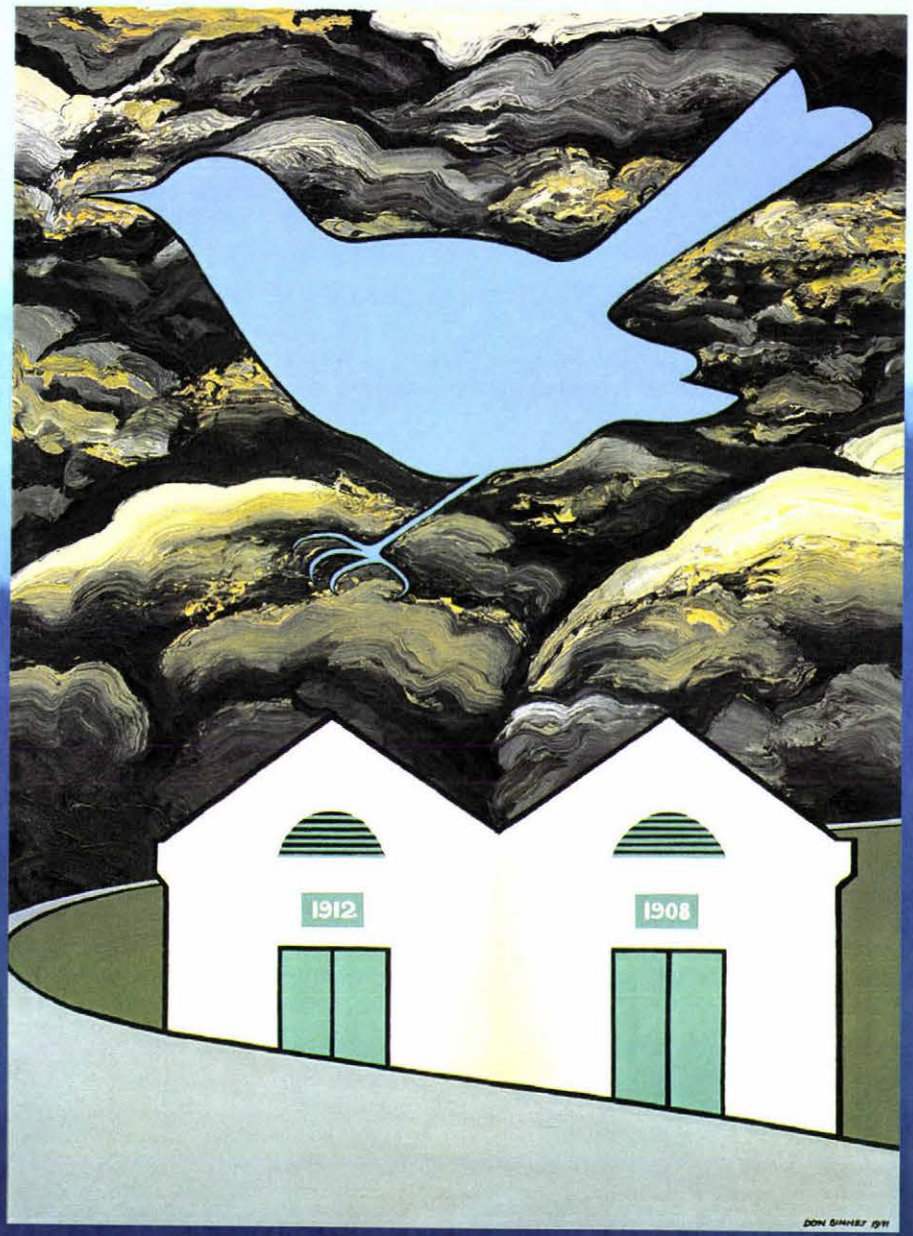
The Stitchbird (Hihi – *Notiomystis cincta*) and its Habitat: Effects on Nesting Behaviour and Reproductive Success



Vanishing Wellington Stitchbird: Don Binney 1971

A thesis presented in partial fulfilment of the requirements for the degree of Masters of Science in Conservation Biology at Massey University, Palmerston North, New Zealand

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2006

Abstract

This thesis grew out of a basic problem in the management of a "Nationally Endangered" New Zealand bird species, the stitchbird. Following European colonisation of New Zealand it is hypothesized that predation and severe habitat loss along with disease, extirpated stitchbird from the North Island and reduced the distribution to a single population on Little Barrier Island. Efforts to recover the stitchbird have involved many translocations to other islands. Three of these translocations failed and the remaining three populations only persist due to intensive management by the Department of Conservation, mainly through supplementary feeding and provision of nesting boxes, as a way of artificially enhancing the island habitats.

