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THE AUCKLAND ISLAND BANDED DOTTEREL HAS APPARENTLY INCREASED

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ABSTRACT

A survey of Banded Dotterel on Adams, Enderby, Ewing, Rose and part of the main Auckland Island was made in November 1989.

Nesting was recorded for the first time on Enderby Island (8 nests) and 11 nests were found on Adams Island. The behaviour of dotterels on both islands indicated the presence of many more nests.

Some dotterels moved at night from fellfield and moorland breeding grounds to the beaches of Adams, Rose and Ewing Islands.

A total of 730 birds was counted, most on Enderby Island (440) and Adams Island (273). Previously, the total was considered to be 100-200 birds. Our high count is probably the result of an increase in breeding habitat following drastic vegetation modification by fire and introduced mammals on Enderby Island during the 19th century. The population has probably been rising for at least 20 years, but this has been overlooked because there has been no previous opportunity to count dotterels during their breeding season, when they are sedentary.

INTRODUCTION

Banded Dotterels (*Charadrius bicinctus*) were first seen on the Auckland Islands in 1840 (Ross 1847), but it was not until 1943 and 1944 that the first specimens were collected (Falla 1978). These specimens led to the recognition of the Auckland Island birds as a separate subspecies (Oliver 1955) and finally its description as *C. b. exilis* by Falla in 1978. The Auckland Island Banded Dotterel is larger than the New Zealand subspecies (*C. b. bicinctus*). Its upper parts are darker brown and the bands are less distinct (Falla 1978).

During World War Two (1941-1945), a team of coast watchers (code-named The Cape Expedition) was stationed at the Auckland Islands. In spring and summer they found a few dotterels nesting on the high tableland of the main Auckland Island and recorded a dozen or so dotterels in breeding plumage on the tops of Adams Island. In mid to late summer, small flocks

and occasional pairs of post-breeding adults and some juveniles appeared on tidal shoreline around Enderby Island (Falla 1978).

Four scientific expeditions between 1954 and 1973 apparently found a similar distribution pattern (Falla 1978). Summarising the results of the December 1972 to February 1973 expedition, Bell (1975) described the dotterels as "nesting on the alpine fell fields and 'wintering' on Enderby Island, mainly at Derry Castle Reef". He commented that "from numbers seen, it appears this race totals only 100 to 200 birds". Subsequent expeditions assumed that flocks seen on Enderby in late summer constituted the total population and estimated it at: a maximum of 155 in April 1980 (Pierce 1986); 150-200 in February to March 1982 (Thompson 1986); 160-300 in February 1988 (G.A. Taylor pers. comm.).

As part of a Department of Conservation expedition, we visited the Auckland Islands between 31 October 1989 and 6 December 1989 and simultaneously counted Banded Dotterels in both the Port Ross area and Adams Island to try to assess the Auckland Island Banded Dotterel population.

METHODS

On Adams Island, between 2 November 1989 and 6 December 1989, expedition members searched for Banded Dotterels whenever they were in likely habitat.

The small, low-lying northern islands, Ewing, Enderby and Rose, were searched for dotterels on 2-9, 12-19, and 28 November respectively.

The Mt Eden – Cloudy Peak ridge system at the northern end of Auckland Island was searched on 6 December 1989. The Hooker Hills were visited several times. The Erlangen Hill – Mt Raynal ridge at the southern end of Auckland Island was searched on 20 November 1989.

Searches consisted of zig-zagging across suitable areas, listening for calls and watching for the dotterel's characteristic bobbing movement. Nests were sometimes found when broken wing distraction displays had indicated breeding.

In calm weather, dotterels often gathered around us and we may have not recognised new birds joining flocks, or we may have counted birds twice. In poor weather, we probably overlooked birds that stayed on their nests or that we did not hear call. Our counts should be regarded as a 'best estimate'.

RESULTS

We counted 730 birds.

The largest concentration was 440 birds on Enderby Island. Birds were widespread on the island (Figure 1), but concentrated in the *Cassinia vauvilliersii/Oreobolus pectinatus* upland moors, on the *Bulbinella rossii* meadows, and on the coastal sward.

