

## Mycological Notes 22: Leaf spots on *Coprosma*

Jerry Cooper – May 2013

New Zealand species of *Coprosma* have a common and distinctive leaf spot. It is usually identified as *Mycosphaerella coacervata* and is pictured in a number of publications. More often than not examination of the leaf spot shows it is asexual and so is referred to the anamorph of *M. coacervata*. Sydow's 1924 original description of *Mycosphaerella coacervata* from *C. robusta*, Wellington, includes the description of this pycnidial anamorph with conidia 5-6 x 1.5-2.5µm.

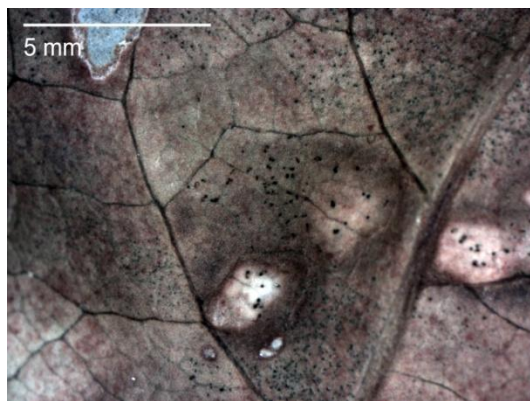
Aptroot (*Mycosphaerella* and its anamorphs: 2. Conspectus of *Mycosphaerella*, 2006) examined the type and indicated "*The isotype contains only various coelomycetes*". It seems likely he examined only the pycnidia mentioned by Sydow.

It also seems likely this is the same fungus as *Phyllosticta coprosmae* described by McAlpine in 1902 from Victoria, Australia on a *Coprosma* leaf. McAlpine described conidia 6 x 2-2.5µm.

Here are three collections of a *Coprosma* leaf spot (nearly) conforming to these descriptions of *M. coacervata* anamorph/*Phyllosticta coprosmae*...

### JAC12663 *Mycosphaerella coacervata* sensu stricto on *Coprosma robusta*

Olive green tendrils associated with pycnidia on lower surface (*Asteromella* state?). Conidia 10 x 1.7µm. This leaf spot was isolated into culture where it consistently develops a *Ramularia* state with hyaline conidia and ramoconidia.



Leaf with spots and pycnidia



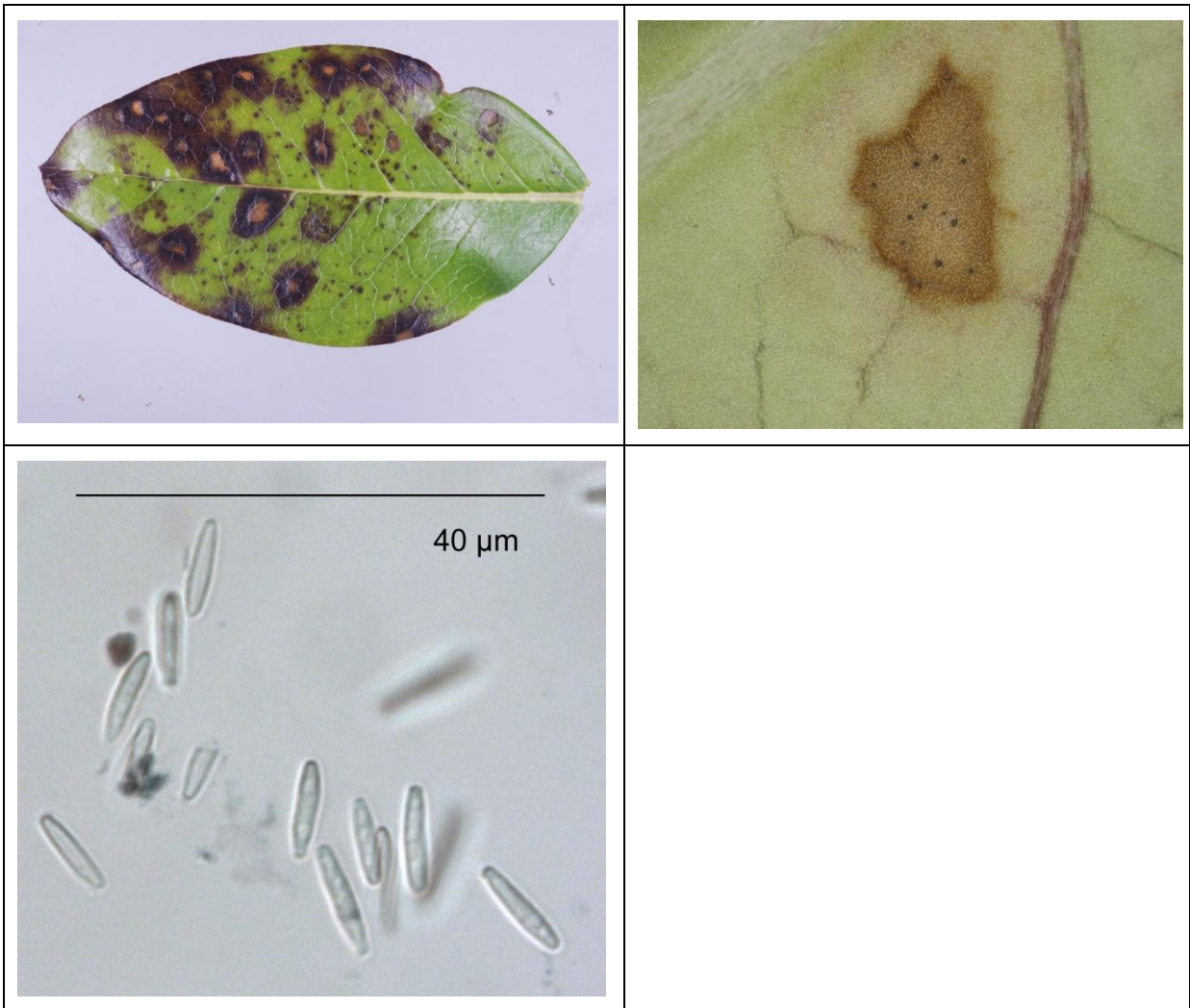
Pycnidia exuding green tendrils of conidia



