

At this stage a comprehensive key, such as that of Geesink et al. (1981), could have been tried, all the while hoping it would not be necessary to cross the usual *pons asinorum* of such works, the determining of the placentation of the ovary. An easier course would have been to try the entirely vegetative keys of Poland and Clement (2009) – but this book was not to hand, and anyway I see now that I would have given the wrong answer at one couplet and would have again landed out of sorts among the chickweeds.

So now I admit it: I asked a certain search-engine to scour the Internet for “tiny annual bog plant”. On the first page of sites, among offers of plants and plant-products for sale, was one with a drawing of *Radiola linooides*, showing its distinctive sepals. The identification was confirmed by comparison with European specimens in AK, some of which I might have put away myself in years gone by.

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The 21st New Zealand Fungal Foray, Masterton, 2007

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Introduction

The 21st annual Fungal Foray was held at Mawley Park Motor Camp, Masterton, 5-12 May 2007. There were 47 professional and amateur mycologists staying for various durations during the week (Fig.1).

As always, each day's foraying involved collecting in the field and then identifying our finds back at the Field Centre, labeling them and displaying them on tables set aside for the purpose. Many of the collections were then dried to take back to the Landcare Research herbarium in Auckland (PDD). I worked with Shaun Pennycook to record information on identified species directly onto computer. Additionally, photographs were taken of various collections. This process is part of the FUNNZ (Fungal Network of New Zealand) tracking system, instituted for the first time at the 20th Fungal Foray held in Westport in 2006.

Some highlights from the foray included finding an introduced *Rhodocybe* sp. (found under oak and poplar), *Cystolepiota hetieri*, *Hyphodontia alutaria*, *Scytinostromella heterogena*, and *Hamatocanthoscypha ocellata*, all new records for New Zealand; and two records of fungi currently classed as Nationally Critical (*Russula papakaiensis*, *Chalciporis aurantiacus*). Data was added also for



Fig. 1. 21st Fungal Foray group photo. FUNNZ, May 2007.

species where only one record was known in New Zealand or it was known only from the type specimen.

The 21st NZ Fungal Foray captured information on 708 collections representing 387 taxa, and 588 collections were added to the PDD national collection. Of these, 32 records had a current 'Data Deficient' status. Several species were added to the New Zealand list, or were so poorly known they were only represented by a single collection in PDD. By far the most records for individual sites came from Mt Holdsworth (289), due in no small part to the diligence of Di Batchelor.

Monday 7 May, Holdsworth

Holdsworth, situated to the northwest of Masterton, is the main entrance to the Tararua Forest Park. On the drive out we saw a group of *Gymnopilus junonius* growing on a pine log, always an impressive sight with their large caps, which can grow to half a metre in size. Along the same stretch of road we also saw the introduced *Amanita muscaria*, with its orange cap and white spots, growing under a pine shelter belt.

The understorey was a mixture of crown fern (*Blechnum discolor*), kidney fern (*Trichomanes reniforme*), kiokio (*B. novae-zelandiae*) and *Hymenophyllum*. The bracket fungus *Fomes hemitephra* was commonly seen growing on wood, and the sky blue mushroom (*Entoloma hochstetteri*) was a frequent sight on the forest floor. This latter is always an exciting find. We noticed with these specimens that they were not as strikingly blue as is characteristic of the species. At the side of the track we found three fruiting bodies of *Entoloma canonicum* and just off the track, growing from the ground, we found a stunning display of the reddish *Dermocybe cardinalis* (Fig.2).



Fig. 2. *Dermocybe cardinalis*. Photo: P. White.

Tuesday 8 May, Fensham & Carter's Bush Reserves

Heading south this time we traveled to Carterton and turned northwestwards to Fensham Reserve on Cobden Rd. Bequeathed to the Royal Forest and Bird Protection Society under the will of John Fensham in 1978, this 50 ha reserve consists of mature forests of kahikatea (*Dacrycarpus dacrydioides*), totara (*Podocarpus totara*), titoki (*Alectryon excelsus*), tarata (*Pittosporum eugenioides*) and black beech (*Nothofagus solandri* var. *solandri*) and with intervening shrublands of kanuka (*Kunzea ericoides*) and manuka (*Leptospermum scoparium*). There is also a 3 ha wetland area that we didn't visit.

