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**AUCKLAND ISLAND TEAL ON EWING  
AND ADAMS ISLAND,  
AUCKLAND ISLANDS, NOVEMBER 1989**

by

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**KEYWORDS:** Auckland Island Teal, Ewing Island, Adams Island, population estimates, behaviour

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**ABSTRACT**

The population of Auckland Island teal on Ewing Island was surveyed in November 1989. A mark-recapture study on the coast repeated surveys conducted in 1982 and 1983. Thirty-three teal were banded and the total population was estimated at 100-169. Seventy-eight teal were counted along the shoreline of Adams Island. Allowing for birds that were inland or using stream habitats, this figure may represent a population of 160-220 birds. Teal were also seen on Enderby, Rose and Ocean Islands but not on Auckland Island, where they are probably excluded by cats and pigs. The surveys support previous estimates that there are probably less than 600 teal on the Auckland Islands, and that the population is probably stable.

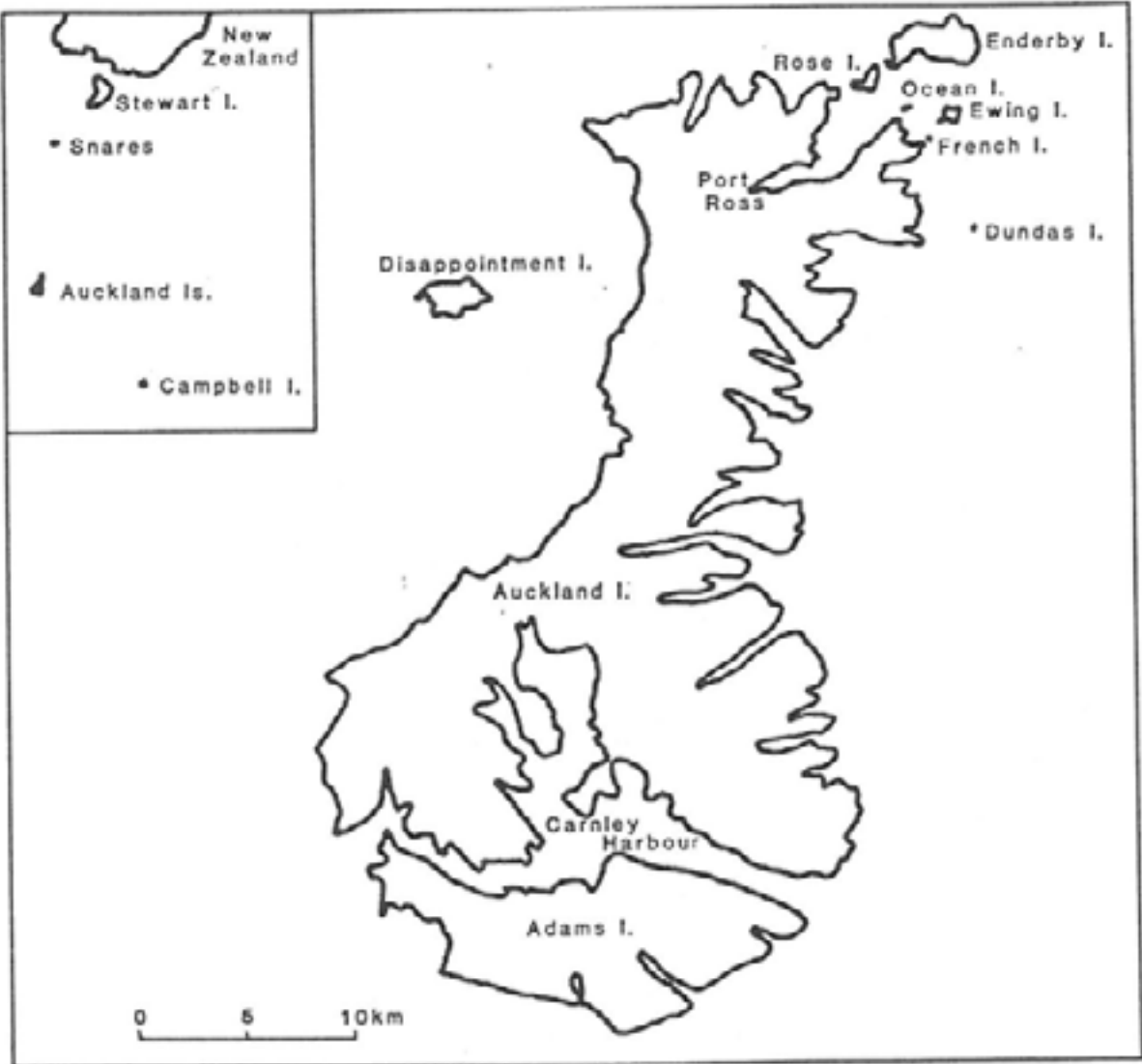
**1. INTRODUCTION**

The Auckland Island teal (*Anas aucklandica aucklandica*) is a flightless duck found only at the Auckland Islands (Kinsky 1970). There are two other subspecies, the brown teal (*A. a. chlorotis*), which is restricted mainly to northern New Zealand (Hayes and Williams 1982), and the Campbell Island teal (*A. a. nesiotis*), a flightless form restricted to Dent Island, off Campbell Island (Robertson 1976).

Breeding of the Auckland Island teal has been reported since the 1970s at Ewing, Enderby, Rose, Ocean, French, Dundas, Disappointment and Adams Islands (Falla 1975, Falla *et al.* 1979, Weller 1975, Williams 1986, see Fig. 1). Other sightings have been on the small Shoe and Passage (=Friday) Islands (Falla 1975) and on Monumental Island (Williams 1986). Teal have not been recorded on the large Auckland Island since the 1940s (Scott 1971), presumably excluded by introduced cats and pigs (Williams 1964, Kear and Williams 1978).

