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**The Prevalence of Psittacine Circovirus
in Native and Exotic Parrots
in New Zealand**

**A thesis presented in Partial fulfilment
of the requirements for the degree of**

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Abstract

Psittacine circovirus (PCV) has been identified in more than 60 psittacine species worldwide in both aviary and wild populations. The virus is a causative agent of psittacine circoviral disease (PCD), a highly infectious disease characterised by beak and feather dystrophy, high juvenile mortality or long-term immunological suppression. The virus is known to be very difficult to control or eradicate and among wild Australian parrots, the prevalence of infection is 10-20 %. No information on the incidence of PCV in parrots in New Zealand was available. The aims of this study were 1) to determine the prevalence of PCV in wild exotic parrots, 2) to determine the prevalence of PCV in wild native parrots, 3) to identify the incidence of PCV in captive native parrots, and 4) to suggest recommendations for the future conservation management of native parrots populations in New Zealand. Two species of exotic parrots; eastern rosella and sulphur-crested cockatoo, and four species of native parrots; kakapo, kaka, kea and parakeet were examined. Feathers of these parrots were collected from different regions in New Zealand and PCR assay was conducted to identify the presence of PCV.

The prevalence of PCV in wild exotic parrots in New Zealand was considerably high in both species of exotic parrots, as the prevalence of PCV at the 95% confidence intervals ranged from 19.17 - 44.02% in eastern rosellas and 22.04 - 33.07% in sulphur-crested cockatoos. No wild native parrots showed any evidence of PCV in PCR assay and given the sample sizes in this study, the prevalence of PCV was estimated as less than 4-7% if PCV is present in the populations. However, the first isolation of PCV in

native parrots occurred in two species of parakeets in captivity: red-crowned parakeets and Antipodes Island parakeets. No significant abnormalities were detectable in the red-crowned parakeets but the Antipodes Island parakeet died shortly after translocation. The presence of PCV was confirmed in contact birds in both cases.

Recommendations

I recommend the following future avenues of investigation, from the results of this study.

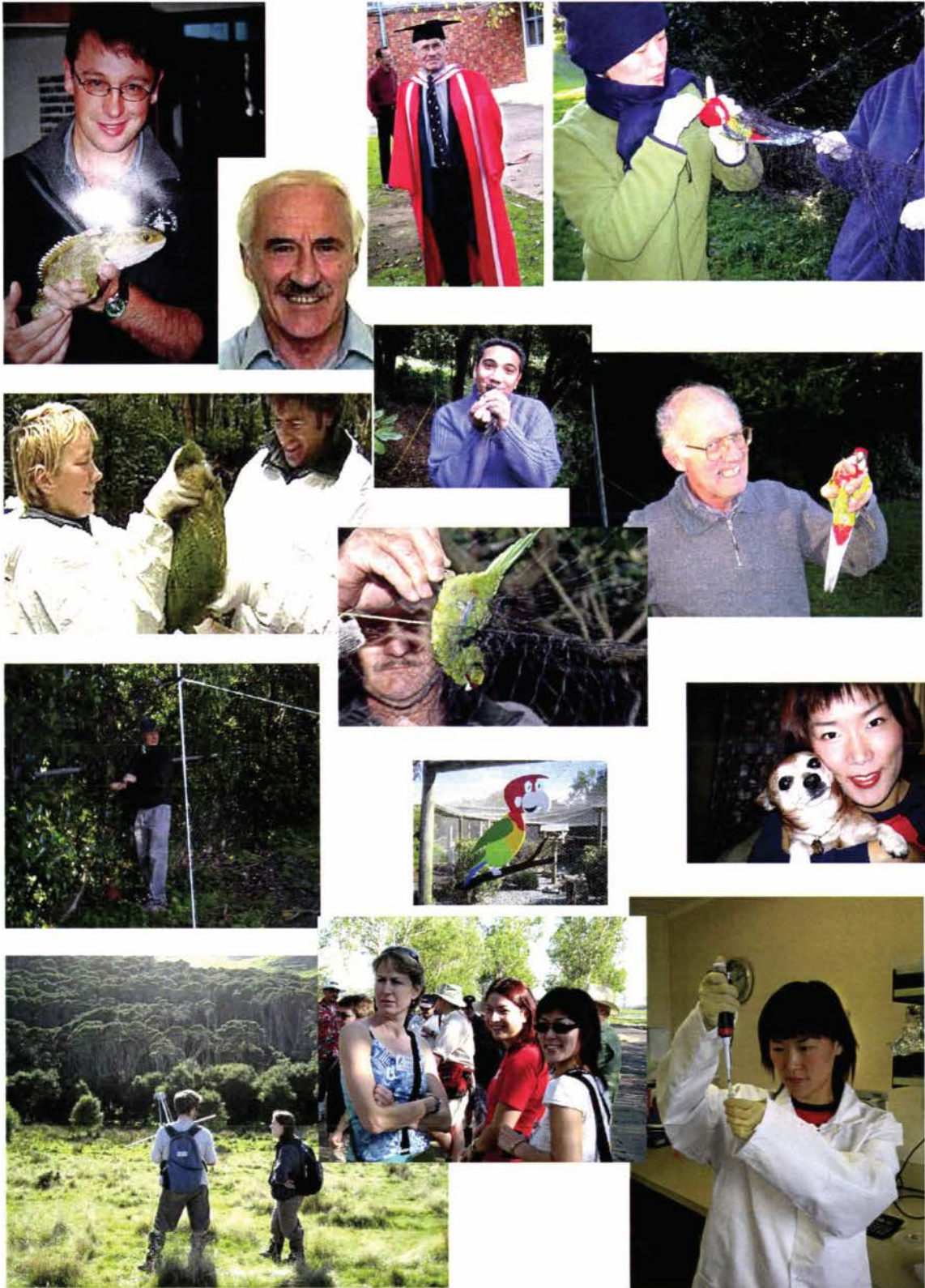
1. Attempts to determine the population size, distribution and ecology of exotic parrots in the wild are recommended. This will allow us to identify the risk of native parrots from contact with exotic parrots.
2. Further sampling of both wild and captive parrots to identify the prevalence and seroprevalence of PCV is required.
3. Intensive monitoring programmes should be undertaken for PCV positive parakeets to identify the impact of PCD in native parrots.
4. Experimental infection of native parrots will provide crucial information not only on the susceptibility, sensitivity, and immunity of native parrots to PCV but also on the ecology of PCV in those species.

The following recommendations for the management of native parrots can be concluded from this study. Prior to translocation or reintroduction of native parrots, the presence of exotic parrots, the prevalence and seroprevalence of PCV should be investigated. Psittacine circovirus should be included in health check and quarantine protocols in the management of native parrots in the wild and in captivity. Nature reserves and captive facilities should be aware of the presence of exotic parrots in the environment and the prevalence and seroprevalence of PCV through regular sampling efforts. The identification of cause of death of parrots that may happen around nature reserves or captive facilities is also essential to identify the presence of PCV.

Additionally, strict hygiene protocols, isolation of native parrots from exotic parrots, and disease screening for PCD in the event of importation of new parrots should be applied in captivity. Vaccination should be investigated as a preventative measure.

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