New Zealand bird outwits alien predators

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New research published in this week's PLoS ONE, led by Dr Melanie Massaro and Dr Jim Briskie at the University of Canterbury, which found that the New Zealand bellbird is capable of changing its nesting behaviour to protect itself from predators, could be good news for island birds around the world at risk of extinction.

The introduction of predatory mammals such as rats, cats and stoats to oceanic islands has led to the extinction of many endemic island birds, and exotic predators continue to threaten the survival of 25 percent of all endangered bird species worldwide.

Dr Massaro says the impact of exotic predators on the native birds of oceanic islands is particularly profound as they evolved over millions of years largely in the absence of these predators and appear naïve towards newly introduced mammals.

But their study on the bellbird, an endemic New Zealand bird, has identified the ability of a previously naïve island bird to change its nesting behaviour in response to the introduction of a large suite of exotic mammalian predators by humans.

Bellbirds were studied at three sites with varying levels of predation risk: a mainland site with exotic predators present (high risk); a mainland site with exotic predators experimentally removed (recent low risk); and an offshore island where exotic predators have never been introduced (permanent low risk).

It was found that females spent more time on the nest per incubating bout with increased risk of predation, a strategy that minimised activity at the nest and decreased the risk of an exotic predator locating and destroying the eggs.

"Parental activity during the nestling period, measured as number of feeding visits per hour, also decreased with increasing nest predation risk across sites, which would further reduce the risk of an exotic predator destroying the nest," Dr Massaro said.

"It shows that such species are not necessarily trapped by their evolutionary history as is generally considered to be the case but they, in fact, have the ability to change their behaviours in ways that appear adaptive.

"More importantly, this study demonstrates that such a change can occur over an ecologically relevant time-scale of years and not centuries."

Drs Massaro and Briskie say although their research was done on New Zealand birds, the conclusions are applicable worldwide. They believe conservation efforts towards the survival of other island birds could be more effective if advantage was taken of the ability of island birds to respond to exotic predators, especially when the elimination of such predators is not possible.

Citation: Massaro M, Starling-Windhof A, Briskie JV, Martin TE (2008) Introduced Mammalian Predators Induce Behavioural Changes in Parental Care in an Endemic New Zealand Bird. PLoS ONE 3(6): e2331. doi:10.1371/journal.pone.0002331

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