in BOUCHET P., LE GUYADER H. & PASCAL O. (Eds), *The Natural History of Santo*. MNHN, Paris; IRD, Marseille; PNI, Paris. 572 p. (Patrimoines naturels; 70).

FOCUS ON *GEISSOIS* (CUNONIACEAE): ANOTHER EXAMPLE OF THE MELANESIAN CONNECTION

Yohan Pillon

Figure 104: *Geissois denhamii* at Penaoru, Santo.

The genus *Geissois*, taken in the strict sense (i.e. excluding the Australian species), a member of the family Cunoniaceae, is a group of trees and shrubs endemic to the islands of the Pacific. It is easily distinguished by its opposite palmately compound leaves and its bright red flowers arranged in bottle-brush like inflorescences that attract nectarivorous birds (Fig. 104). Besides their ornamental potential, species of *Geissois* provide valuable timber and several species possess antibiotic and anti-oxidant properties, a feature shared by many Cunoniaceae.

The genus encompasses 19 species, 13 of which are endemic to New Caledonia, four to Fiji, one to Temotu Province (Vanikoro) in the Solomon Islands, and one to Vanuatu (Fig. 105). *Geissois denhamii*, the Vanuatu species, ranges from Vanua-Lava in the North to Aneytium in the South and is present on most of the larger islands, including Santo. It is a small to large tree found in primary rainforest or sometimes in secondary vegetation (white grass) at medium to high elevation, including the summit of Mount Tabwemasana.

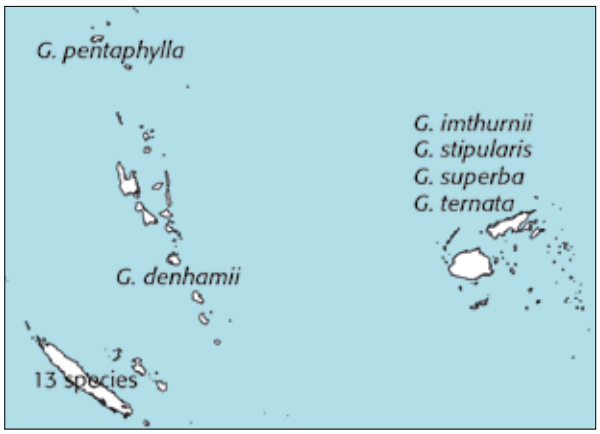

Figure 105: Distribution of the species of *Geissois* within Melanesia.

The Santo 2006 expedition provided an opportunity to collect material for a phylogenetic study of Cunoniaceae largely focused on the taxa occurring in New Caledonia. Two nuclear genes were sequenced for all members of *Geissois* from New Caledonia and Vanuatu, and the results were used to reconstruct the relationships among the species. The phylogenetic tree (Fig. 106) indicates a close relationship between *G. denhamii* and the New Caledonia species, with *G. denhamii* nested within the New Caledonia group, suggesting that its ancestor originated in New Caledonia. Although the Fijian and Solomon Island species

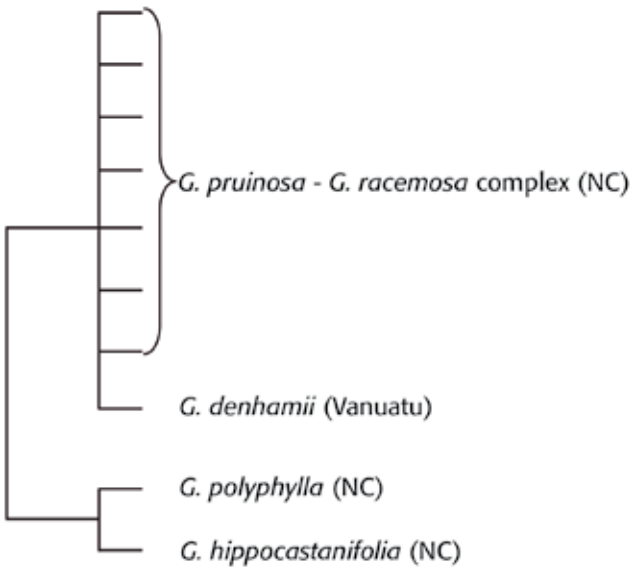

Figure 106: Phylogeny of the genus *Geissois* according to molecular data.

have not yet been included in phylogenetic studies, a similar position can be expected for them.

New Caledonia is home to the largest number of species and the greatest morphological diversity within *Geissois*, and it seems plausible that this old archipelago was the cradle of the genus. As the islands of Vanuatu emerged from the sea through the process of volcanism, the genus no doubt reached them through long-distance dispersal, which was facilitated by small winged seeds that can easily be carried by the wind. Thus *Geissois* is similar to other genera such as *Megastylis* (Orchidaceae), *Oxera* (Lamiaceae) and the genera of Araliaceae mentioned above, all of which likewise had members that dispersed from New Caledonia (or in one case perhaps Fiji) to Vanuatu, demonstrating the biogeographic affinities between these neighboring Melanesian archipelagos.