

FUNGI AND FOREST HEALTH IN THE ABSENCE OF FIRE: ECTOMYCORRHIZAL COMMUNITY ECOLOGY OF TASMANIAN *Eucalyptus delegatensis* FOREST

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Introduction

Eucalypt decline is widespread in Australian forests and has many causes. Theories have linked absence of fire to decline in *E. delegatensis* forest in Tasmania^{1,2}. The application of fire can ameliorate dieback symptoms in the canopy². There is also evidence that ectomycorrhizal fungi (which perform key ecosystem functions) differ in healthy and declining forests³ exposed to different fire histories.

The research presented in this poster addresses the following questions:

- What changes take place in the mycorrhizal community with increasing time since fire?
- Is ectomycorrhizal community composition related to tree health, soil chemistry or understorey vegetation?

Study sites are located in high altitude *E. delegatensis* forest in northern Tasmania. Six plots have a wet sclerophyll understorey and six plots have a dry sclerophyll understorey (Figure 1). These 12 plots have different fires intervals from long unburnt to burnt 20 years ago. Half of the plots, one from each fire interval, will have a burn treatment during winter of 2008.

Preliminary Pre-burn Observations

Observations show differences between plots with different fire histories and understorey vegetation but further analysis is required to confirm this relationship.

Plots with dry sclerophyll understorey and more recent fire appeared to have:

- a more diverse, abundant ectomycorrhizal community with most species from the Cortinariaceae or Tricholomataceae (Fig. 2)
- healthier eucalypts trees (Fig. 1)



1a



1b



2a



2b



2c



2d

Figure 2. Ectomycorrhizal sporocarps collected during 2007. a. Boletus sp. b. Amanita sp. c. Various fruiting bodies mostly from the Cortinariaceae d. Hypogeous, "truffle like" fruiting bodies

Figure 1. Tasmanian *E. delegatensis* forest. a. With wet sclerophyll understorey b. With dry sclerophyll understorey