On Adams Island, 273 birds were counted, mostly on the fellfields along the main ridge of the island (Figure 2). The fellfields comprised flat, stoney, poorly drained ridge-tops with *Pleurophyllum hookeri* and occasionally mounds of *Phyllachne clavigera* and the daisy *Damnamenia vernicosa*. Birds were generally in pairs or small groups of four to ten, but one group of 20 was seen.

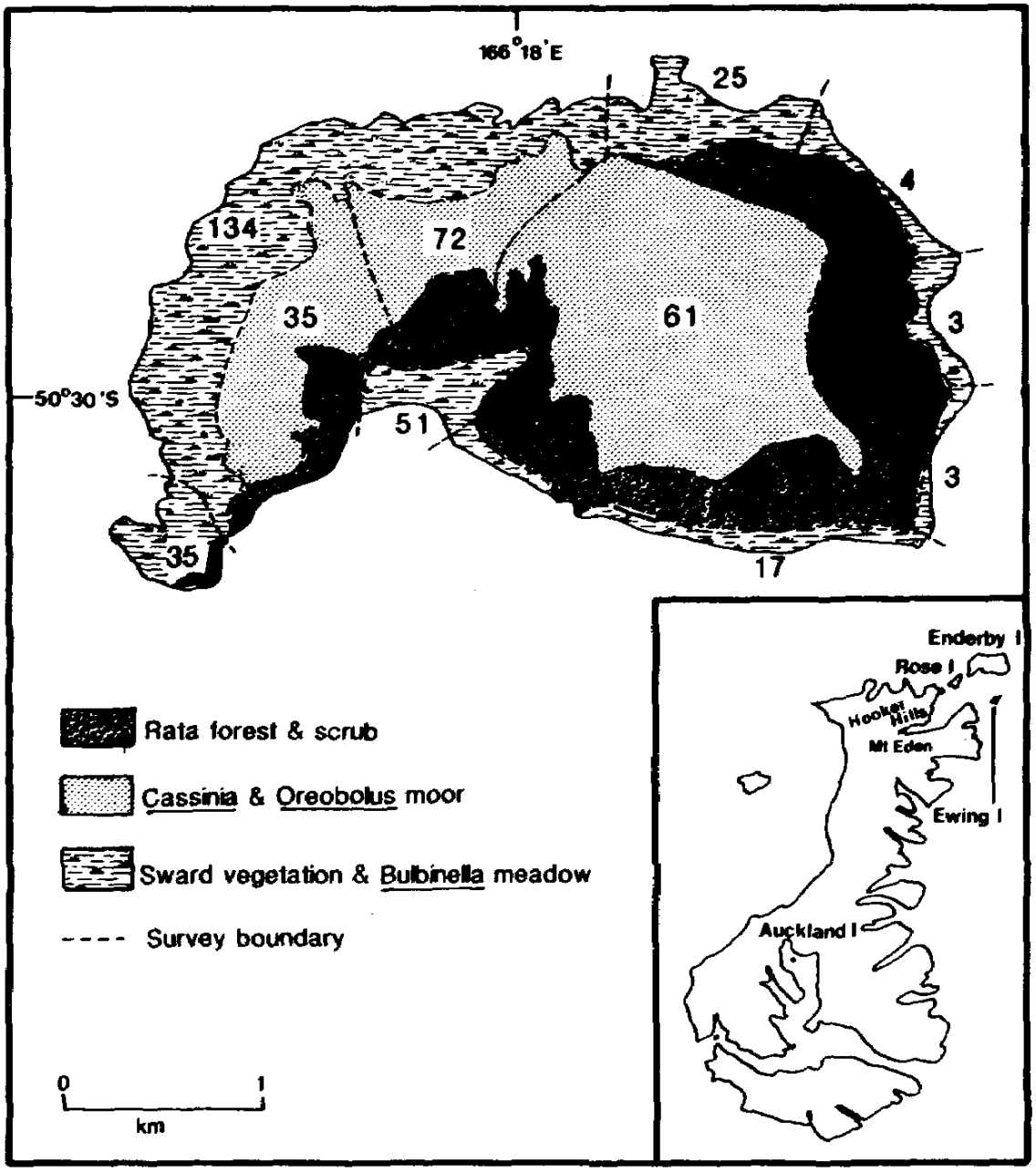

FIGURE 1 — The Auckland Island Banded Dotterels counted on Enderby Island, November 1989. The sward and moorland dotterel habitat was arbitrarily divided into units for survey convenience. Numbers are total dotterel numbers in the units.