I had visited the reserve on two previous occasions, the first time to write a management plan for the reserve (White 2000), and the second time to do a fungal foray. We started from the eastern side and

walked through hardwood-podocarp forest, then black beech and finally kanuka before returning to our starting point. There are some magnificent specimens of kahikatea, matai (*Prumnopitys taxifolia*) and miro (*P. ferruginea*) here, towering above the plain. The introduced orange pore fungus (*Favolaschia calocera* – Fig.3) is quite common here. On a well-decayed *Pinus radiata* log I found the pagoda fungus (*Podoserpula pusio*), always an exciting find for me.

After lunch we went to Carter's Bush Reserve, a *Carex geminata* wetland with *C. secta*. The orange pore fungus was again common here, and there were some nice collections of the scarlet pouch fungus (*Leratiomyces erythrocephalus* – Fig.4) under kahikatea.



Fig. 3. *Favolaschia calocera*. Photo: P. White.



Fig. 4. *Leratiomyces erythrocephalus* (formerly *Weraroa erythrocephala*). Photo: P. White.

Wednesday 9 May, 6th Mycology Colloquium

This year's colloquium started with Ross Beever. He told us that there are 100 truffle-like fungi in New Zealand, half of which are described. These are gasteromycetes (sequestrate fungi) and are dispersed by animals. In New Zealand it is presumed they are dispersed by birds, the kiwi and before that the moa. In New Zealand there are three species of *Weraroa* – *W. novae-zelandiae*, *W. virescens* and *W.*

erythrocephala. In New Caledonia we have three species of *Leratiomyces* – *L. similis*, *L. smaregdina* and *L. atrovirens*. Recent work has shown that both these genera are polyphyletic and name changes are needed. [These name changes have since been proposed. The three New Zealand *Weraroa* species have been dispersed into three different genera: *Psilocybe*, *Leratiomyces*, and *Clavogaster*; and the genus *Weraroa* itself is reduced to a synonym of *Psilocybe*.]

Pam Catcheside then spoke on the genus *Cribbea* in Australia, which is known from very few specimens from just two sites in South Australia and Queensland. This genus is secotioid with a stipe, peridiopelia, a layer of clavate cells, lamellate glebe, and the spores are pale yellow brown. Four species have been described, three from Australia (*C. gloriosa*, *C. reticulata*, *C. lamellata*) and one from Argentina (*C. andina*). Another Queensland species, *C. "karte"*, has spores that are thick walled and with swirls evident, and huge cystidia. *Cribbea reticulata* has reticulated spores, *C. lamellata* has spiny spores, and *C. gloriosa* has spiny spores. The Queensland *Cribbea* species are sequencing out to *Crepidotus* and the South Australian species to *Oudemansiella*, similar to *O. radicata*. There is a question as to whether *C. 'karte'* is attached to wood like other *Cribbea* species, as there is no evidence of this thus far.

Tod Ramsfield was next on a fourth species of *Armillaria*. There are approximately 40 species of this genus. In New Zealand there are three named species, *A. novae-zelandiae* with a slimy cap, *A. limonea* with a dry cap, and *A. hinnulea* with a darker cap and olivaceous stipe. *Armillaria* species form a rhizomorphic mycelial fan that infects the root system of a tree and moves from one root system to another. They can act as a pathogen killing a tree. A new species of *Armillaria* was collected in 2006 at Whirinaki and Tongariro National Park.

David Orlovich then gave some notes about several species of *Cortinarius*, the most diverse ectomycorrhizal genus worldwide. It is a very common fungus detected in root tips of *Nothofagus* species in New Zealand. DNA-based identification is becoming essential for ecological studies. *Cortinarius magellanicus* was first described from Argentina; it has a blue-yellow colour. It has been recorded in New Zealand, mostly in the South Island. Recent phylogeny casts doubt on its identification in this country. Specimens collected in Nelson have been sequenced to the Argentinian collection. *Cortinarius rotundisporus*, with its slimy steely blue cap, brown spores and greenish tinge to the stipe, grows in association with *Eucalyptus casuarina* in Australia and *Leptospermum* and *Kunzea* in New Zealand. There is also a subspecies growing in association with *Nothofagus* in New Zealand [now raised to species rank as *C. tessiae*].

