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**THE EFFECTS OF COLOUR-BANDING
ON CHATHAM ISLAND
OYSTERCATCHERS AND SHORE PLOVER**

by

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THE EFFECTS OF COLOUR-BANDING ON CHATHAM ISLAND OYSTERCATCHERS AND SHORE PLOVER

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ABSTRACT

During a visit to Rangatira Island in 1990 we evaluated the effect of colour banding on the endangered shore plover (*Thinornis novaeseelandiae*) and Chatham Island oystercatcher (*Haematopus chathamensis*). We assessed the condition of colour bands and the cause of any band failure on 90 birds. All oystercatchers had very worn colour-bands and a number of these were removed as they were likely to have brought about some discomfort to the birds. Although none of the 83 colour-banded shore plover examined appeared to have immediate problems with bands, deterioration of some bands on birds handled was noted and problems may occur in the future. Recommendations for future population monitoring and the use of colour bands are made.

1.1 INTRODUCTION

The endemic shore plover (*Thinornis novaeseelandiae*) was once widespread throughout New Zealand but is now to a single population of about 130 birds on Rangatira Island, in the Chatham Islands. The decline of shore plover throughout its former mainland and main Chatham Island range coincided with the introduction and spread of rats (*Rattus norvegicus*) and cats (*Felis catus*). The Chatham Island oystercatcher (*Haematopus chathamensis*) is the rarest oystercatcher species in the world and is confined to the Chatham Island group (Davis 1988). The population numbers about 100 birds and individuals are found on all of the larger islands of the group. On the two largest islands, Chatham and Pitt islands, introduced predators are present and these probably affect breeding success of the birds. Rangatira Island is the largest predator free island where Chatham Island oystercatchers are found and around eight pairs breed there (Davis 1988).

On Rangatira Island both shore plover and oystercatcher have been studied since the 1970s (Davis 1988). Most birds have been colour banded with wrap-around bands to study productivity and social behaviour and to facilitate detailed population monitoring. However, some lame banded birds and birds with lapped and partly unrolled colour bands and deformed legs have been reported, and there has been concern expressed at the effect of colour banding on these species because both are considered to be endangered (A. Grant, E. Kennedy pers. comm.). Band failure which causes undue stress, injury and/or death to endangered birds is not acceptable, and alternative

methods for population monitoring need to be found.

During a visit to Rangatira Island between 22 March and 12 April 1990 we were asked by Canterbury Conservancy to evaluate the effect of colour banding on the shore plover and Chatham Island oystercatcher.

Our objective was to evaluate the condition of colour bands, assess the cause of any band failure and make recommendations for future monitoring.

1.2 METHODS

A census of shore plovers and oystercatchers was undertaken. The colour bands of all individuals were checked visually at least once. A sample of birds was caught by spotlighting on the shore at night (Appendix D) and colour bands were examined closely. Worn colour bands causing discomfort were removed but metal bands were retained.

1.3 RESULTS

Oystercatchers

Oystercatchers were banded with K-sized bands. Seven oystercatchers were present on the island, five of which were colour-banded. Four of these birds were handled and all had worn colour bands; one bird was limping badly as a band had partly unrolled and was digging into its foot (Figure 1a & 1b). Colour bands were removed from three of the four birds handled.

Shore plover

Shore plover were banded with C-sized bands. We recorded 83 colour banded birds but only one had obvious leg injuries. This female, resident at Whalers Bay, had its right foot missing but the bird appeared to feed normally. It is not known if this injury was caused by colour bands.

Sixteen banded shore plover were captured and examined. Two of these had deformed toes on the leg without bands, the others appeared healthy. Unbanded shore plover have also been observed with deformed toes (A. Davis pers. comm.) and this was probably caused by the rocky environment. On most birds the colour bands were very worn, with some almost fused and the overlapping edges had been worn away (Figure 1b). These bands may cause problems in the future.