Conidia from pycnidia

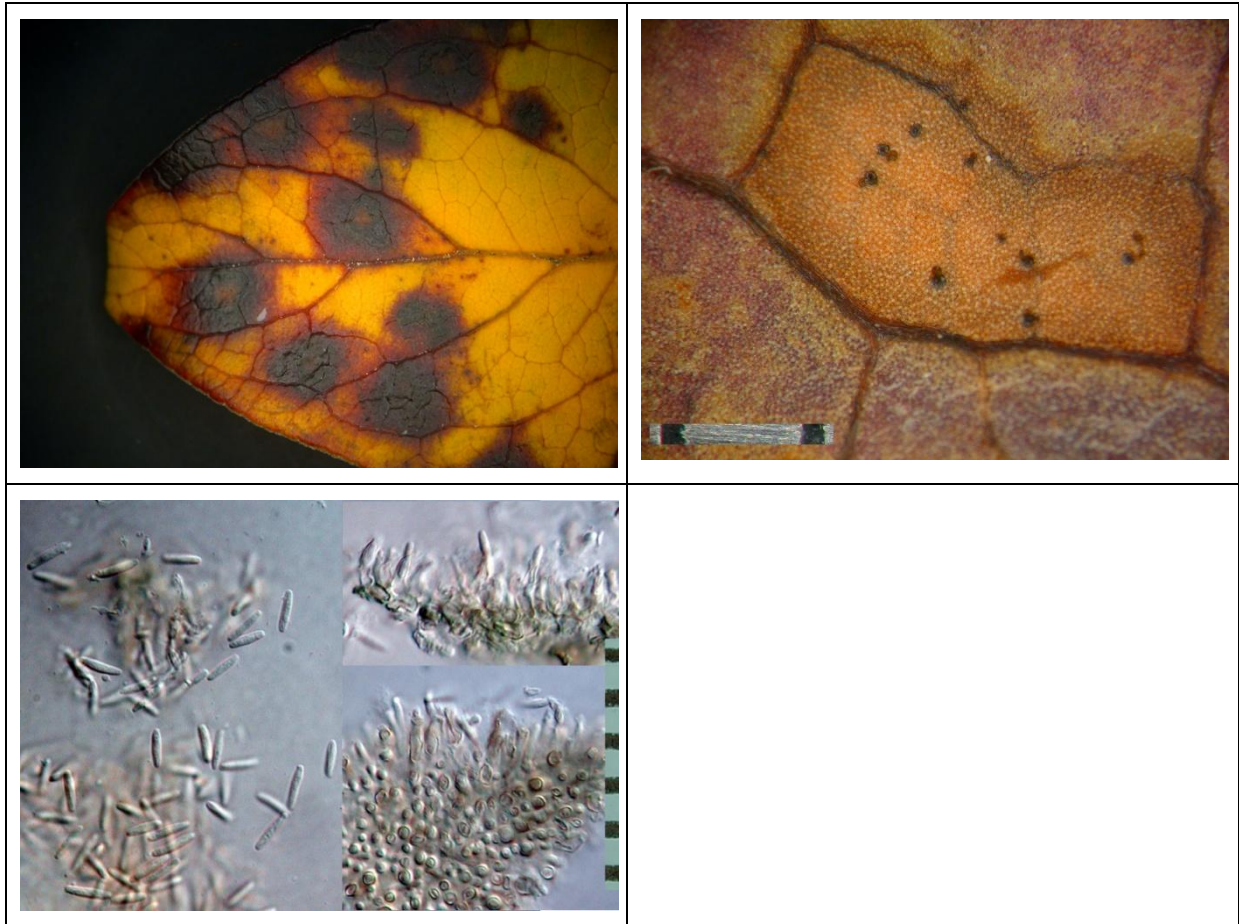
**JAC12394 *Mycosphaerella coacervata* sensu stricto on *Coprosma robusta***

