

Research has implications for New Zealand bird conservation

28 March 2019

Research by recent Victoria University of Wellington Ph.D. graduate Dr. Nyree Fea shows significant differences in the way bird species respond to conservation efforts.

Her work, done as part of her Ph.D. in Ecology, has implications for conservation management in New Zealand.

According to Dr. Fea's research, large endemic [birds](#) like kaka or kereru respond positively to control of the mammalian predators that threaten birds in New Zealand forests: possums, stoats, and rats. However, species that arrived in New Zealand more recently, like the blackbird, silvereye and fantail, either show no change at all after the removal of mammalian predators, or in some cases even show a decline.

"Large, deeply [endemic birds](#), like the kaka and tieke (saddleback), are believed to have been isolated from mammalian predators for longer and may have lost any natural defences against such predators," Dr. Fea says. "For example, birds like kaka and tieke nest in holes and can be trapped by an approaching mammalian predator. Intensive predator control, like eradication of mammals from off-shore islands or sanctuaries like Zealandia, particularly benefits these species."

However, Dr. Fea says the more recently arrived birds, such as the silvereye and fantail (both with close relatives in Australia), share a more recent evolutionary history with mammals, and are likely to have retained defences against these potential predators. She made an extensive study of fantails and says they are able to build their nests on very thin branches. These nests have a greater chance of surviving rat predation, possibly because they are less accessible to rats.

"Dr. Fea's project is the first time the results of bird monitoring from so many different pest-control projects across the country have been brought

together and analysed as a whole using a formal meta-analysis process," says her Ph.D. supervisor Dr. Stephen Hartley from the School of Biological Sciences.

Dr. Fea approached her project from a number of different angles. She conducted a national meta-analysis of published data from conservation projects; analysed large datasets from her own team at Victoria University of Wellington, the Department of Conservation and the Greater Wellington Regional Council to model the responses of bird populations to increases in rat abundance; closely monitored bird populations in the greater Wellington region to see how they were affected by a 1080 operation; and carried out field tests on nesting fantails in Wellington.

The latter involved tracking fantail breeding pairs in Wellington's nature reserves to observe how survival of the adults and their offspring differed according to estimates of rat abundance at the nest, and how the nest was placed.

"I loved this part of my research," Dr. Fea says. "Fantails are fascinating creatures to observe, and I had a lot of fun tracking down the fantails and their nest young and, if the nest young had disappeared, trying to use camera footage and evidence at the [nest](#), to solve the murder mystery like a detective!"

"My work shows that moderate levels of conservation management will benefit some species far more than others, but that there are certain highly [vulnerable species](#) that will only benefit from high intensity pest control," Dr. Fea says. "High levels of pest control are particularly effective for larger birds that have a longer evolutionary association with New Zealand."

Dr. Fea's work also shows that responses to [predator](#) management are mixed for the smaller, endemic species like the rifleman and tomtit. Her work suggests that these very [small birds](#) appear to

be particularly vulnerable to increases in rat abundance that occur a year or two after mammal control ceases. It is also possible that these very small endemics are suppressed by populations of the larger insectivorous birds (like robins, tui, and tieke) whose populations are experiencing a resurgence after the removal of mammalian predators.

Provided by Victoria University of Wellington

APA citation: Research has implications for New Zealand bird conservation (2019, March 28) retrieved 27 February 2021 from <https://phys.org/news/2019-03-implications-zealand-bird.html>

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