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Aspects of the biology of managed populations of two
Cyanoramphus parakeet species in New Zealand:
breeding biology, pathogen screening and translocation

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Red-fronted parakeet (above) and Malherbe's parakeet (below)

Photos by L. Ortiz-Catedral

I would like to dedicate this work to my parents Alfredo Ortiz Delgadillo and Emma Catedral Hernandez and to the memory of my aunt Eva Margarita Catedral Hernandez. She gave me my first book on birds. Such little gesture has opened up a world of wonders.

ABSTRACT

In this study, a visit to the remote Kermadec archipelago and the translocation of two parakeet species to novel sites opened up opportunities to document aspects of the biology of free-living and captive-bred parakeets. Four years after the eradication of cats and rats on Raoul Island by the Department of Conservation, the Kermadec red-fronted parakeet has naturally recolonised this site, potentially from the adjacent Herald Islets. Over a period of three weeks in March-April 2008, 100 parakeets were captured on Raoul Island and the first evidence of nesting of the species at this site since 1836 was recorded. These observations reinforce the view that eradication of introduced predators such as cats and rats is a requisite for the recovery and establishment of populations of New Zealand parakeets. These observations also suggest that strategic eradication of cats and rats can facilitate the natural dispersal of parakeets.

Taking into account the remarkable recolonisation of parakeets on Raoul Island and the existence of islands free of introduced mammalian predators and red-fronted parakeets in the Hauraki Gulf, a translocation of parakeets was envisaged. Between April and May 2008, 32 red-fronted parakeets were translocated from Little Barrier Island to Motuihe Island, in the first translocation of the species within the Hauraki Gulf in 32 years. Alongside such transfer, a total of 62 captive-bred Malherbe's parakeets were monitored on Maud Island, in the Marlborough Sounds. Because the translocations of red-fronted and Malherbe's parakeets were temporally close, a unique opportunity to study translocated free-living and captive-bred parakeets was identified. The focus of monitoring on both sites was the detection of successful

nesting attempts, a short-term measure of translocation success. On both sites (Motuihe and Maud Islands) evidence of successful nesting was found within a year of the release of the first flocks.

As part of the planning steps for the translocation of red-fronted parakeets, a survey was designed for four selected microorganisms of conservation concern for New Zealand parrots: *Campylobacter*, *Salmonella*, *Yersinia* and the beak and feather disease virus (BFDV). Only the latest was detected at a prevalence of 28% on Little Barrier Island. Subsequent isolation and sequencing of BFDV genomes revealed a previously undescribed genotype of this virus in New Zealand.

The discovery of a new BFDV genome in a wild population of endemic New Zealand parakeets highlights need of future research. BFDV is known to affect the immune system and survival of infected individuals in other species and is likely to hamper conservation efforts for threatened parrot species. The challenges to study BFDV in New Zealand, a global hotspot of parrot diversity, are outlined and high priority lines of research are identified and discussed.

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Although the research presented here is the result of the coordinated effort of numerous individuals, any mistakes or misinterpretations remain the sole responsibility of the author.

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