FUNNZ FORAY REPORT FOR 2010

Jerry Cooper 19th January 2010

STATISTICS

- 602 records were added to the FUNNZ database (c.f. 695 on the 2009 FUNNZ foray)
- The FUNNZ foray records database now contains 7,233 observation/collection records
- The 602 records represent 362 taxa (c.f. 301 taxa on the 2009 FUNNZ foray)
- 311 collections were added to the PDD national collection (c.f. 389 collections on the 2009 FUNNZ foray).

SITES WITH MOST COLLECTIONS

The higher elevation sites at Klondyke Corner (74 colls) and along the highway from Cragieburn to Arthur's Pass all had the significant numbers of collections. The lowland regions around Oxford had been dry for many weeks prior to the foray and were relatively unproductive.

ASSESSMENT USING DOC CRITERIA FOR CONSERVATION STATUS

- 4 records of Nationally Critical taxa: *Ramaria basirobusta* (Cragieburn), *Ramaria piedmontiana* (Grey River Nature Walk), *Ramaria avellanovertex* (Cragieburn, Lyndon saddle Track), *Russula papakaiensis* (Greyney's Shelter). However, all of these taxa represent taxonomically difficult groups where further work is required (especially molecular) to establish morphologically robust species boundaries.
- 99 records of 57 taxa listed as 'Data deficient'

  Athelia epiphylla, Bulbillomyces farinosus, Cantharellula foetida, Cheimonophyllum candidissimum, Cheimonophyllum roseum, Chlorociboria argentinensis, Clavulina geoglossoides, Cortinarius aerugineoconicus, Cortinarius alboaggregatus, Cortinarius alienates, Cortinarius austrocyanites, Cortinarius cardinalis, Cortinarius chrysma, Cortinarius epiphaeus, Cortinarius indotatus, Cortinarius ionomataius, Cortinarius melimyxa, Cortinarius naphthalinus, Cortinarius ohauensis, Cortinarius olorinatus, Cortinarius peraureus, Cortinarius picoides, Cortinarius rubrocastaneus, Cortinarius taylorianus, Cortinarius tessiae, Cortinarius ursus, Cortinarius veronicae, Cortinarius violaceovolvatus, Cortinarius viscoviridis, Cortinarius vitreopileatus, Crepidotus novae-zealandiae, Entoloma translucidum, Entoloma uliginicola, Flammulaster pulveraceus, Hebeloma mediorufum, Hygrophoropsis umbriceps, Hyphoderma puberum, Inocybe cerea, Inocybe destruens, Inocybe scabriuscula, Lentinellus novae-zelandiae, Marasmiellus omphaloides, Marasmiellus violaceogriseus, Marasmius gelatinosipes, Marasmius otagensis, Mucronella calva, Multiclavula mucida, Mycena helminthobasis var. novae-zelandiae, Mycena hygrophora, Mycena pura, Pholiota multicingulata, Puccinia pounamu, Puccinia wahlenbergiae, Ramaria purpureopallida, Simocybe unica, Simocybe phlebophora, Stypella dubia,

JERRY'S NOTES ON SELECTED COLLECTIONS

More details and images of these collections, and all other foray collection deposited in PDD can be found on the NZFUNGI website, although please note that Landcare Research is upgrading the collection database management systems and the website over the next few months. Photographs will also appear on the FUNNZ Facebook page.

http://nzfungi.landcareresearch.co.nz/

http://www.facebook.com/#!/pages/Fungal-Network-of-New-Zealand/107477229300343?v=wall

On this foray many collections were sampled for their DNA and some of this material has been processed to sequence the Internal Transcribed Spacer region (ITS1-5.8S-ITS2). The growing data bank of NZ mushroom sequences allows us to explore the often fuzzy morphological boundaries of species, and to test our hypotheses about relations between New Zealand species, and with species from other countries. There are 249 sequences of New Zealand fungi deposited in Genbank and a further 200 unpublished sequences that will be published following taxonomic studies. We have 42 sequences so far from the 2010 foray, with more to come. Many *Cortinarius*, *Russula* and *Tricholoma* (ectomycorrhizal) collections were sequenced and people are actively working on the taxonomy of those genera. Here I will focus on a selection of other groups that were sequenced, most of which were of particular interest to me.

