Davis Expedition Report Jane Herbert

Plant collecting expedition
New Caledonia, 22nd May to 12th June 2001

I travelled to New Caledonia in May this year in order to collect material of the poorly known endemic plant species *Canacomyrica monticola*. I joined a group of three scientists from the Royal Botanic Garden Edinburgh who were collecting material of various *Araucaria* species that are also endemic to this small Pacific island.

I am studying for a PhD at the University of St Andrews on the relationships within the Myricaceae, of which *C. monticola* is a member. I hope to look at the evolution of breeding systems within the family and as *C. monticola* is thought to occupy a basal position in the group, it was particularly important that I should be able to include it in my work. At present very little is known about this species.

Details about the localities of populations of *C. monticola* were obtained from herbarium specimens held at the IRD office in Noumea, the capital of New Caledonia. From these it was clear that *C. monticola* is not found in the north of the island and is, in fact, restricted to the ultramafic substrate found almost exclusively in the southern half of the island. The distribution of the species was restricted within this area to high altitude sites, not being recorded below 600m and more commonly recorded at >1000m.

The expedition time was divided between searching for and collecting leaf material of *Araucaria* species and of *C. monticola*. On the first collecting day we climbed Mont Mou near Noumea where *C. monticola* was recorded in the original description of the species. However, I did not find specimens there and suitable available habitat covered a very small area.

Later that week we climbed Mont Bouo which is one of the peaks of the Monts Koghi range. At about 1050m, just a few meters below the summit of this peak we found specimens of *C. monticola* in flower and fruit beside the path. Descending on the other side of the peak we found further specimens and I was able to collect leaf and seed samples from almost 40 plants representing the majority of plants in that area. At this altitude *C. monticola* was growing to about 4m in height and was forming part of the canopy of a relatively short-growing cloud forest community. Conifers such as *Podocarpus gnidiodes* and *Falcatifolium taxoides* were growing in this area and the ground cover consisted mostly of ferns, mosses and lichens.

At the end of the first week we travelled to Mont Dzumac where *C. monticola* had been recorded from beside the River Ouinné at 600m. However, I was unable to locate any specimens from this locality.

It was not until the end of the second week that I was successful in finding a second population of *C. monticola*, this time at relatively low altitude (approx. 500m) and in a very different habitat type than the population at Mont Bouo. The plants were found at Mont Mamié on the east coast of the island. Here the plants were growing on almost bare rock with a sparse covering of moss and numerous fresh-water springs that made the substrate very wet. The surrounding vegetation was low growing and

the specimens of *C. monticola* were all less than 1m tall. Again, many plants were bearing fruit but in this population many appeared to be multi-stemmed giving the impression that perhaps some clonal growth, common in the Myricaceae, was occurring. There were numerous seedlings in this population and I was able to sample more than 80 individuals.

Seeing *C. monticola* in the field enabled me to make some interesting observations. It was clear that some plants bore hermaphrodite flowers whilst others appeared to bear only male inflorescences, confirming an earlier report to this effect. I was also able to appreciate the enormous variety of growth form between populations growing at high and lower altitudes in different parts of the island.

All the leaf material that I collected was dried in silica gel in preparation for DNA extraction in the laboratory. I have begun this process and the next step will be to use molecular markers such as AFLPs (a fingerprinting technique) to look at the level of inbreeding in the two populations as an indicator of whether these plants are predominantly selfing or outcrossing. I hope to publish the results of this work in conjunction with work on the phylogenetic position of the species within the Myricaceae. The material collected will also enable me to determine whether *C. monticola* is a hyperaccumulator of metals, and I may also be able to make a chromosome count of the species; all adding to the pool of information about this taxon. Further, an important result of my expedition is that I have been asked to write an account of the family for the Flora of New Caledonia produced by the Paris Museum.