Only 13 birds were counted during a two hour search of Rose Island, all on the rock platforms and grass sward around the coast. Though a week was spent on Ewing Island, only six dotterels were seen; all on the boulder beaches and rocky shoreline on the south-west part of the island. The Ewing birds were all single birds, and all were seen at night.

Only one dotterel was seen in the northern part of the main Auckland Island, in the Hooker Hills (K. Timpson pers. comm.). No birds were seen during the visit to the southern end of Auckland Island.

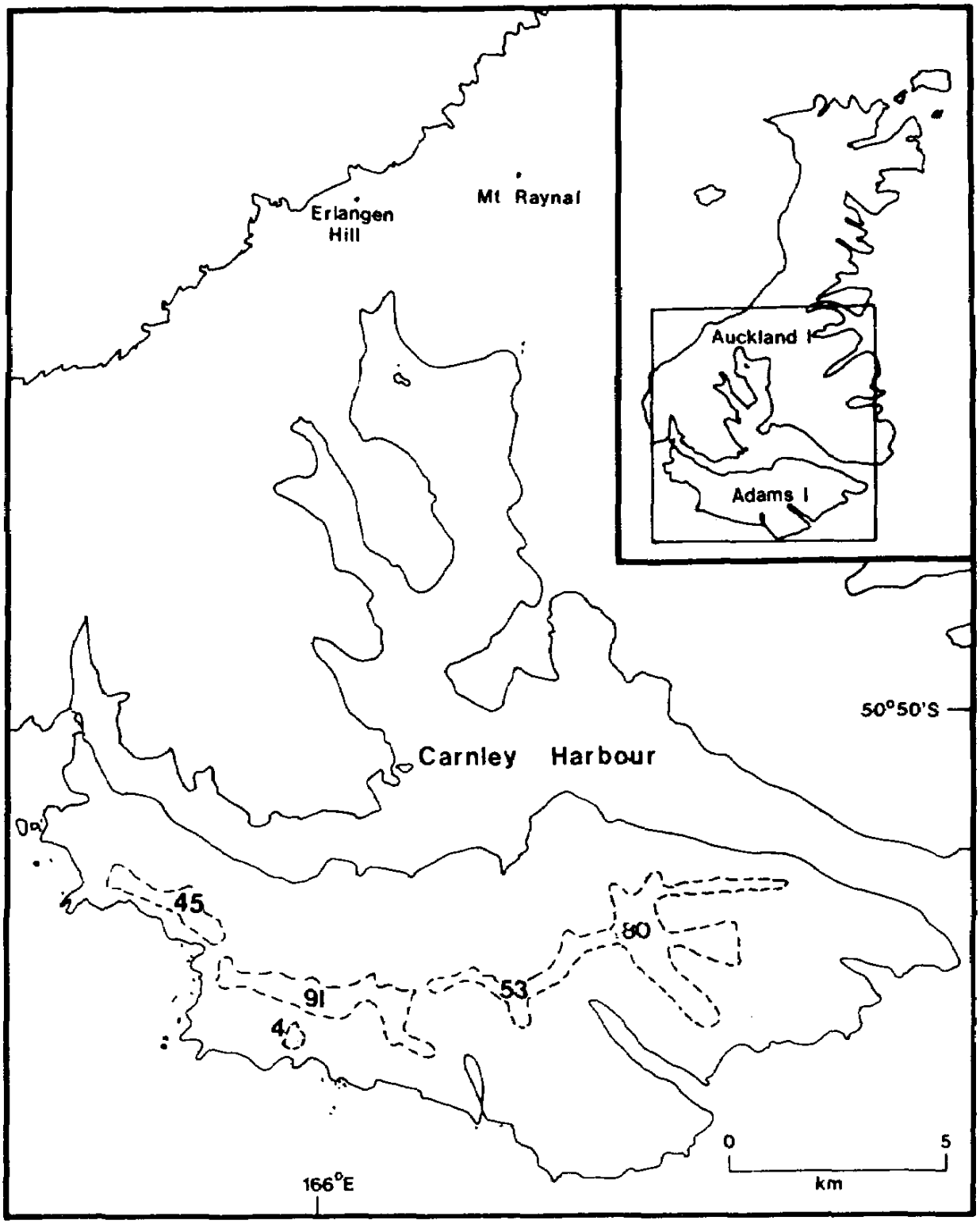

FIGURE 2 — The Auckland Island Banded Dotterels counted on Adams Island, November 1989. The area within dotted lines is fellfield dotterel habitat, arbitrarily divided into units for survey convenience. Numbers are total dotterel numbers in the units.

Movements

There was some evidence of nightly movement of dotterels from the fellfields and moorland down to the beaches, presumably to feed on the nocturnal sandhoppers which are very abundant among the tidal debris.

A single bird was seen flying to the north-eastern shoreline of Rose Island during the evening of 27 November 1989, and on 28 November a single bird was seen flying from Rose to Enderby Island (P. McClelland pers. comm.). The handful of dotterels on Ewing Island must have flown in each night from Enderby Island, as they were not seen on Ewing during the day.

A pair of Banded Dotterel was seen twice after dark on the beach at Magnetic Bay on Adams Island, apparently feeding on invertebrates among the tidal debris. On the night of 2 November 1989, one of these birds was caught in a tunnel trap set on the beach for Auckland Island Rails (*Rallus pectoralis muelleri*). No dotterels were seen on the beaches of Adams Island during the day.

Breeding

