POPULATION DYNAMICS IN SOME RAINFORESTS ON ULTRAMAFIC SOILS IN NEW CALEDONIA, AND THEIR IMPACT ON PATTERNS OF CANOPY RICHNESS.

J. READ*, G.S. HOPE**, E. GAUDRIE***, T. JAFFRÉ**** & J.-M. VEILLON****
*Department of Ecology & Evolutionary Biology, Monash University, Clayton 3168 Australia
** Department of Archaeology & Natural History, Research School of Pacific Studies, Australian National University, Canberra 2600 Australia
*** CIRAD-Forêt (Nouvelle-Calédonie), B.P. 10001, Nouméa, Nouvelle-Calédonie. Currently at Office National des Forêts, 1 allée des Fontainiers, 04 000 Digne, France
**** Centre ORSTOM de Nouméa, BP. A5 Nouméa Cedex, Nouvelle-Calédonie

Permanent plots are being established in monodominant and mixed rainforests over a range of altitudes on ultramafic soils in New Caledonia to investigate the factors determining canopy richness. Initial studies are examining the dynamics of the major tree species to assess the role of disturbance and successional change in controlling the canopy richness of these stands. The monodominant stands being investigated are dominated by *Nothofagus* spp. and have a high species richness in the understorey, despite the low richness of the upper canopy. Many of the species recorded in the understorey are potentially capable of reaching the canopy, including species that typically occur in the canopy of nearby mixed rainforests. However, the dominant canopy species of *Nothofagus* are rare as saplings, with the population sample showing a bell-shaped size distribution. It therefore appears that these *Nothofagus*-dominated forests are successional, and in the hypothetical absence of disturbance the *Nothofagus*-dominated canopy is likely to be replaced by a species rich canopy similar in composition to the adjacent mixed rainforests.

Study of adjacent mixed rainforests suggests that these too are seral forests, with many of the common canopy species not represented in the understorey. Some of the canopy species are well represented in the smaller size classes, and there are few canopy species occurring in the understorey which are not also represented in the canopy. Therefore these forests may eventually become less species-rich as the forest ages, with only the most shade-tolerant species occurring in the canopy.