The Auckland Island teal is a rare species (Bell 1986). Falla (1975) considered that the population had been stable at about 500 birds (excluding Disappointment Island) for at least 50 years. Surveys of the Port Ross islands of Ewing, Rose, Enderby, and Ocean in the early 1980s (Williams 1986) confirmed that there were no more than 600 birds (Williams 1985) and discounted previous estimates of 1200-1500 (Weller in Kear and Williams 1978) or possibly more than 1000 (Weller 1980).

Figure 1: Auckland Islands



In November 1989 we repeated the 1982 and 1983 surveys of teal on Ewing Island and conducted a less intensive survey of teal on Adams Island.

## 2. METHODS

Ewing Island was visited from 2-9 November 1989. Because only some of the teal are found foraging on the shoreline at any one time, the total population was estimated using capture-recapture techniques. Methods closely followed those of Williams (1986), with two consecutive nights of capture, a night of no disturbance, followed by a night of "recapture". On the first two nights, birds were captured with hand-nets and banded with a stainless steel band on one leg and a single colour band on the other leg, to identify the night of capture. In contrast to Williams (1986), "recaptures" were sightings of the colour-banded birds rather than actual recaptures. This survey was conducted at low tide on the western side of Ewing Island, between points A and C (Fig. 2). Birds were also counted on a night-time survey of remaining coastline, and incidental observations were made at other times.

Population size was estimated using the standard Estimate corrected for small samples (Bailey 1951, Begon 1979). The formula used was:

$$\text{Population Estimate} = \frac{r(n+1)}{(m+1)}$$

where  $r$  = the number of birds originally banded,  $n$  = the total number of birds caught or seen, and  $m$  = the number of banded birds seen.

A weighted mean version of the Petersen Estimate was used for an overall population estimate for the three nights of survey (Begon 1979).