Eight nests were found on Enderby Island and many birds were defending territories, giving broken wing displays, or suddenly appearing from cover where they probably had a nest. There is probably a large breeding population on Enderby Island, though breeding has not previously been recorded there.

All the nests found on Enderby Island were on the central moors, although the behaviour of birds suggested nesting also on the coastal *Bulbinella* meadows. Nests were tucked in among low-lying (15-20 cm high) shrubs, particularly *Cassinia vauvilliersii* but also *Myrsine divaricata* and *Bulbinella rossii*. One nest was not sheltered but lay between mounds of *Oreobolus pectinatus*. The nests were usually lined with a few leaves or twigs of the canopy plant, but one was lined with leaves of southern rata (*Metrosideros umbellata*) and another with lichen.

The 11 nests found on the fellfields of Adams Island were in the lee of stones or the rush *Marsippospermum gracile*, which provided a little protection against the constant strong winds. As on Enderby Island, the behaviour of pairs and distraction displays showed we overlooked some inconspicuous nests.

Clutches of two to three eggs were found on Enderby and one to four eggs on Adams (Figure 3), though some may have been incomplete when we found them.

Predation

Falla (1978) considered that the dotterel breeding grounds in the alpine fellfields of Adams Island were too distant from the habitual hunting grounds of New Zealand Falcons (*Falco novaeseelandia*) and Brown Skuas (*Catharacta skua lonnbergi*) for these predators to pose a threat to dotterel eggs, chicks or adults.

However, on Adams Island during this survey, we found both skuas and falcons nesting on or near high altitude fellfield, and we saw a falcon chase a small flock of dotterels.

DISCUSSION

The Auckland Island Banded Dotterel population is much larger than the 100-200 birds estimated by Bell (1975) and Pierce (1980). Our total of 730 birds is conservative, as it does not include any dotterels on the main