The primary aim of this study was to determine the effect of habitat on stitchbird nesting behaviour and reproductive success. To investigate this, I conducted research that aimed to relate stitchbird parental provisioning, reproductive success and habitat on Little Barrier Island, the single self-sustaining population of stitchbird from where little information was previously available. I then examined these results with similar data from three other stitchbird populations (Kapiti, Tiritiri Matangi and Mokoia Islands) to assess the effects of management enhanced and unmanaged habitats on stitchbird. An in-depth analysis of habitat structure was then conducted in two of the populations (Little Barrier and Kapiti Islands). These data were then analysed with respect to the reproductive success of these populations (with Kapiti's reproductive success being taken during the period when there was little management).

When all islands are considered, conservation management, through the provisioning of nest boxes and feeders led to a significant increase in fledging success. This habitat management did not affect paternal behaviour. Although maternal investment was highly variable between individuals, females showed increased visitation rates when their habitat was enhanced through conservation management. In the unmanaged populations habitat complexity and nest tree size were found to be very important to the reproductive success of the stitchbird.

Regardless of management and location, habitat quality played an integral part in determining the pattern of parental investment, and significantly affected reproductive success. In the unmanaged populations habitat complexity may provide a proximate assessment of overall habitat quality, while nest tree size may influence the internal microclimate of the nesting cavities. It appears that in lower quality habitats, parent's trade off their own survival against current and future reproduction. Conservation managers have managed to offset the restrictions of low quality habitat by enhancing habitats to a higher quality than natural environments. Now there is a need to find new sites where self-sustaining populations can be established, without the aid of expensive conservation management. I have found that it may be important to consider not only the phenology of the habitat, but also its complexity and the availability of large potential nest trees when considering new translocation sites.

Acknowledgments

This project has been a work in progress for almost my entire life. It started with my parents instilling in me an interest in nature, the environment and the outdoors. Followed by my Uncle and Aunt who got me involved in every possible ecological project under the sun and of course Isabel Castro whom I started volunteering for from the age of twelve. This early introduction to ecology, science, stitchbirds and many other things set me on the path to completing a Masters at Massey University from an unusually young age.

I gratefully acknowledge Isabel Castro (my principal supervisor) for her friendship and all the help, inspirational ideas, months of editing and for allowing me to use her unpublished data in my thesis. Without Isabel's support, direction and patience this project may never have got off the ground and it definitely wouldn't have evolved into this finished product. I also thank Alastair Robertson (my co-supervisor) for all the advice and support throughout the duration of this project.

I would like to thank my entire family, especially my parents, for all the support throughout this project, University and the rest of my life. I was always a bit of a weird child, with plenty of wacky ideas, yet you guys were always there for me.

There are a great number of people who assisted me throughout this project. It is fair to say this thesis would have not been possible without their help. In no particular order I wish to thank: Mark Fraser, my field assistant who put up all the well humoured crap I could give him for an entire summer; Matt Low for all the brilliant ideas, comments, advice and for allowing me to use his unpublished data in my thesis; Ian Johnston, Cleland Wallace, Claire Brown, Stefanie K, Rowena Teal, Kevin Parker, Rose Thorogood, John Ewen, Rebecca Boulton, Isabel Castro, Alastair Robertson, Richard Griffiths, Rosalie Stamp, Matt Low, Asa Berggren and Phil Cassey for all their help in the Field; Ian Atkinson and John Campbell for their ideas about my vegetation sampling methods; Alasdair Noble, Mike Joy, Yvan Richard and Phil Cassey for there invaluable statistical advice; Mark Orams for transport to Little Barrier island; The Little Barrier Weeders - Cleo Rothschild, Jono Walter and James Andrews along with everyone else who made for an entertaining life in the Little

Barrier Island Bunkhouse; Don Binney for allowing me to use his artwork on all my cover pages.

This thesis could not have been completed without the support of the New Zealand Department of Conservation. I would especially like to thank Richard Griffiths, Rosalie Stamp, Eric Dorfman, Lynn Adams and all the members of The Hihi Recovery Group. My fieldwork on both Kapiti and Little Barrier Islands would not have been possible without all the logistical support provided by the island rangers - Pete and the Barrow family, Dave and the Wrightson family, Hugh Gardiner, Greg Moorcroft and Erica Cammack.

I also want to thank Massey University Ecology group. The other graduate students in the department that read bits and pieces of my work and provided plenty of entertainment throughout my thesis, especially Susan Cunningham who made comments on my drafts and taught me the horses trick (replace data with horses, it works every time). Barbara Just and Erica Reid for all the administrative and technical support, projects like mine just don't get done without the help of people like you.

This project was funded with support from the New Zealand Parks and Conservation Foundation, the Hihi Recovery Group, the Department of Conservation Wellington and the Royal Forest and Bird Society.

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