Flammulaster pulveraceus

FUNNZ2010/0499 (PDD95768), on rotten wood, Cragieburn Lyndon Saddle Track, 3/5/2002, Collected N. Siegel, Identified J. Cooper

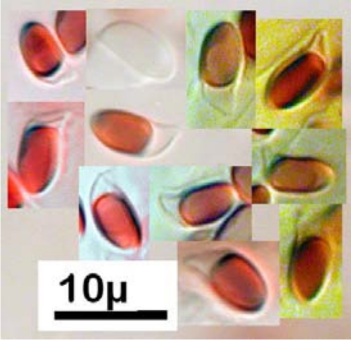
Photo N. Siegel

This collection is closer to Egon Horak's original description of *Flammulaster foliicola* but in a forthcoming revision he will synonymise *F. pulveraceus* and *foliicola*. There are currently no other ITS sequences for any other *Flammulaster* species in Genbank and the nearest matches to this collection suggest an affinity with *Tubaria*. This agrees with sequences for the Large Subunit region (LSU) which group together collections placed in *Tubaria*, *Crepidotus*, *Phaeomarasmius* and *Pleuroflammula* (See Matheney et al, Taxonomy of displaced species of Tubaria, Mycologia, v99, pp569-585, 2007).

Rhodocollybia sp. 'Waiora (PDD87541)'

FUNNZ2010/0469(PDD95837), in litter, Waimakariri River Track, 3/5/2010, Col. N. Siegel, Id. J. Cooper.

Photo N. Siegel



Spores showing dextrinoid/truncate appearance (under Differential Interference Contrast)

The genus *Rhodocollybia* is uncommon in the southern hemisphere and there are no described species in New Zealand (maybe!). The genus is morphologically close to *Gymnopus* (*Collybia* as was). A characteristic of *Rhodocollybia* is that a proportion of the spores show a dextrinoid reaction of the endospore in Melzer's reagent. The reaction seems to be most common on spores collected deposited on the surface of the cap. Lennox noted this feature of *Rhodocollybia* (Mycotaxon v9, p117-231, 1979, Collybioid genera of the Pacific Northwest), and the tendency for the endospore to retract making the spores appear truncated. This character is evident in the New Zealand species (see image above). *Rhodocollybia* sp. 'Waiora (PDD87541)' has been found a few times now (also on the 2008 foray). In my opinion there is a strong possibility that *Lepiota purpurata* (Stev.) Horak is the same species. It is possible to confuse the retracted dextrinoid endospore for the bullet-shaped dextrinoid spore of a section of *Lepiota*. ITS matching against Genbank places *Rhodocollybia* sp. 'Waiora (PDD87541)' in a clade with *Rhodocollybia butyracea (*rather than *R. maculata)*. A recent study by Keirle et al reviewed *Rhodocollybia* phylogeny with respect to the affinities of an Hawaiian taxon (Geographic origins and phylogenetic affinities of the Hawaiian endemic *Rhodocollybia laulaha*, Mycotaxon, v112, pp463-473, 2010). A similar fibrillose capped *Rhodocollybia* is known in Australia (P. Catcheside, pers. Comm.).

Resupinatus applicatus

FUNNZ2010/0907(PDD95777), on decorticate log, Cragieburn, 7/5/2010, Col. N. Siegel, Id. J. Cooper

This is quite common in New Zealand but macroscopically is easily confused with *Marasmiellus violacogriseus* (see below). Microscopically it can be distinguished by spherical rather than cylindrical spores. ITS places it near (but not identical) to a collection of *R. applicatus* sequenced by Bodensteiner at al from France (Phylogenetic relationships of cyphelloid homobasidiomycetes, Molecular Phylogenetics and Evolution, v33, pp501-515, 2004). A review of the literature suggests the name *Resupinatus applicatus* is being used in a broad sense and there may be a number of geographically related species.

Marasmiellus violaceogriseus(G. Stev.) E. Horak

FUNNZ2010/0624(PDD95788), on dead wood, Glentui Meadows, 7/5/2010, Col. J. Cooper, Id. J. Cooper.

Image is JAC11583(PDD95971)

Compare with *Resupinatus applicatus*. Microscopically it can be distinguished by a thick-walled, glassy coralloid tomentum on the cap surface and cylindrical spores. The ITS sequence places it squarely in *Resupinatus* and Stevenson's original name of *Resupinatus violaceogriseus* should be re-instated. Egon Horak moved it to *Marasmiellus* some time ago on the basis of a narrower concept of *Resupinatus* which is no longer supported by molecular evidence. It is probably close to *R. cinerascens* from Australia*, R. subvinosa* from Borneo, and *R. alboniger* which is known from France, the Americas, and Africa. Singer erected the genus *Asterotus* for Resupinatus-like species with coralloid cap hyphae but later correctly subsumed it back into *Resupinatus*. Thorn's exploration of the *Resupinatus* clade indicates it contains a mixture of gilled, merulioid, poroid and cyphelloid species with various spore shapes and cap hyphae (A new poroid species of *Resupinatus* from Puerto Rico, with a reassessment of the cyphelloid genus *Stigmatolemma,* Mycologia, v95, pp1140–1151, 2005)

Mucronella calva

FUNNZ2010/0618(PDD95742), Canterbury, Col. Anon, Id. J. Cooper.