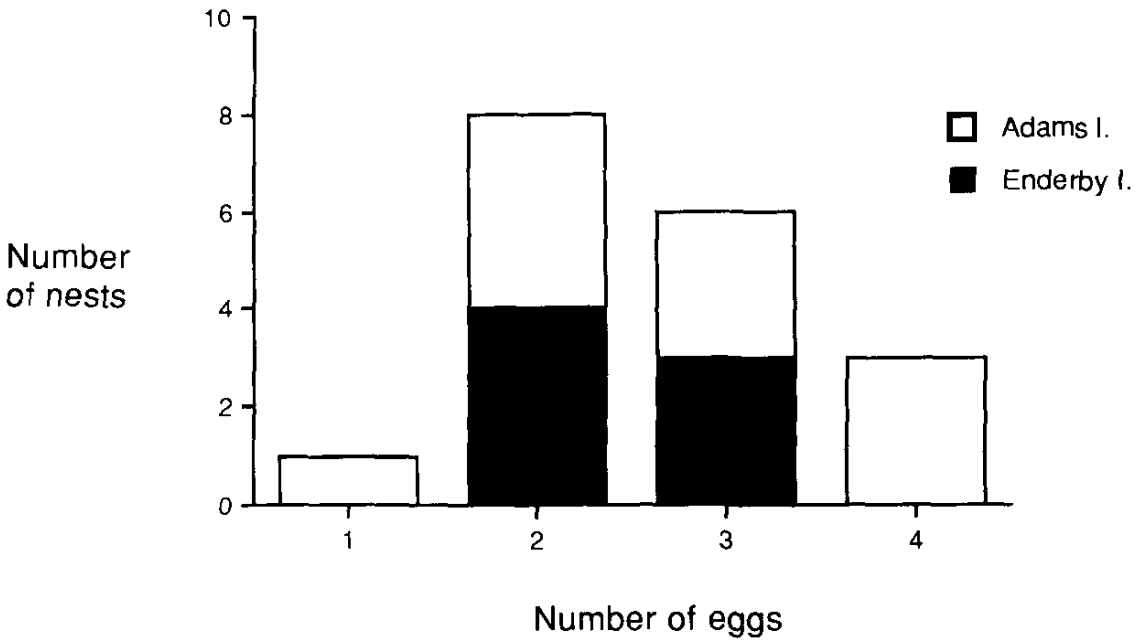

FIGURE 3 — Clutch sizes on Enderby and Adams Islands

Auckland, Dundas and Disappointment Islands. Either the number of dotterels has increased dramatically or the larger population had previously been overlooked.

Possible population changes

Though there is no previous comprehensive count of dotterels on Adams Island to compare with our result, the dotterel numbers on Adams Island have probably been much the same over the last 200 years because the island environment is almost pristine.

On the main Auckland Island, the dotterel numbers probably declined during the 1800s after the introduction of pigs in 1807 and cats some time between 1807 and 1840. Despite Falla's (1978) assertion that the dotterels nest well beyond the altitudinal range of cats and pigs, we now know that both mammals use the high open country extensively (Challies 1975, Taylor 1975) and almost certainly prey on dotterel nests. Our results indicate that few, if any, dotterels now nest on the main Auckland Island, and while cats and pigs are present, the number is unlikely to increase.

The only place where dotterel numbers are likely to have risen is Enderby Island. Banded Dotterels generally breed in the open in sites with a good, clear view. Until this survey, breeding had not been recorded on Enderby Island, and before the arrival of humans there was probably very little open ground suitable for dotterels to breed on this island.

Originally the more sheltered parts of the island were covered in southern rata forest and scrub. Most of the rest was covered in tall tussock (*Poa litorosa*) with scattered magaherbs (*Anisotome latifolia* and *Stilbocarpa polaris*) (Taylor 1971). Even the summit of the island and other exposed windy places were clothed in tussock (Cockayne 1904). The only open areas where dotterels might have bred were the exposed cliff tops, where there were patches of

sward vegetation, and the highest and most exposed parts of the central plateau, where there may have been lanes of open ground among wind-shorn tussock and scrub (Taylor 1971).

Today, most of Enderby Island is open ground. The forest is much reduced in extent and quality, the tussock grassland has almost disappeared, large areas of sward and *Bulbinella* meadow are around the coast, and the central plateau is a moorland dominated by *Oreobolus* and *Cassinia*. The successive introduction of rabbits, pigs, sheep, cattle and goats, together with the widespread burning of vegetation by early colonists, caused this dramatic change. Today, only cattle and rabbits remain, but their grazing and trampling are enough to maintain the smooth lawn-like appearance of much of Enderby Island. The close grazing has favoured low-growing plants such as *Oreobolus*, mounds of which appear able to prevent other plants from establishing for several years (Campbell & Rudge 1984).

