	AS
Hydnangium sp. "Hinewai"	RFP
Hydnomerulius pinastri * (=*Serpula pinastri*)	LR
Hydropus funebris	AS
Hygrocybe blanda	OF
Hygrocybe conica	LR, NM
Hygrocybe firma	AS, OV
Hygrocybe striatolutea	OF
Hygrophoropsis umbriceps	OV
Hygrophorus salmonipes	OV
Hymenogaster sp.	OV
Hyphodontia spp.	LP, NM
Hypholoma brunneum	OV

Hypholoma fasciculare	OV
Hypholoma frowardii	OV
Ileodictyon sp.	PP, WB
Ileodictyon cibarium	ER, OV, RFP
Inocybe spp.	CW, ER, MH, RFP, WT
Insiticia roseoflava *	OF, OV
Junghuhnia nitida	LP, OV
Laccaria sp.	ER
Laccaria violaceonigra	AS, OV
Lactarius clarkeae var. *aurantioruber*	AS, MH, RFP
Lactarius tawai	AS
Lactarius umerensis	MH
Laetiporus portentosus	OV
Lentinellus sp.	OV
Lepista sp.	CW
Lepiota alopochroa *	RFP
Leratiomyces ceres *	ER, NM, NR
Leratiomyces erythrocephalus	AS, HM, LP, NM, NR, OF, OV, PSR, WSR
Leucoagaricus leucothites *	Turakirae Head Scientific Reserve
Leucoagaricus sp. "Rotokuru Lakes"	RFP, WSR
Leucopaxillus lilacinus	RFP
Lycoperdon compactum (=*Morganella compacta*)	AS, WSR
Lycoperdon perlatum	HM, NM
Lycoperdon (=*Vascellum*) *pratense*	ER, LR, NM
Macrolepiota clelandii	Carter Observatory, ER, PP, WB
Macrotyphula defibulata	NM
Marasmiellus bonii	LP
Macrolepiota clelandii	Carter Observatory, ER, PP, WB
Macrotyphula sp.	NM
Marasmiellus bonii	LP
Marasmius elegans	OV
Marasmius oreades *	ER
Melampsora hypericorum *	Waikanae River
Mikronegeria sp.	NM
Miyagia pseudosphaeria *	LP
Mycena spp.	NM, OF
Mycena sp. "Ahuriri Reserve"	AS
Mycena sp. "Mt Grey"	NM
Mycena sp. "Perseverence Road"	LP, MW
Mycena aetites	OF
Mycena austrororida	HM, LP, NM, NR, OF, WB
Mycena cystidiosa	RFP
Mycena epipterygia (=*Collopus epipterygius*)	AS, OF, OV
Mycena helminthobasis var. *novae-zelandiae*	LP
Mycena interrupta	AS, OV
Mycena mariae	HM, LP, NM, NR, OF, WB
Mycena morris-jonesii	NR
Mycena olivaceomarginata *	ER
Mycena rubroglobulosa	WR, WSR
Mycena subdebilis	OF
Mycena subviscosa (=*Collopus subviscosus*)	AS, ER
Mycena ura	AS, MW, OV
Mycosphaerella (=*Septoria*) *rubi* *	Waikanae River
Neoclitocybe sp.	WSR
Octaviania tasmanica	OV
Omphalina sp.	NM
Omphalina pyxidata sensu E. Horak	AS
Panaeolus (=*Panaeolina*) *foenisecii* *	OF
Panellus sp. "Waiohine Gorge"	LP
Parasola sp.	NM
Paxillus sp.	North Manakau Rd Reserve
Paxillus involutus *	ER
Phellinus sp.	HM, NR
Phellinus cf. *roseoalbus*	OV
Phellodon sinclairii	OV
Pholiota sp.	ER,OF, WT
Pholiota alnicola	AS
Pholiota aurivella *	ER, LP
Pholiota multicingulata	LP
Phragmidium violaceum *	NM
Palifer verecundus (=*Hyphodontia verecunda*)	LP
Phanerochaete spp.	LP, NR, WT
Pleurocollybia cremea	MW
Pleuroflammula praestans	AS
Pluteus concentricus	WB carpark
Pluteus paradoxus	RFP
Pluteus pauperculus	RFP
Pluteus perroseus	LP, NM
Pluteus readiarum	MH, WSR
Pluteus velutinornatus	NR
Podoscypha petalodes subsp. *floriformis*	OF, WB, WSR
Polyporus sp.	NR
Polyporus melanopus	NM
Postia brunnea	OV

Protubera parvispora	LP
Psathyrella sp.	AS, ER
Psathyrella ammophila	PP, WB
Protostropharia semiglobata (=*Stropharia semiglobata*) *	ER
Psilocybe coprophila	WB
Psilocybe makarorae	OF
Psilocybe semilanceata	Clouston Park Akatarawa
Psilocybe weraroa (=*Weraroa novae-zelandiae*)	LP, NM, OV, RFP, WSR
Puccinia sp.	WB
Puccinia caricina	NM
Puccinia crepidicola *	WB
Puccinia tetragoniae var. *novae-zelandiae*	WB
Puccinia tiritea	LP, NM, Reikorangi Rd.
Pycnoporus coccineus	ER, NM, OV, OV
Ramariopsis kunzei	OV
Resupinatus applicatus	HM
Resupinatus vinosolividus (=*Campanella vinosolivida*)	NM
Rhizopogon rubescens	ER
Rickenella fibula	AS, NM, OF
Rossbeevera pachydermis	MH
Russula sp.	OV
Russula acrolamellata	RFP
Russula griseobrunnea	OV
Russula kermesina	OV, RFP
Russula macrocystidiata	CW
Russula tawai	OV, WT
Russula tricholomopsis	OV
Russula umerensis	OV
Russula vinaceocuticulata	AS
Sarcodon sp.	MH
Sarcodon thwaitesii	OV
Schizophyllum commune	OV, WB, WSR, Te Horo foredune
Scleroderma spp.	CW, ER, MH, NM, North Manakau Rd. Reserve, PSR
Scleroderma verrucosum	NM
Simocybe phlebophora	RFP
Sirobasidium rubrofuscum	LP
Stereum ostrea	HM, LP, NR, OV,
Stropharia sp.	OV
Stropharia sp. "Kennedy's Bush"	MW, RFP
Stypella sp.	LP
Suillus luteus *	ER
Suillus subacerbus *	ER
Trametes versicolor	NM
Tremella sp.	WSR
Tremella fuciformis	LP, NM, NR, OV
Tremellodendropsis flagelliformis	AS, OV
Tricholoma sp.	OV
Tricholoma viridiolivaceum	MH, OV
Tubaria sp.	NM
Tulostoma sp.	PP
Tympanella galanthina	AS
Typhula sp.	OF
Uredo toetoe	NM
Uromycladium maritimum *	WB
Volvopluteus gloiocephalus * (=*Volvariella speciosa*)	ER

Myxomycota	
Ceratiomyxa fruticulosa	MW
Lycogala epidendrum	NM