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THE BEHAVIOURAL ECOLOGY  
OF THE POPULATION OF BLACK SWAN  
(*Cygnus atratus* Latham)  
ON A MANAWATU DUNE LAKE

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## ABSTRACT

The behavioural ecology of a population of Black Swan (*Cygnus atratus* Latham) on the Manawatu dune lake, Pukepuke Lagoon, is examined. This population is of interest as breeding is by territorial swans, whose behaviour has not been completely studied previously.

A non-breeding flock comprises approximately 75% of the population, at time of nesting. The behaviour patterns and time-activity budgets of this flock are examined, and its relationships with the breeding swans are also studied.

Aggressive behaviour and the mechanisms of territory selection and defence are described. Territory sizes vary considerably, but this is not shown to have any effect on breeding success; rather, the strength of brood defence appears to influence cygnet mortality.

Courtship, pair-bond maintenance, and copulatory displays are listed. All show distinct daily and annual rhythms. Black Swans do not pair for life but do remain together for at least one season. Bond strength and duration are related to the degree of investment necessary to breed successfully in a territorial situation.

The physical and behavioural development of wild and captive cygnets are recorded and compared, providing data on growth rates, ontogeny of behaviour patterns, and the development of social relationships.

Parental care, and the relationships between families and other swans, are examined. Clear sex roles are apparent, with the male being most prominent in defence of the brood. The survival value of family behaviour in a territorial context is examined.

The main points arising from the preceding sections are interrelated, and suggestions and hypotheses presented for future investigation.

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## ABBREVIATIONS AND SYMBOLS USED IN THE TEXT

g	grams
kg	kilograms
m	metres
ha	hectares
h.	hours
d.	days
sp	species
df	degrees of freedom
p	probability
sd	standard deviation
$\bar{x}$	mean
$\alpha$	accepted level of significance
$\chi^2$	Chi-squared
log.	logarithm
<	less than
$\leq$	less than or equal to
>	greater than
$\geq$	greater than or equal to
$\Sigma$	the sum of
$\sigma$	male
$\phi$	female
$\sigma^2$	pair

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