Over the last 100 years, the vegetation changes on Enderby have increased the area of suitable breeding habitat for the Auckland Island Banded Dotterel. Such an increase in breeding can explain our high counts, but it does not explain how the increase has been overlooked by recent expeditions to the Auckland Islands.

Population overlooked

This century there have been many trips to the Auckland Islands by experienced ornithologists, but almost all were made after the dotterel breeding season.

Between 1940 and 1945, members of the Cape Expedition visited most parts of the Auckland Islands, although they spent most time on the high peaks and near the bases in Ranui and Tagua Bays. Several breeding pairs were seen on the tops of Adams and the main Auckland Island in spring months, and "numerous observations of banded dotterel on tidal areas around Port Ross were made throughout 1943 to 1944, most of them on the north coast of Enderby" (Falla 1978).

Since 1945, few ornithologists have visited Enderby during the dotterel breeding season. Rare exceptions were R.H. Taylor on 10-12 November 1954 (pers. comm.), M.F. Soper in early December 1972, and J.A. Bartle and C.D. Paulin on 7-9 December 1976. No breeding dotterels were seen. Soper saw only six dotterels (Soper 1976), while Bartle & Paulin (1986) found "non-breeding birds scattered over the higher open tops of Enderby Island" (though they shot two in breeding plumage!). They judged the total population on Enderby at that time to be probably fewer than 50 birds (Bartle, pers. comm. to Falla 1978).

Because of the lack of spring expeditions, Bell's notion that the entire Banded Dotterel population gathered at Enderby Island to overwinter remained unchallenged. The only indication that the population may have been increasing was the gradual rise in size of the post-breeding flock at Enderby Island between 1972 and 1990.

Dispersal

Our discovery that Auckland Island Banded Dotterels are breeding at

Enderby Island, where they are not known to have bred before, suggests that the whole population has recently increased. Recent breeding at Enderby, however, cannot itself explain our counts being higher than previous ones. We found more birds on Adams than were previously estimated for the whole population, and the Adams numbers are not likely to have changed. It is clear that only part of the Auckland Island Dotterel population overwinters on Enderby Island.

Do Adams Island birds remain on their breeding grounds all year? During a brief visit on 9 May 1981, Robertson & Jenkins (1986) found four or more flocks of 5-6 dotterels on the eastern Adams tops, and so this is a possibility. Do some birds overwinter in Carnley Harbour? Falla (1978) suggested that Carnley had no suitable coast for dotterel to overwinter, yet we found significant areas of tidal mudflats and turf-covered shores there. Do birds just disperse around the Auckland Island coastline in the winter? We found some evidence that dotterels use stony beaches, and this possibility cannot be ruled out.

A check of the Adams Island tops and the Auckland Island coastline in mid-winter is required to resolve this question.

CONCLUSION

The Auckland Island Banded Dotterel has probably increased during at least the last 20 years because of an increase in the area of breeding habitat available to them.

Few ornithologists have had the opportunity to see dotterels on their breeding grounds, and because of the assumption that after breeding all dotterels moved to Enderby Island, the population increase was overlooked. It seems that the Auckland Island Banded Dotterel remains on the alpine tops of Adams Island, or disperses around the coast after breeding, with some birds remaining at Enderby Island. Our observations of nocturnal movements of a few dotterel to beaches on Adams, Rose and Ewing Islands indicate that the dotterel may be less of a flocking sedentary species than previously assumed. Given that even the relatively accessible Port Ross area is seldom visited, it is hardly surprising that a growing dotterel population should have been overlooked if it dispersed after breeding.

Future changes and recommendations

It is planned to remove cattle (in 1991 and 1992) and rabbits from Enderby Island and pigs from the main Auckland Island. The removal of pigs from the main Auckland Island may increase dotterel breeding there, but the continued presence of cats could prevent this. The removal of cattle from Enderby Island will result in tussock and scrub replacing much of the meadow and moorland vegetation, decreasing the dotterel breeding area (Pierce 1980). It is unclear whether dotterel numbers will rise or fall overall at the Auckland Islands.

Further investigation is needed into the winter distribution of dotterels on the Auckland Islands, and the entire population should be checked at five-yearly intervals to monitor any population or habitat changes.

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