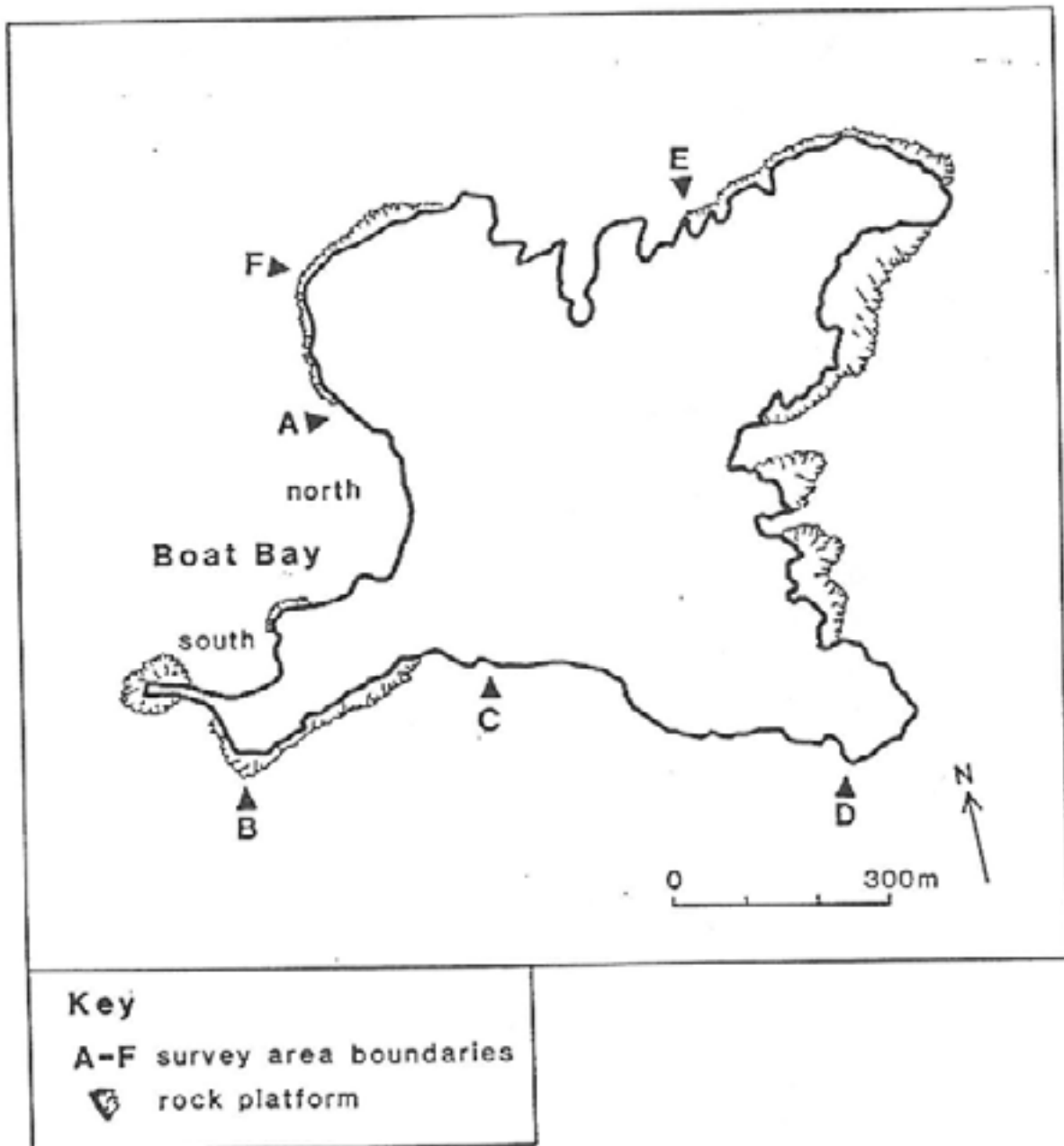
$$\text{Population Estimate} = \frac{\sum Mn}{(\sum m)+1}$$

where  $M$  = the original number of banded birds released on day 1 ( $r$ ) plus the additional numbers of banded birds released in subsequent days. Standard errors were calculated using formulae from Begon (1979) and 95% confidence intervals were calculated as  $\pm 1.96$  standard errors.

Adams Island was visited from 2 November to 6 December 1989. Most of the northern shore was surveyed for teal, except for 5 km of shoreline west of Gilroy Point which was too steep and exposed to survey. Most of the apparently suitable habitat on the southern coast was also visited. The Adams Island surveys were conducted by counting teal while we were slowly walking along the shoreline at low tide or when travelling by boat in calm seas between the kelp beds and the shoreline. Most bays were surveyed only once, but Magnetic, Maclaren and Fleming Bays were surveyed at least three times.