Purple blotches on upper surface of leaf and necrotic patches with immersed pycnidia below. Pycnidia to 120 $\mu$ m diameter. Conidia length=7.2–10.2 $\mu$ m ( $\mu$ =8.5,  $\sigma$ =0.87), width=1.5–1.9 $\mu$ m ( $\mu$ =1.7,  $\sigma$ =0.16), Q=4.2–5.7 $\mu$ m ( $\mu$ =5.04,  $\sigma$ =0.57), n=9.



**JAC10669 *Mycosphaerella coacervata* sensu stricto on *Coprosma robusta***

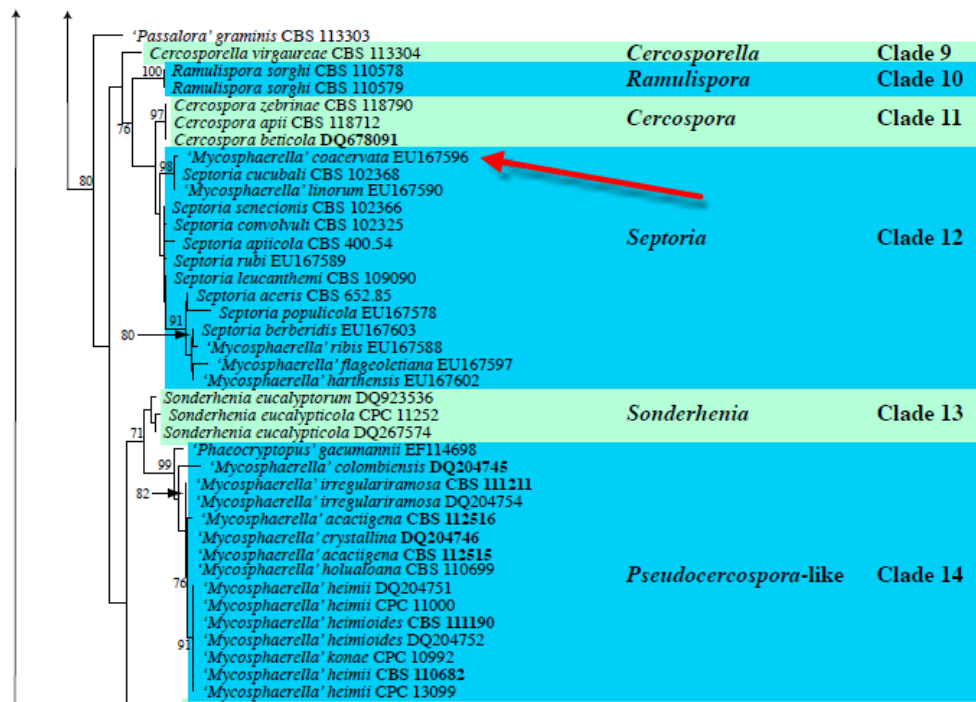
Leaf spot causing purple blotches on living leaves. Conidia 11 x 2. Clearly phialidic.



Genbank lists a sequence of *Mycosphaerella coacervata*, EU167596, which is based on CBS113391 collected from Russell on *Coprosma robusta* by G. Verkley (V2020). The database contains no detail on whether collection was the teleomorph or anamorph.

This sequence appears in quite a number of papers, e.g. **Unravelling Mycosphaerella: do you believe in genera?** Crous et al, Persoonia 23, 2009: 99–118. Here '*M. coacervata*' appears in Clade 12 of Septoria-like species within the Mycosphaerellaceae ...





