

Canterbury Plains Dabbling Duck Survey 2023

Matthew Garrick, North Canterbury Fish and Game
Hamish Stevens, Central South Island Fish and Game
Heather Sanders Garrick, North Canterbury Fish and Game



Photo credit: Richard Cosgrove

Executive Summary

North Canterbury Fish and Game and Central South Island Fish and Game conducted late summer aerial surveys of dabbling ducks across the Canterbury Plains over two days on March 14th and March 15th. The average number of dabbling ducks per transect was 45.1, an increase of 39% from last year. This number of dabbling ducks per transect is 8.6% above the long-term average of 41.5.

Introduction

Fish and Game Council staff are charged with the management of sports fish and game bird resources in the recreational interests of anglers and hunters. Under the Conservation Act 1987, the functions of each Fish and Game Council shall be to manage, maintain, and enhance the sports fish and game bird resource in the recreational interests of anglers and hunters, and in particular—

- 1) *to assess and monitor—*
 - a. *sports fish and game bird populations*

North Canterbury Fish and Game (NCFG) and Central South Island Fish and Game (CSIFG) staff conducted annual aerial surveys in 2023 to

- 1) Assess the population status of dabbling ducks across the Canterbury Plains
- 2) Inform hunting harvest regulations

Methods

Aerial flights were conducted on March 14th and March 15th, with two observers counting ducks along 10 km transects. Transects were randomly selected within four areas: between Amberley to the Waimakariri River, Waimakariri River to the Rakaia River, Rakaia River to the Rangitata River, and Rangitata River to Herbert. In 2023, there were 62 east-west transects and eight river transects flown (two per river – Rakaia, Rangitata, Waimakariri and



Waitaki, Figure 1). Each observer counted all ducks within 150 meters perpendicular to the transect on either side of the plane. The transects are flown 450 feet above ground level from east to west, with river transects being flown upriver.

Count data was log-transformed and analysed using a generalized linear model (GLM) on a Poisson distribution with transect ID as a random effect. The glmer function from package lme4 in program R was used for analyses. Log-transformed transect counts were set as the dependent variable, year as the independent variable, and transect ID was coded as a factor and set as a random effect.

Figure 1. Aerial transects were flown across the Canterbury Plains during the 2023 dabbling duck survey.

Results

Between 2006 and 2023, the log of the mean number of ducks per transect increased, on average, by 0.022 per year ($X^2 = 406.6$, $P < 0.001$). The mean number of dabbling ducks per transect has increased by 0.99 dabbling ducks per year on average (Figure 2).

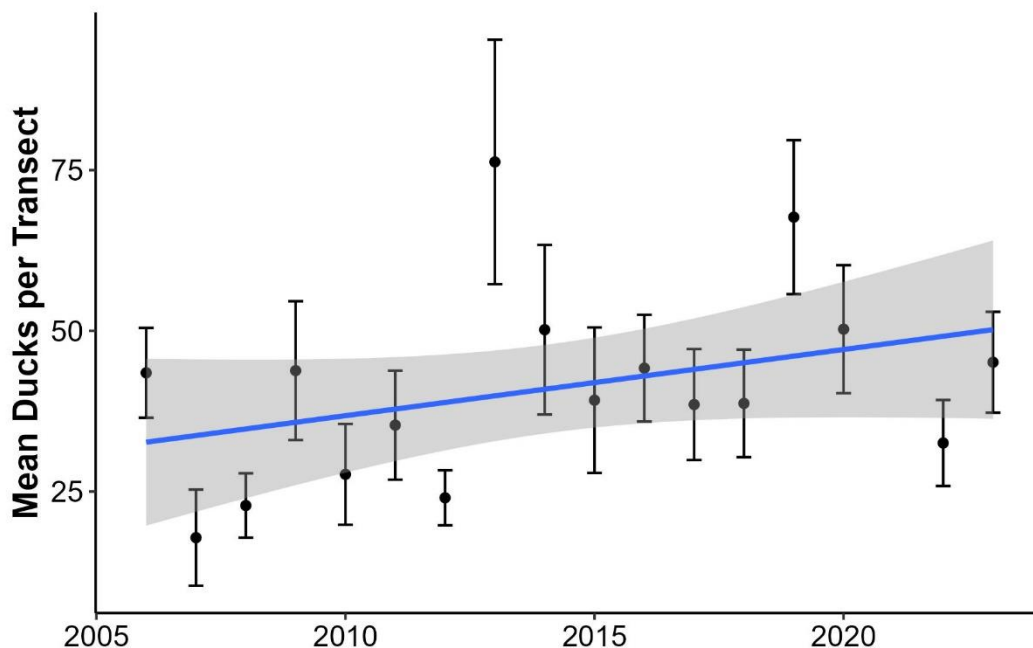


Figure 2. Mean number of dabbling ducks observed per transect during the Canterbury Plains dabbling duck surveys between 2006 and 2023. Error bars indicate standard error, and the trend line represents an approximation of the GLM.

The mean number of dabbling ducks counted per transect in 2023 is 8.6% above the long-term average of 41.5 dabbling ducks per transect.

Discussion

Population indices can provide important information for management; however, objectives should be clearly defined (Engeman 2003). The primary issue surrounding population monitoring is appropriate versus inappropriate experimental design and data analyses to achieve the investigators' objectives (Engeman 2003).

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CSIFG have developed thresholds for guiding management decisions; however, NCFG has not. NCFG should work closely with CSIFG to develop an adaptive harvest strategy for the Canterbury Plains, which guides hunting regulations in a similar way to the Flyway system in the U.S. (USFWS 2022). This would allow each Fish and Game region to determine their own regulatory harvest packages (i.e., liberal, moderate, and restrictive packages, which encompass different bag limits, special seasons, and season lengths) to be selected based on population status. This process would guide decision-making in a consistent, defensible, and pre-emptive manner and reduce post-hoc decisions on season regulations.

Literature Cited

Engeman, R.M. 2003. More on the need to get the basics right: population indices. *Wildlife Society Bulletin* 31:286-287.

U.S. Fish and Wildlife Service. 2022. Adaptive Harvest Management: 2023 Hunting Season. U.S. Department of Interior, Washington, D.C. 77 pp.