A survey by boat of part of the Auckland Island shoreline (western arm of Carnley Harbour) was conducted on 8 November 1989.

**Figure 2: Auckland Island teal survey areas on Ewing Island.**  
Modified from Williams (1986).



### 3. RESULTS

#### 3.1 Population estimate of teal on Ewing Island

The coastline of Ewing Island comprises boulder beaches, wave-cut platforms, rock pools and cliffs. The coastal vegetation is mainly *Olearia lyallii* forest, with some areas of shrubs (e.g. *Hebe elliptica*), tussock (e.g. *Poa foliosa*) and herbs (e.g. *Stilbocarpa polaris*)

Table 1 summarises the results of the intensive survey (between points A-C, Fig 2) on Ewing Island. The minimum number of birds in this area was 49 (33 were banded and 16 unbanded birds were seen on the third night).

**Table 1: Population estimates of Island teal on Ewing Island, November 1989**

	Shoreline A-B <sup>1</sup>			Shoreline A-C <sup>2</sup>		
	2 Nov	3 Nov	5 Nov	2 Nov	3 Nov	5 Nov
Total caught and/or seen	26	19	19	29	27	29
No. unbanded	26	16	10	29	23	16
No. previously banded						
on day 1		3	7		4	9
on day 2			2			4
No. new bands released	18	9		20	13	
Total banded in population	18	27		20	33	
Peterson estimates (± 95 % confidence intervals)						
day 1-2			90.0 +/- 70.6			112.0 +/- 81.2
day 2-3			60.0 +/- 54.2			78.0 +/- 57.0
day 1-3			45.0 +/- 22.8			60.0 +/- 29.0
day (1+2) -3			54.0 +/- 22.6			70.7 +/- 26.1
weighted mean			65.8 +/- 38.4			83.2 +/- 40.5

1: Area surveyed in 1982 and 1983 (Williams 1986) - See Fig. 2 for details

2: Larger area surveyed in 1983 (Williams 1986)

During the first three hours of darkness on 4 November 1989, 21 teal (including at least four pairs) were counted between points C and E on the southern and eastern coasts. On 5 November 1989, a further nine teal (including four pairs) were seen on the rocky platforms between points A and F. This area was not surveyed by Williams (1986). The coastline between points E and F was mainly small cliffs, and therefore was not surveyed.

The most birds seen in the intensive survey area (A-C) on a single night was 29. This is 59% of the minimum population of 49 birds, or 35% of the weighted mean population estimate of 83 birds. Using these ratios, the 30 teal seen on the remaining shoreline could represent 51-86 birds, bringing the total for the whole island to 100-169 birds.

### 3.2 Population estimate of teal on Adams Island

Seventy-four birds, including 24 pairs, were found spread along the Carnley Harbour shoreline of Adams Island (Fig. 3, Table 2). The coastline comprises stoney beaches, a small number of narrow wave-cut platforms, and extensive rocky shores with occasional low cliffs. The coastal vegetation was either Southern rata (*Metrosideros umbellata*) and inaka (*Dracophyllum longifolium*) forest, or a community of tussock (*Poa foliosa*), sedge (*Carex appressa*) and megaherbs (*Stilbocarpa polaris*, *Pleurophyllum criniferum*, *Anisotome latifolia*). The highest concentration of teal was at Fleming Bay, the largest and most sheltered inlet on the northern shore of Adams island. Up to 11 teal fed on sea lettuce (*Ulva*) on the delta at the head of this bay. The 5 km west of Gilroy Head which was not surveyed was less suitable teal habitat because of its steepness and exposure. On the south coast, a few teal were found near the outlet of Lake Turbott, and one was seen upstream of Bollons Bay. No teal were seen at the head of the steep-sided Fly Harbour.

