



Large epiphyten strewn matai trees at Pureora.

different classes of tree species rather than just the number of individuals! Finally, the tagging of a large number of food trees enabled regular assessments of their patterns of flower and fruit production. One astonishing result of this was discovering a large matai which changed sex half-way through the study!

Kokako diet

A huge variety of foods is consumed by kokako (their voracious appetites extending even to berries hand-proffered to birds caught for banding in mist-nets).

Invertebrates, including beetles, cicadas, the bag-moth (*Liothula omnivorus*) and particularly the green sixpenny scale insect (*Ctenochiton viridis*) featured in the diet mainly during summer. For example, at Pureora the scale insect formed up to seventy percent of items eaten in one month. (A policy of sampling all foods did not normally extend to invertebrates but field assistant Neil Howie assured me of the sweetness of scale-insects.)

Fruits of a variety of trees and shrubs were taken in the autumn when they were most abundant while leaves were eaten throughout the year, particularly in the spring, when other foods were scarce.

Some plant species were apparently selected for, featuring in the diet more prominently than their actual abundance would suggest. Preference was shown, for example, for five-finger (*Pseudopanax arboreus*), raukawa (*P. edgerleyi*), broadleaf (*Griselinia littoralis*), putaputaweta (*Carpodetus serratus*), kaikomako (*Pennantia corymbosa*) and a number of species of liane and epiphyte. Overall use of podocarps (the main group of timber species) was lower than expected from their abundance, but this varied considerably between seasons and years; eg matai (*Podocarpus spicatus*) use ranged between 1 percent and 80 percent in different seasons, while it contributed approximately 18 percent of the foliage of the forest. This is probably related to the periodicity of fruit production exhibited by these species (Beveridge, 1973). Matai was the only podocarp to produce large quantities of fruit during that period of the study and use of the other species could be expected to increase during years of high seed production. There was a greater use of podocarps if the large quantities of lianes such as supplejacks (*Ripogonum scandens*) and epiphytes such as the spleenwort (*Asplenium flaccidum*) were included with their host trees in the analysis.

Competition for food

There is considerable overlap between the foods favoured by the kokako and possums, deer and goats. This suggests that there is a strong likelihood of actual competition occurring and having a deleterious effect on kokako. Subsequent analysis of distribution and rates of spread of possums (Leathwick, Hay and Fitzgerald, 1983) provides considerable support for this hypothesis.

These mammals have reduced the abundance of preferred food plants in much of the remaining kokako habitat and the present distribution of the birds suggests that this is an important factor contributing to their decline. With few exceptions the best areas for kokako — the



Feeding on Pepperwood berries

