

Understanding banded rail (*Gallirallus philippensis assimilis*) habitat use in mangrove habitats of New Zealand

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Mangrove forests in New Zealand are expanding seawards, fuelled by anthropogenic increases in terrigenous sediments and nutrients in estuaries. Consequently, large-scale mangrove removal has been carried out throughout New Zealand in an attempt to restore open tidal flats. However, little is known about how the expansion and potential removal of mangroves may affect the birds which use mangrove forests. Developing an understanding of species-habitat relationships is pivotal to targeted conservation management; an absence of information on mangrove-avifauna associations likely hinders holistic mangrove management practices in New Zealand.

As many as forty-eight bird species are thought to make use of mangrove environments in New Zealand. Of these birds, the banded rail – an elusive native species undergoing decline – most closely associated with mangroves, and is thought to use these coastal forests as foraging habitat. Previously found throughout the country, an estimated eighty to ninety percent of New Zealand's banded rail population is today restricted to coastal pockets of saltmarsh and mangrove forest found in the North Island. The banded rail population is predicted to decline by ten to thirty percent over the next ten years. Unfortunately, the cryptic nature of banded rails means their ecology is poorly understood; data collected on banded rails are sparse and inferences into their precise habitat use are severely limited.

My research project seeks to build on limited banded rail study to date and determine how banded rails make use of mangrove habitats. To do so, I will assess banded rail habitat use at two scales. Firstly, I will track banded rails using GPS loggers to determine their home-ranges sizes and estimate how they use different estuarine vegetation types. Secondly, I will evaluate banded rail activity within localised patches of mangroves, using the presence of footprints to assess banded rail micro-habitat use and activity. By understanding the habitat use of banded rail at these scales, I hope to improve an understanding of its ecology and the conservation management of its habitats.



Left: Mangroves in Mangawhai estuary | Right: banded rail footprints in the mud