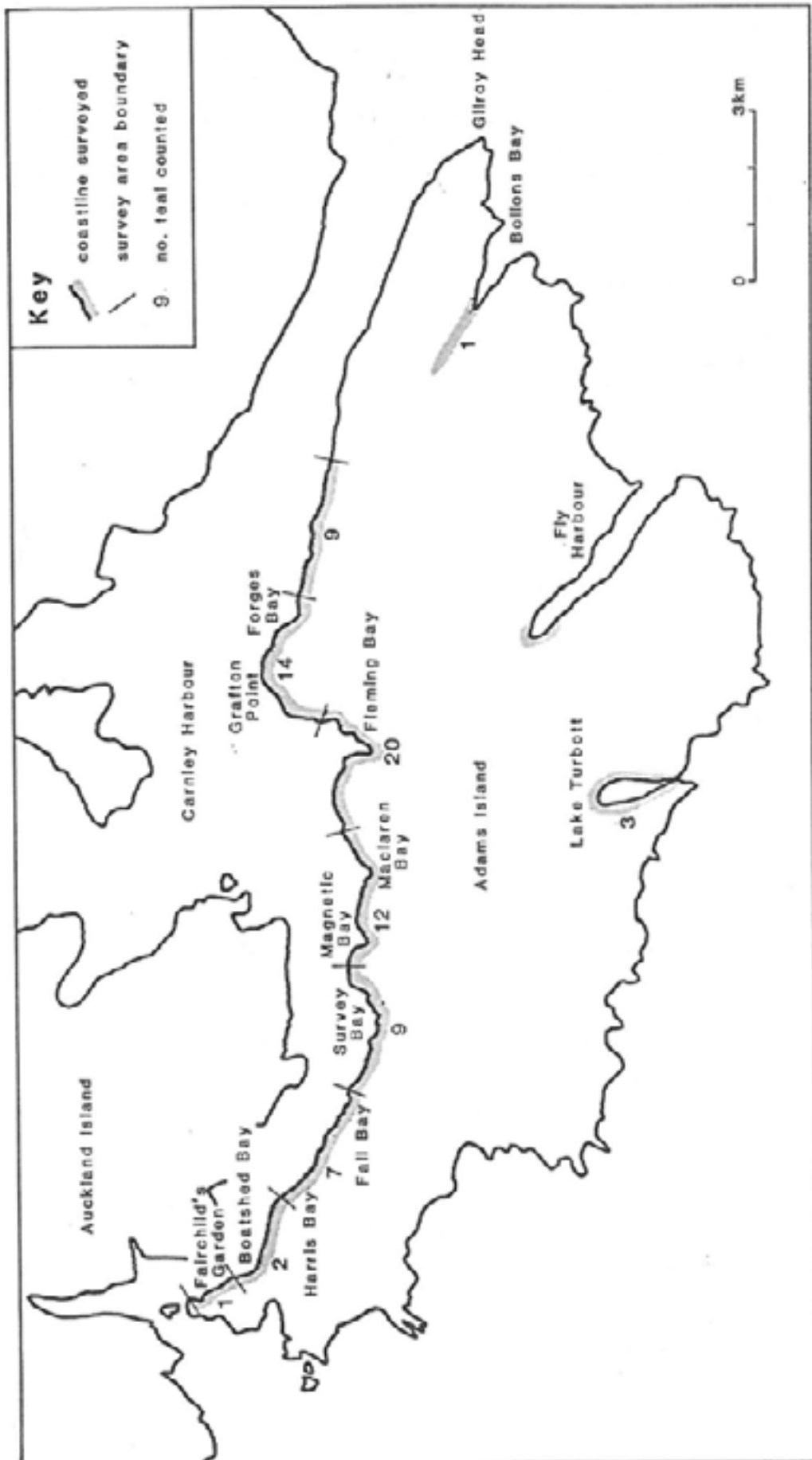
**Table 2 : Number of Auckland Island teal on Adams Island, November 1989**

Shoreline	Date	No. Pairs	No. Single	Total Birds
Fairchild's Garden	19.11.89		1	1
Boatshed Bay	19.11.89		2	2
Harris-Fall Bays	19.11.89	3	1	7
Survey Bay	5.11.89	4	1	9
Magnetic-Maclaren Bays	4, 9, 29.11.89	4	4	12
Fleming Bay	5, 9, 14.11.89	4	12	20
Grafton Point	9, 22.11.89	6	2	14
East of Forges Bay	22.11.89	2	5	9
Bollons Bay stream	18.11.89		1	1
Lake Turbott	4, 5, 12.11.89	1	1	3
		<b>24</b>	<b>30</b>	<b>78</b>