This collection was placed on the foray table without any documention (arrgh! Please don't do that). It is recognised macroscopically by the fact the teeth arise independently from the substratum and is confirmed microscopically by amyloid spores. It is now treated as a member of the Clavariaceae but formerly placed in the Russulales along with *Hericium* and *Russula*. The placement of our collection in the Clavariaceae is supported by ITS where it appears close to *M. bresadolae*. This collection is morphologically identical to *M. calva*. *Mucronella aggregata* is considered a synonym of *M. calva* (Stalpers, Studies in Mycology, v40, 1996; Roberts et al, British Chanterelles and Tooth Fungi, 1997). As *M. aggregata* it was previously known in New Zealand from one collection by Cunningham in 1946.

Cheimonophyllum roseum

FUNNZ2010/1401(PDD95827), on dead wood, Cragieburn Lyndon Saddle Track, 3/5/2010, Col. J. Cooper, Id. J. Cooper.

Photo N. Siegel

This striking species seems to be relatively rare. Barbara Segedin described it in a paper treating a number of related species (Studies in the Agaricales of New Zealand : new records and new species of the genera *Cheimonophyllum*, *Mniopetalum*, and *Anthracophyllum*, New Zealand Journal of Botany, v32, 1994, pp61-72.). Also included in that paper was a description of New Zealand material of *Cheimonophyllum candidissimum*. That is reported in the literature to have a cosmopolitan distribution but descriptions vary in details. *C. canddissimum* sensu stricto has globose to subglobose spores and filiform forked cystidia. *C. canddissimum* sensu Segedin has pyriform spores, does not possess cystidia, and may represent a different species. However, microscopically *C. canddissimum* sensu Segedin is similar to *C. roseum* so they are possibly con-generic but perhaps not appropriately placed in *Cheminophyllum*. To confuse matters the real *C. canddissimum* is also present in New Zealand (with globose spores and filiform cystidia), e.g. see http://bit.ly/gaGp4Y . I have several collections of a species tagged *Cheimonophyllum* sp. ''Kennedy''s Bush (PDD87367)'' which may be Segedin's concept of *C. candissimum*. It is unusual in preferring to grow on bare rock surfaces and is clearly associated with an alga (http://bit.ly/i6bHLA). Sequences of *Cheimonophyllum canddissimum* sensu stricto place it near *Baeospora* and *Hydropus* (Moncalvo, 2002, One Hundred Clades of Euagarics, Molecular Phylogenetics and Evolution, v23, pp357-400). ITS for our collection of *Cheimonophyllum roseum* place it distant from these genera and near *Lichenomphalia* and *Arrhenia* (and potentially *Dictyonema* and *Multiclavula)* which are well known basidiolichen genera. All these NZ species share some micro-characters in common with the genus *Cyphellostereum* except that lacks gills. *Cyphellostereum laeve* has a wide distribution and is known in New Zealand where it is associated with bryophytes (http://bit.ly/hrFqUT). The literature suggests at least one species (*C. pusiolum*) is also a basidiolichen (Lowry et al, High concentration of basidiolichens in a single family of agaricoid mushrooms (Basidiomycota: Agaricales: Hygrophoraceae), Mycological Research, v113, p1154, 2009). ITS for our collection of *C. roseum* does not place it near *C. canddissimum* sensu stricto, supporting the view that *C. roseum* and *C. canddissimum* sensu Segedin may belong elsewhere and may even have basidiolichen affinities, although the relationship to *Cyphellostereum* is unproved.

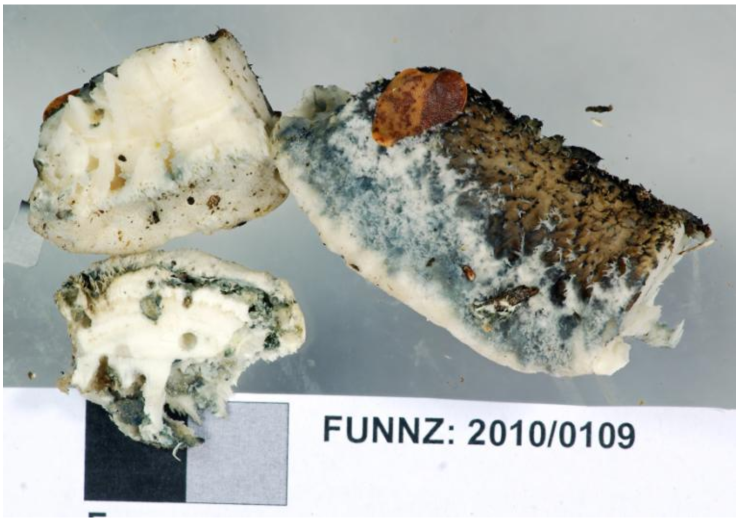
Gymnopus readiae

FUNNZ2010/1395(PDD95844), on soil, Waimakariri Track, 3/5/2010, Col. J Cooper, Id. J. Cooper