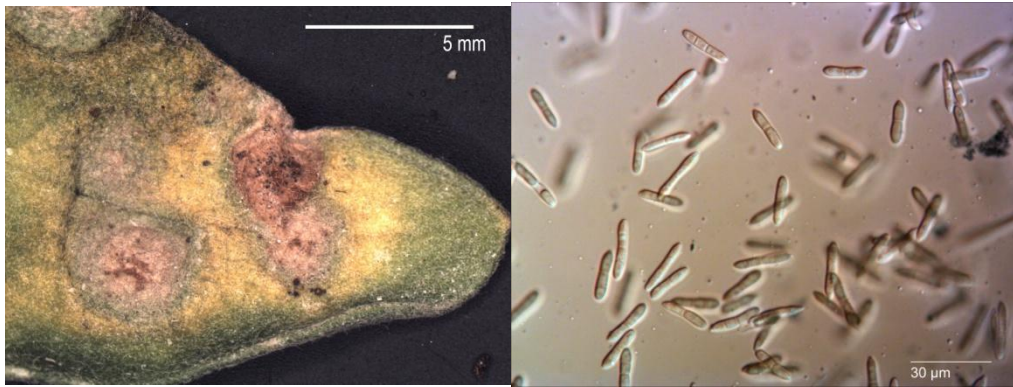
A culture of *M. coacervata* derived from JAC12663 was sequenced but is not the same as the EU167596 Genbank sequence. They can't both be *M. coacervata*. In fact my sequence of material of *M. coacervata* is very close to a sequence of the type of *Ramularia eucalypti*, described in 2007 from *Eucalyptus* in Italy.

Then the story became even more complicated.

Some time ago I found a leaf-spot on Sea-stock, *Matthiola incana*, growing on a local beach. A search of the literature indicated it was *Ascochyta matthiolae*, agreeing in all respects with the descriptions. It was a new record for New Zealand and so I isolated the fungus into culture and it too was recently sequenced, with a surprising result. First, here's the collection...

#### JAC12641 *Ascochyta matthiolae* on *Matthiola incana*

Conidia 15-30 x 2.8-3.5µm exuded from pycnidia as pink tendrils. This fits with Priest's concept of *A. matthiolae* with conidia 11-22(-33) x 2.5-4µm (M.J. Priest. Fungi of Australia – *Septoria*, 2006). In his discussion Priest notes that the fungus (recorded under this name) is really a *Septoria*, and that *Septoria henriquesii*, recorded for NZ, is distinguished by conidia 11-12 x 2µm (see Saccardo Sylloge v3). It is worth noting that Lindquist in his description of Argentinian material of *Septoria henriquesii* forma *santonensis* describes conidia 12-20 x 3-4µm (see also Saccardo Sylloge v14, p967 for the original), which is closer to my collection. So it is possible that NZ collections of *Septoria henriquesii* conform to *Septoria henriquesii* forma *santonensis* and are the same fungus on *Matthiola*. That would make *Ascochyta matthiolae* (1899) and *Septoria henriquesii* forma *santonensis* (1889) synonyms, for which *Septoria santonensis* would be an appropriate correct name.



It turns out that a sequence of this is identical to the Genbank sequence deposited *Mycosphaerella coacervata* (and *M. linorum*)

Here's the ITS tree with the various sequences ...



So what can make of this? Here's my interpretation.

'*M. coacervata*' EU167596 CBS113391 was incorrectly identified. I expect an examination of the collection would show conidia longer than that described for *M. coacervata*, thus conforming to the morphological concept of *Septoria*, and confirming its position in the *Septoria* clade. It is the same as '*Ascochyta*' on *Matthiola incana*, and is thus probably a pleurivorous fungus for which many names might exist. At the moment the best guess at a correct name would be *Septoria santonensis* or *Septoria matthiolae*.

The real *Mycosphaerella coacervata* is unusual because in vitro it forms pycnidia, but in culture forms a *Ramularia* state (no I didn't cross contaminate isolates). I can find no records of a *Mycosphaerella* with such synanamorphs, altho I haven't looked very hard. A sequence confirms that it appears in Crous' *Ramularia* clade and is close, if not the same, as *R. eucalypti*. If it is conspecific then this would be another pleurivorous fungus for which other undiscovered names might exist. The earliest name so far would appear to be *Ramularia coprosmae* based on McAlpine's *Phyllosticta*, depending on the eventual disposition of *Mycosphaerella* sensu lato incorporating numerous anamorph forms.

Assuming mycosphaerella-like fungi are host limited, giving new names to isolates from new hosts, and using host names as epithets, probably isn't appropriate.