

Weka: Campsite hooligans or important seed dispersers?

Jo Carpenter, University of Canterbury PhD student



Weka are often vilified as sandwich-stealing scallywags. Their tendency to gobble any food available (whether it be an unwatched biscuit, a penguin egg, or a critically endangered gecko) also makes them troublesome for conservationists. However, my PhD research has found that these charismatic birds may offer hidden benefits for New Zealand's forests. Weka are potentially important seed dispersers, as they consume over 26 species of native fruits and have a large beak that allows them to also eat fruits that smaller birds can't manage. However, little is known about the

seed dispersal capabilities of weka, including how far they typically disperse seeds.

To be able to ascertain how far weka disperse seeds requires data on daily weka movement patterns, and seed retention times (the amount of time it takes for seeds to pass through a weka). With the help of some long-suffering field assistants, I attached GPS tags to 46 weka at three South Island sites (Lake Mahinapua, Goldsborough Reserve, and Ulva Island), to obtain high-resolution movements over a two week period. To assess the amount of time it takes for a seed to pass through a weka, I inserted tiny microchips (passive integrated responder tags, or PIT tags) into hinau and miro seeds. I fed the tagged seeds to captive weka, then scanned the birds at regular intervals to see whether the microchipped seeds were still inside them. Fascinatingly, these trials showed that weka have the longest avian seed retention times ever recorded, with most seeds taking over a day to pass. Some seeds were still inside the weka five weeks later.

Using the weka movement data and the seed retention times, I estimated that weka disperse 94-97% of seeds away from the parent canopy. As seeds can suffer from disproportionate mortality beneath their parent, this is an important way of assessing how effective weka are as seed dispersers. Weka dispersed hinau seeds an average of 152 m away from parent canopies, and miro seeds an average of 131 m away from parent canopies. Around 1% of seeds were dispersed over 1 kilometre away from the source, with some seeds reaching distances of 2.3 km. These dispersal distances are even greater than those calculated for kereru, which demonstrates that weka are highly capable dispersers. In addition, the long seed retention times of weka mean that they probably perform vital long distance dispersal events on occasion, enabling plants to colonise new habitats and maintaining gene flow between distant plant populations.

Hopefully, the knowledge gained from this research will facilitate more holistic decision-making when debating the presence of weka on certain islands, or when considering their reintroduction to areas where they have become locally extinct. Weka may be campsite hooligans, but they also perform significant ecosystem functions in New Zealand's forests.

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