

## SUCCESSIONAL PATTERNS IN *GYMNOSTOMA* MAQUIS ON ULTRAMAFICS IN SOUTHERN NEW CALEDONIA: THE ROLE OF FIRE.

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In many regions of New Caledonia, the ultramafic maquis appears to possess fire adapted traits in addition to being adapted to substrate conditions (Morat *et al*, 1986 b). Selection of species in these communities may favour fire adapted taxa over ultramafic species. A phytosociological survey was conducted in *Gymnostoma deplancheanum* communities in southern New Caledonia to identify floristic changes which may suggest a fire related succession pattern. Fire adapted responses of the more common species were also recorded for these communities to both quantify the succession pattern and possibly identify the biogeographic origins of fire tolerance in New Caledonia.

MDS ordination of the floristic survey combined with a succession index best explains the variance in the data suggesting the pattern is successional. There appear to be 4 different floristic groups which occur at different times since fire. The first early colonist phase is dominated by vegetative regenerating genera shared largely with the Australian region. Later succession steps are dominated by obligate seeders which facilitate subsequent colonisation of sensitive maquis and forest taxa.

It appears that fire adaptation in New Caledonian maquis originated from ancestral Gondwanan taxa prior its separation. These sclerophyllous taxa may have increased their radiation on ultramafics during fire promoting dry periods. A second evolution possibly took place in New Caledonian forest taxa in response to dry conditions and led to the creation of fire adapted endemic genera.