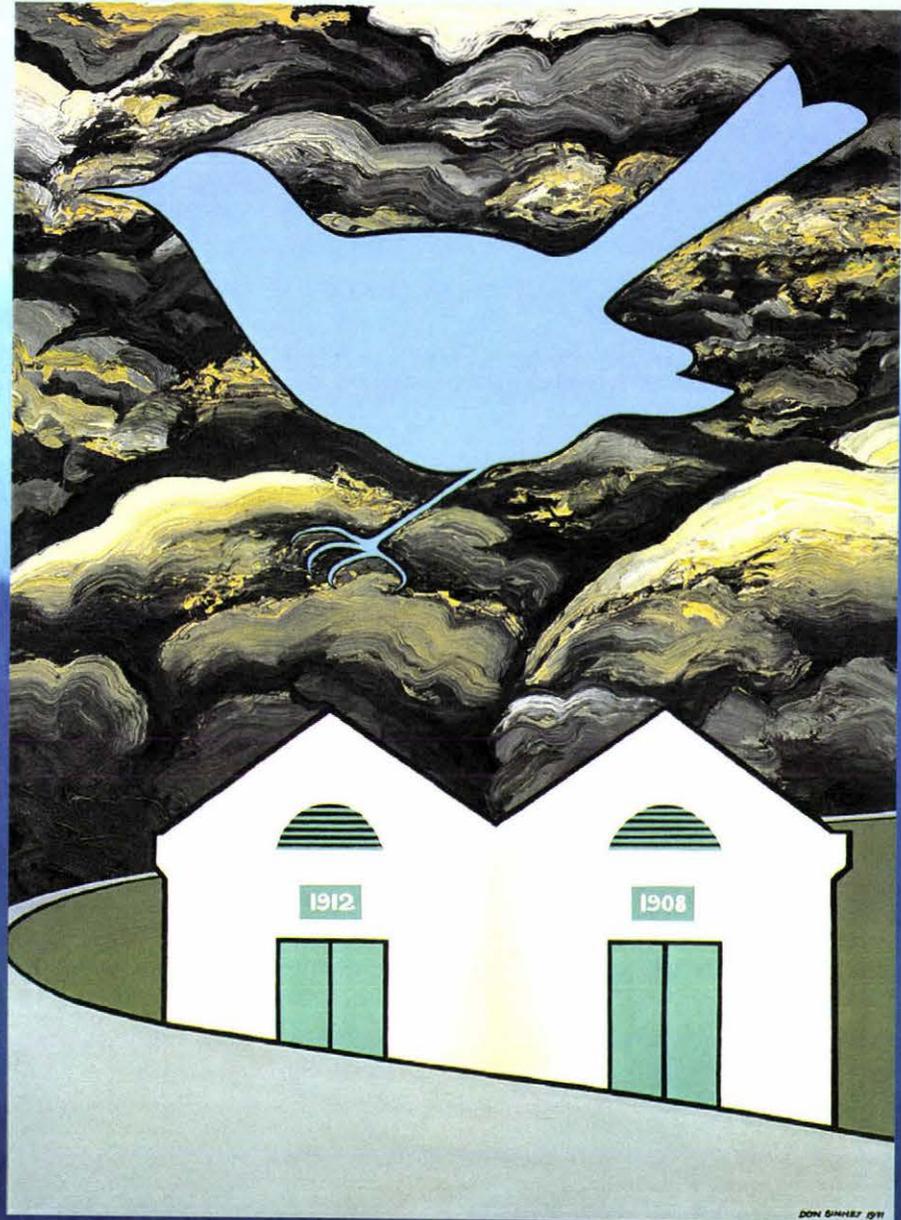


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The Stitchbird (Hihi – *Notiomystis cincta*) and its  
Habitat: Effects on Nesting Behaviour and  
Reproductive Success



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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## **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.

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