Pat Leonard then presented some thoughts on the genus *Tricholoma*. This is a medium to large mycorrhizal mushroom growing on wood. It has a fleshy stipe with a ring, sinuate or adnexed gills, and white spores. Eleven species of *Tricholoma* are known only from the type specimen, and three of the four most commonly recorded species in New Zealand are from the original seven species recorded by Greta Stevenson. Five of the rarest species all involve reclassification where no clear descriptions exist.

After morning tea Matt Power presented a talk on the genus *Nectria* in pruned and unpruned trees. *Nectria fuckeliana* has a wide distribution in Otago. It is the cause of fluke canker disease in *Pinus radiata*, and it has been hypothesised that the entry point is pruning wounds. Matt works with Tod Ramsfield at ENSIS to study the disease. They have studied 180 trees, 90 pruned and 90 unpruned, from four different stands in three forests. Cores were taken from just above the pruning sites or just above evidence of fluking. The cores were then ground in liquid nitrogen and DNA extracted for *Nectria*-specific PCR reaction. The conclusion they have drawn is that pruning wounds are not necessary for *Nectria* infection. All trees in the study were resampled through culturing with similar results.

Anna Hopkins then talked about her work on *Eucalyptus obliqua* forests at Waria in southern Tasmania. These forests are an important habitat for mammals, birds, invertebrates, fungi and other saprophytic organisms. Due to logging in these forests there is a reduction of old growth trees greater than 150 years old and a reduction of large diameter logs over 120cm in diameter. Her study asked what fungi are found living in these forests, whether there is a change in the number of wood decay fungi as trees age, and whether the community structure changes with age. Only 5-10% of fungal species are described in Australia and there are only a handful of full time taxonomic mycologists. Also, there are no taxonomic keys. She had to use a combination of classical morphology, then microscopic characteristics and finally molecular techniques to identify species. The process identified over 300 fungal isolates in the log sampling sites. Twenty species were common, 71 were found only once. There were 6 ascomycetes and 84 basidiomycetes, and 57 species were unnamed. The common species included *Postia*, *Conicophora*, *Hypholoma*, *Athelia*, *Xylaria*, *Stereum* and *Hymanochaetaceae*. There were more species in trees greater than 150 years old and the species mix is quite different from that for younger trees. However, younger trees are important too for different reasons. There is a need to retain younger trees within stands to mimic natural wildfire events.

Genevieve Gates was next with a talk on coarse woody debris and associated macrofungal assemblages in natural *E. obliqua* forests in southern

Tasmania. Her aims were to characterise, quantify and map coarse woody debris present, then to document and examine macrofungal assemblages. She drew a map of composite logs in an old growth plot, all numbered and labeled.

Di Bachelor was the last speaker of the morning. Mt Holdsworth, where she has been working, has never been logged. The forest consists of mixed beech and podocarp, with more podocarp on the valley floors and more beech on the upper slopes. She is building up a list of macrofungi greater than 5mm in width, using three different methods – collecting 1 m either side of the track, forays, and examining 10 x 20m plots. She also does some incidental collecting. Over 20 weeks 192 specimens were taken and 122 species were identified.

After lunch, David Ratkowsky started the afternoon session with a report on survey data taken in Tasmania of an area that had been clearfelled, burned and sowed with seed. Afterwards there were no mycorrhizal fungi present and the species that were present were typical of open areas rather than mature forest. An unharvested control area revealed mycorrhizal species and more diversity.

Jerry Cooper followed with a talk on the Terrestrial and Freshwater Biodiversity Information System (TFBIS). The object is to digitise past Foray lists, process collections of data, accession material to the PDD and enter information into the national database. In the 2006 Foray, collections were entered on recording slips and this information recorded on computer database, good specimens were retained, pictures were taken, species lists were gathered and the data was entered in the NZ Biodiversity Recording Network (NZBRN). The next step is to continue using the new recording methods and publishing online, to purchase a laptop and encourage people to enter data.

