Effects of food supply and competition on the outcome of hihi (*Notiomystis cincta*) translocated to Mokoia Island

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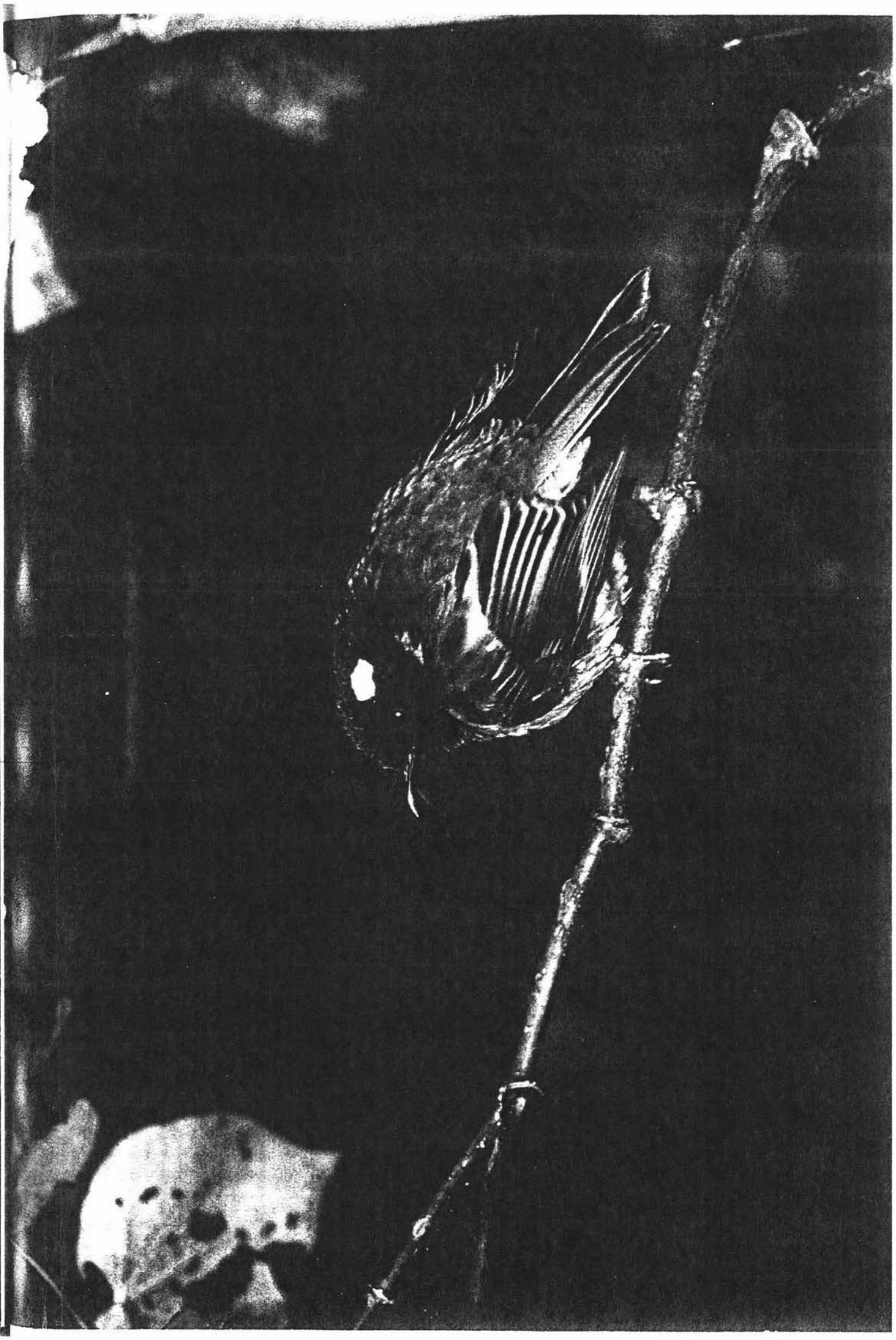

Plate:

Male hihi or stitchbird
(*Notiomystis cincta*)
Photo by Brent Stephenson

Abstract

The hihi or stitchbird (*Notiomystis cincta)* is a cavity-nesting honeyeater (family Meliphagidae) indigenous to New Zealand. Hihi were originally widespread but following European colonisation became confined to Little Barrier Island. Attempts to establish hihi on other islands appear to have been unsuccessful. The main reasons suggested for these failures are: (1) insufficient year round supply of nectar and fruit, (2) competition from the other more dominant honeyeaters (bellbirds *Anthornis melanura*, and tui *Prosthemadera novaeseelandiae*), and (3) lack of nesting cavities.

This study was conducted on Mokoia Island, situated in Lake Rotorua. 40 hihi were translocated to Mokoia in September 1994 from Little Barrier Island. Two field-trips, lasting three to four days, were made to the island every month from August 1994 through October 1995.

The primary aim of this study is to assess whether hihi suffer increased mortality, or lose weight due to seasonal shortages in their food supply, and therefore whether artificial food supplementation would be needed to sustain a population. The methods for testing this aim involved: (1) doing food supplementation experiments throughout the year (20% sugar solution), (2) measuring changes in bird's weights and mortality throughout the year, when supplementary food was available *vs* unavailable, (3) measuring nectar and fruit availability throughout the year as energy per unit area (e.g., kJ/ha), and (4) observing hihi to determine the amounts of time spent feeding on nectar, fruit, and invertebrates, and any interference from tui whilst feeding at those sources.

These data allowed me to identify periods when hihi were most limited by the naturally occurring nectar/fruit supply on Mokoia. This `limitation` is measured in terms of changes in birds body mass, survival, reproduction, and foraging effort in response to food supplementation. These data allow me to make recommendations concerning further supplementary feeding, and planting programs on Mokoia to make the habitat more suitable to hihi.

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