This was one of the rare occasions where a sequence of NZ material absolutely matched a collection already in Genbank. That was only because Ron Petersen had already investigated this species and deposited a sequence of NZ material (Mata et al, Sydowia, v58, p191, An investigation of /omphalotaceae with emphasis on the genus *Gymnopus*). The combination of this into *Gymnopus* has currently separated it from a number of related NZ species still sitting in *Collybia* and which also require recombination into *Gymnopus*.

Postia caesia

FUNNZ2010/0109 (PDD95774), on fallen beach log, Cragieburn, 7/5/2010, Col. N. Siegel, Id. J. Cooper



This polypore develops blue/grey tints on bruising and has been variously placed in *Postia*, *Oligoporus* and *Tyromyces*. Molecular data places it with *Postia*, although Tura et al (Polypores new to Israel, Mycotaxon, v103, pp217-227, 2008) indicate it is still distant from core *Postia* species and suggest the possibility of reviving an old name *Cyanosporus* for the species. This name was coined by 'McGinty' which was the mischievous alter ego of Curtis Gates Lloyd (1859-1926) who took exception to just this kind of 'name juggling' - as he called it. It would be ironic if this name eventually floated to the surface, although it would probably be invalid under the botanical code of nomenclature (not accepted by its pseudonym author). There is an acknowledged species complex here (Yao et al, Molecular variation in the *Postia caesia* complex, FEMS Microbiology Letters, v242, p109, 2005). These authors sequenced a range of British material identified as *P. caesia* and *P. subcaesia* and found two principle clades A & B, with mixed identifications, corresponding to morphological differences, where A has a tomentose pileus and is associated with hardwoods, and B is smaller, has a smooth pileus, a smaller spore Q value, and lives on conifers or hardwoods. After then including Norwegian material in their analysis they finally came to the conclusion there is considerable morphological variation in the complex across the European range which does not align simply with groups identified by their molecular study, or align with accepted morphological species concepts. They questioned the validity of the definition of *P. subcaesia*. Historically *P. caesia* has been accepted with relatively broad spores on conifers, whereas *P. subcaesia* and *P. alni* are characterised as having narrower spores, a preference for hardwoods, and a subtly different blueing reaction. The NZ collection comes out between Yao's clades A and B but is closer to B and has mixed A/B morphology. The inclusion of New Zealand material into Yao's analysis supports the view this species is currently best treated as a single broadly defined globally distributed taxon labelled *P. caesia*. It is reported on *Nothofagus* and other hosts in S. America (Rajchenberg, Los Poliporos de los Bosques Andino Patagónicos de Argentina, Bibliotheca Mycologica v201, 2006). The morphology of the S. American material agrees with the NZ material. Incidentally, I can find no evidence to support Rajchenberg's statement that *P. atrostrigosus* has "context and tubes becoming blue upon drying and handling" and therefore part of the *P. caesia* group (Notes on New Zealand polypores 2. Cultural and morphological studies of selected species, New Zealand Journal of Botany, v33, pp99-109, 1995).

Cantharellula foetida

FUNNZ2010/0784(PDD95825), on rotting beach log, Kowai Bush, Col. P. White, Id. J. Cooper.

The spores of this collection are weakly amyloid, as described by Stevenson. This was not observed by Egon Horak on his re-examination of Stevenson's type which he transferred to *Omphalina* some time ago. It is similar to Stevenson's *Cantharellula fistulosa* with paler colours and smaller spores, and which Egon transferred to *Pseudoarmillariella*. Other candidate genera with amyloid spores for these species would be *Pseudoclitocybe* or marginally *Clitocybula* or *Pseudoomphalina*. ITS does not place this collection near Genbank sequences deposited as *Cantharellula umbonata*, *Pseudoarmillariella ectypoides*, *Clitocybula lacerata* or a number of *Pseudoomphalina* species. The sequence is very similar to two recently deposited accessions of *Pseudoclitocybe cyathiformis* supporting the view this is now perhaps better placed in that genus.