

TRANSACTIONS
OF THE
ROYAL SOCIETY OF NEW ZEALAND

BIOLOGICAL SCIENCES

VOL. 11

No. 2

DECEMBER 2, 1968.

The Food of the Black Shag (*Phalacrocorax carbo
novaehollandiae*) in Otago Inland Waters

By K. W. DUNCAN,

Zoology Department, University of Canterbury.

[Received by the Editor, January 19, 1968.]

Abstract

ANALYSIS of 74 stomachs and 90 pellets of the black shag (*Phalacrocorax carbo*) showed that, in Otago, brown trout (*Salmo trutta*), perch (*Perca fluviatilis*) and crayfish (*Paranephrops zealandicus*) were the main food items. Adult birds select small fish and eat approximately 300 to 400g of fish at one time. The stomachs of nestlings are useless for quantitative food analysis. There is no evidence that the birds eat small invertebrates, any present in the stomachs having been released from the stomachs of fish eaten by shags.

INTRODUCTION

SINCE the introduction of freshwater game fishes a century ago, there has been much controversy over the effect of predation by black shags (*Phalacrocorax carbo*) on these fishes, especially the two trout species—*Salmo trutta* and *S. gairdnerii*. The factual basis of this controversy is limited as very few studies have been made of the shags' diet and none on the effect of its predation on trout.

Williams (1945) collected 2,833 analyses of shag stomach contents made by numerous individuals. This data showed that brown trout (*S. trutta*) was the main food species of shags in Otago inland waters. Eels were a very minor part of the diet. Stokell (1952) has criticised this work because Williams did not count the small invertebrates present in the stomachs.

Falla and Stokell (1945) analysed 62 stomachs taken from various localities at different times of the year. They found that trout and eels (*Anguilla* spp.) were the main fish species eaten. These results have often been extrapolated to situations not covered in their work. In particular they have been used to criticise Williams' conclusions.

Dickinson (1950) analysed 29 stomachs taken from the Rotorua-Taupo district during July. The native bully (*Gobiomorphus* sp.), carp (*Carassius* sp.) and crayfish were the main food items, while rainbow trout (*Salmo gairdnerii*; Dickinson's *S. irideus*) was very infrequent.

Published by the Royal Society of New Zealand, c/o Victoria University of Wellington, P.O. Box 196, Wellington.