Seed dispersal by kereru (*Hemiphaga novaeseelandiae*) at Wenderholm Regional Park

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By consuming large fleshy fruits, kereru (*Hemiphaga novaeseelandiae*) play an important role as seed dispersers in New Zealand forest ecosystems. I set out to investigate the role of the kereru in seed dispersal at Wenderholm Regional Park north of Auckland. Kereru behaviours, home ranges, seed passage through the kereru gut, seed germination and regeneration strategies of kereru food plants were all studied.

Feeding trials with captive kereru showed that kereru defecate most seed within half to two hours. Seed size was found to have no significant effect on passage time, indicating that seed size has not been a major influence in the evolution of kereru gut passage traits. It is suggested that kereru perhaps cope with their high bulk diets through behavioural adaptations rather than gut passage traits.

Trials were conducted to investigate relationships between kereru gut passage and seed germination. Germination was found to be highly variable between individual trees. Gut passage enhanced total germination of karamu (*Coprosma robusta*), but had no significant effect for ti, (*Cordyline australis*), taraire (*Beilschmiedia tarairi*), kahikatea (*Dacrycarpus dacrydioides*), or nikau (*Rhopalostylis sapida*) or on the rate of germination for any species. Manual removal of fruit pulp enhanced total germination and increased rate of germination for all species tested. Overall, kereru gut passage was found to act primarily as a pulp-removing mechanism, and although beneficial for germination, it was not essential.

Home ranges were calculated for six radio-tagged kereru. Minimum annual ranges varied significantly between adult birds and un-paired young birds, with adults occupying much smaller areas. These differences were attributed to dominance and therefore better access to food in adult birds. Movements over longer distances were often related to food availability, and based on their more frequent long distance movements, unpaired young birds were found to be potentially better seed dispersers.

Monitoring of radio-tagged kereru showed that use of branches and canopy level by kereru was governed by comfort and fear, with birds tending to feed on thin, exposed branches but retiring to thick, sheltered branches to rest. As a result post-feeding activity varied between tree species, with individuals more likely to leave a taraire tree after feeding than they were a puriri (*Vitex lucens*), due to fruit positioning on the tree. Seed deposition patterns reflected this and most seed of all species was deposited beneath puriri. Behaviours varied depending on the age of the bird, with juvenile kereru more likely to visit a larger number of sites thus making them potentially better dispersers. Regeneration strategies of kereru-dispersed species were described, with seeds found to be either light or shade regenerators. All seeds were found to be taken more frequently to shady sites than high-light sites and thus kereru dispersal appears to favour large, shade tolerant seeds of taraire, tawa (*Beilschmiedia tawa*) and the like.