Peter Austwick then told an amusing story of building a balcony at their home in France. It was built for the view. An *Albizia* tree they planted grew and grew, making the balcony shady and damp, and a haven for fungi. In 1998 it flooded and the following year there was a growth of *Postia* (= *Polyporus*) *fragilis* growing on a Douglas fir. Under the decking there was another polypore species. They coated the decking with fungicide every year but after ten years *Auricularia mesenterica* began to appear and the following year it was attacked by a hyphomycete. They replaced some decking but there was no difference, the fungi kept appearing. Other species they recorded were *Postia leucomallella*, *Daedalea quercina*, *Dacrymyces stillatus*, *Comatricha* sp. and *Lycogala epidendrum*. They sold the house in 2004. The new owners love the place but have built a new balcony!

Next came Don Horne with a slide show of the amazing colours and forms of a variety of fungi and slime moulds that he had photographed.

After afternoon tea, Simon Cook spoke about his work as an arborist for Auckland City Council. There are 85,000 street trees in the Auckland Isthmus and 80,000 specimen park trees. Every year between 1,600 and 2,000 replacement trees and over 300 new street trees are planted. Titoki and pohutukawa (*Metrosideros excelsa*) are the most common natives planted. There are 550 different tree species stored in the database.

Major tree removals have been required in One Tree Hill Domain, Auckland Domain, and Myers Park, due to oak dieback (probably caused by a group of fungal and bacterial pathogens) and Dutch elm disease (caused by *Ophiostoma novo-ulmi* spread by bark beetles). Other problems affecting trees include powdery mildew (*Microsphaera* sp.), oak anthracnose (*Apiognomonina errabunda*), bacterial bleeding (*Pantoea cedenensis*), root rot (*Phytophthora* sp.) and gum leaf skeletoniser (*Uraba lugens*).

Shaun Pennycook then told us about the work of Ron and Angela Freeston on the fungi of Matiu/Somes Island in Wellington harbour. They have recorded 54 species of fungi and their report is on the FUNNZ website (see web site link below).

Jerry Cooper finished the day with a talk on *Macrocystidia reducta*, a proposal to recognise this fungus as "At risk – range restricted" under the Dept of Conservation's NZ Threat Classification System Lists 2005 (see web site link below). This fungus is a secotioid fungus from the *Marasmiaceae* family looking rather like a paler version of *Weraroa erythrocephala*. It has an ochre-brown to orange-brown pileus, a strong smell of linseed oil and pink or pale brown spores. It prefers bare well-drained soil under *Kunzea*/lowland podocarp forest and is known from valley sites around the southern side of Bank's Peninsula.

Thursday 10 May, Lowe's Bush

We spent the morning walking through Lowe's Bush just north of Carterton. This is a kahikatea forest and we found it very dry. The orange pore fungus was very common and there were nice groups of scarlet pouch fungi under the kahikatea.

That evening the FUNNZ AGM was held at the Golden Shears Restaurant in Masterton and afterwards we had a Powerpoint presentation of fungi photographs presented by Pauline Muir.

Friday 11 May, Lower Tauherenikau Valley & Soldiers Memorial Park

For our final day of foraging we headed south once again. Our first stop was Tauherenikau Valley, out from Featherston. The forest consists of kanuka forest with regenerating broadleaf. We found several of the pale blue pouch fungus, but otherwise the most common fungus was the orange pore fungus again. A short walk took us to the Tauherenikau River, its bed covered in white boulders.

Our next stop was the Soldiers Memorial Park in Greytown. This is a totara-titoki-tawa (*Beilschmiedia*

tawa) forest with scattered matai. This charming little reserve proved rather productive compared with the paucity of the morning's foray in the *Kunzea* forest. Fungal species found here included *Agrocybe parasitica*, *Auricularia cornea*, *Conchomyces bursiformis*, *Crepidotus pallidus* and *Trametes versicolor*.

Acknowledgements

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References

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Web Sites

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