If it is assumed that the proportion (relative to the total population) of teal counted on the shoreline of Adams Island was similar to that found on Ewing Island, the 78 birds counted would represent a total population of 132-223 birds. However, Ewing Island is essentially a dry island, and almost all birds concentrate around the coastline (Williams 1986). Birds on Adams Island are unlikely to be as restricted to the coastal zone because



Figure 3: Auckland Island teal survey area on Adams Island, November 1989.



of the availability of streams and wetlands. There was evidence that some birds lived only on streams and did not frequent the coast, and one bird was caught in a drop trap in a boggy wetland, about 1 km from the coast. There are about 15 streams on the northern coast of Adams Island and at least six streams accessible to teal on the south coast. Assuming that at least two pairs of teal will occupy each stream, as suggested for Enderby Island (Williams 1986), there may be a further 42 pairs and a total population of 162 birds on Adams Island.

### **3.3 Teal on other islands**

No teal were found on the Carnley Harbour shoreline or on the northern coast of Auckland Island. However, in January 1990 three teal were seen in outer Port Ross, equidistant from Auckland, Rose and Ocean Islands (W. Cooper, pers. comm.).

Surveys for teal were not conducted on other islands; but casual observations were made. At dusk on 27 November 1989 at least 10 teal, including two that were banded in 1982 or 1983, were seen on the north-east coast of Rose Island. A daytime search of Ocean Island on 30 November found seven teal at six localities. Teal were also seen in several parts of the southern, eastern and northern sides of Enderby Island, mostly in small streams or gullies, but also on the shore and coastal sward.

### **3.4 Teal behaviour**

Teal were active on the beaches of Ewing Island at all hours of the day but especially after dawn, and before and after dusk. More birds were seen roosting during the middle of the day than at other times.

The number of birds encountered in any bay varied (e.g. Table 3) with the time of day, tide and weather conditions. Fewer birds were encountered at high tide (e.g. 2 November 1989, Table 3), during the middle of the day, or in poor weather conditions on exposed beaches (e.g. northern Boat Bay on 3 and 5 November 1989).

Pairs or individual teal occupied territories on the beaches of Ewing and Adams Islands. These were apparently advertised by calling (repeated rasping notes), with heads held erect and beaks inclined upwards. Intruders were chased away at the water's edge by rapidly paddling towards them using both wings and feet. Most disputes were brief as the intruder either dived or paddled quickly away but some fights lasted several minutes. Aggressors sometimes grabbed intruders with their beaks, while they tried frantically to escape. At other times the contest was more equal, with both birds grasping each others' necks and beating with their wings until one bird managed to escape. Some birds were more aggressive than others and patrolled up to 50 m of the water's edge, despite the presence of teal on the adjacent beach. Other birds, possibly immature birds, exhibited little territorial behaviour, and gathered in loose flocks. For example, on one occasion, eight birds were seen roosting within 10 m of each other in the southern part of Boat Bay, Ewing Island. A similar number were regularly seen together in Fleming Bay, Adams Island.

**Table 3: Numbers of teal counted in bays of Ewing Island, November 1989**

Date	Time	Boat Bay north	Boat Bay south	South Coast B-C	South Coast C-D	East Coast D-E	North Coast A-F	tide
2.11.89	1300-1500	6	5	7				High
2.11.89	1730	12						High
2.11.89	2100-0130	23	3	3				Low
3.11.89	2100-0130	13	6	8				Low
4.11.89	2100-0000				14	7		Low
5.11.89	2100-2115						9	Low
5.11.89	2115-2300	13	6	10				Low
8.11.89	0715	22						Low
9.11.89	0500		11					Low
9.11.89	0630		14					Low

Copulation was observed on Adams Island in mid November-early December.

Teal were very wary of Southern skuas (*Stercorarius skua lonnbergi*) flying overhead and usually sought cover, or moved into open water. Other birds were generally ignored, although swoops overhead by New Zealand falcons (*Falco novaeseelandiae*) caused some nervousness. Falcons were not an obvious threat on Adams Island, because at Fleming Bay, teal frequently roosted near a falcon nest. Teal usually ignored Hooker's sea lions (*Phocarctos hookeri*), even when they passed close by in open water, although on one occasion a sea lion was observed chasing two teal for a short distance.

Teal were observed almost "flying" when being chased by other teal, or a sea lion on one occasion. They flapped their wings and ran across the surface of the water for several metres. On Adams Island teal were also seen swooping down to the sea from five-metre-high cliffs.

#### **4. DISCUSSION**

Results of the intensive survey of teal on Ewing Island were very similar to those of Williams (1986). The weighted mean Peterson Estimates for shoreline A-B were 66 birds in 1982, 54 in 1983 and 66 in 1989; for the larger survey area A-C the weighted mean estimates were 87 birds in 1983 and 83 in 1989. Total estimates for the whole island were 109-184, 81-131 and 100-169 for the three respective surveys. These results suggest a stable population on Ewing Island.

Of the northern islands, Ewing Island appears to offer the best habitat for teal, with extensive wave platforms and large areas of washed-up seaweed (Williams 1986). Most authors (e.g. Falla 1975) have acknowledged the high density of teal there. This has probably been the case for at least 100 years; for example, Chapman (1890) saw "considerable flocks, sometimes of a dozen birds, close to the shore" but only saw them occasionally on other islands.

At least 78 teal (including 24 pairs) were seen on the Adams Island 1989. Allowing for the underestimating the number of birds using the coastal zone and those occupying stream and wetland habitats, there must be at least twice that number in the total population -possibly 160-220 birds. There is little previous information for Adams island. As we found in 1989, C.A. Fleming found the largest number of teal at Fleming Bay, 30-40 on one occasion (in Scott 1971). Falla (1975) reported the breeding stock to be restricted to the shoreline and lower level stream beds and forests. His conservative estimate of 50+ pairs seems appropriate although surveys of selected streams and wetlands would help clarify this.

Casual observations of at least 10 teal on the north-east coast of Rose Island are consistent with surveys of the entire east coast in 1982 and 1983, when the most birds seen per night was seven and 16 respectively (Williams 1986). Similarly, the seven birds seen during the day on Ocean Island compares with eight seen during a full survey in 1983 (Williams 1986).

The 1989 expedition to the Auckland Islands supports the estimates by Falla (1975) and Williams (1985, 1986) that there are probably fewer than 600 teal on the Auckland Islands (Table 4). Teal were seen on Enderby, Rose and Ocean Islands, and although detailed surveys were not conducted, there was no evidence for dramatic changes in the populations. The total population of Auckland Island teal appears to have remained stable, and as long as cats and rats are not introduced to the offshore islands, the species is probably secure. The cats and pigs on the main Auckland Island prevent reintroduction of teal there.

Some writers have suggested that Auckland Island teal are not completely flightless. For example the species has been described as having "only weak powers of flight" Williams (1964) and Captain Bollons, a frequent visitor to the islands early this century, reported them flying short vertical distances to nest holes in cliffs (Waite 1909, Guthrie-Smith 1936). However, Weller (1975) states that teal are incapable of true flight. They skitter across the water or land using both feet and wings and can jump onto ledges, usually by synchronising with incoming waves (Weller 1975). The 1989 observations confirm that, although essentially flightless, Auckland Island teal use their wings to assist their locomotion over short distances, as do other flightless species.

Table 4 :Population estimates of Auckland Island teal

Island	Falla (1975) (pairs)	Williams (1985-86) (birds)	This study (birds)
Ewing	40	81-184	100-169
Enderby	30-40	76	
Rose	30	50	
Ocean	10	8-20	
French	3		
Adams	50+		78-162
Disappointment		?-30	
Dundas		14	
Total	<b>173+</b> “at least 500 birds”	<b>365-480</b> “no more than 600”	<b>362-527</b>

1:Estimates were made using information in preceding columns to fill gaps in knowledge for each study.

NOTE Other population estimates include:

- 56 birds on Ewing Island in 1972 (Weller 1975);
- 1200-1500 total population (Weller in Kear and Williams 1978);
- hundreds, and possibly exceeding birds (Weller 1980).

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