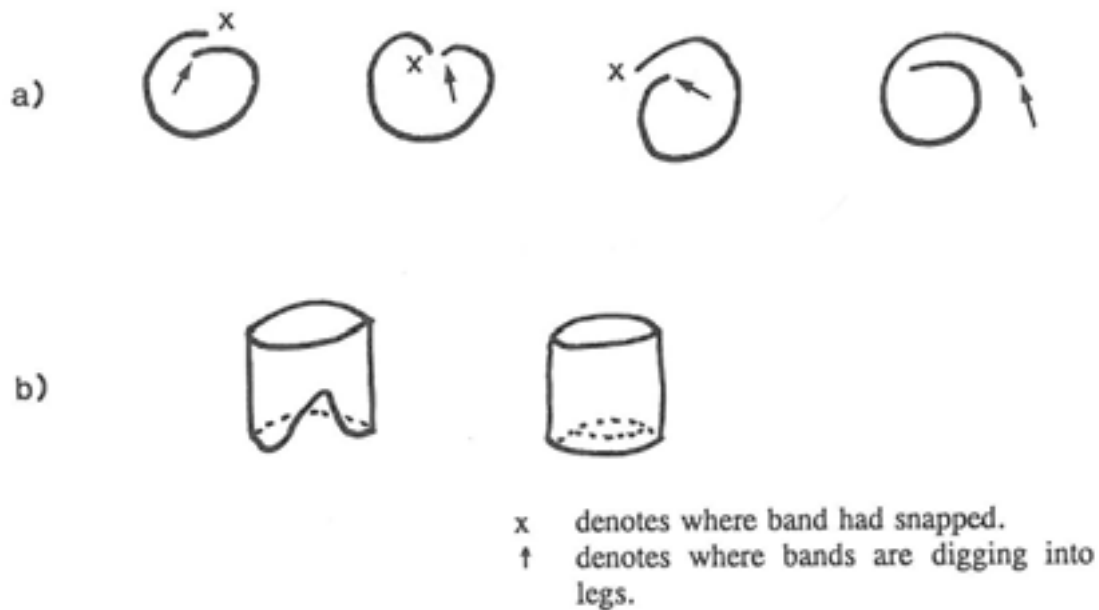
Of the sixteen banded birds that we examined seven had lost all of their colour bands and had only metal remaining. Three of these metal bands were worn and partly illegible, they were replaced by new bands. The birds examined had been banded at a variety of times: 18 years ago, two 15 years ago, then 14, 9, 5 and 2 years ago. We assume that the birds had lost their colour bands naturally. Although one bird had lost all its colour bands in less than two years, the age at which band loss occurs probably varies greatly between individuals.

The other group of banded birds we examined - those still with colour bands - also varied greatly in age. They included the oldest bird we found which was 19.5 years old. Two were 12, two were 8, two were 5 and two were 4 years old. However, as some of

these birds may have been rebanded at various times it is impossible to determine at what age band loss occurred. A. Davis (pers. comm.) suggests that most band loss occurs in birds banded for three years or more.

Several of the older metal bands had partly sprung open and the ends could dig into the birds leg. These could easily cause problems in the near future.

Figure 1: Examples of colour band failure.



Causes of colour band failure

1. Double wrap around bands were worn very thin, probably because of excess abrasion on the volcanic rocks of the island. Once thin, sections of the band snapped off. This led to the edges digging into legs or feet (Figure 1a, 2a).
2. Bands were becoming worn very thin on the inside edges causing a deformed, bevelled edge which dug into the toes (Figure 1b).
3. Different sizes of bands have been used for oystercatchers over the years (Figure 2b). Smaller (thinner) bands can actually slip through larger bands.
4. The plastic used in commercially made bands varied in thickness (Figure 1b) and would wear at different rates.

Figure 2: Oystercatcher bands. Those in the top row of each photo (a) were removed from birds on Rangatira Island. Note the varying sizes and how some have snapped off and become unravelled. Bands in the lower rows (b) are new unused bands showing varying sizes and thickness of materials.



1.4 DISCUSSION

It is important to re-evaluate the necessity of continuing to colour band shore plover and Chatham Island oystercatchers. Although we saw no shore plover suffering obvious ill effects from banding, in the past birds with leg injuries have been reported. However, during three years of intensive observations banding appeared to cause the death of only two birds (A. Davis pers. comm.). If banding is causing increased mortality of plovers, the problem would not be obvious in the remaining population. Many of the shore plover bands did show excess wear which may create problems in the future. Colour bands appeared to be causing major problems for oystercatchers, largely due to band wear with age. The use of bands of different thicknesses appears to be a problem particularly when broken bands slip inside others. Bands were causing discomfort to some birds and logically this would lead to infection, loss of limbs and perhaps death. Such risks cannot be sanctioned in these endangered species.

There are four options for the future. Which one is adopted will depend on monitoring needs and future management requirements.

- Option 1: No banding
- Option 2: Metal banding only with removal of existing colour bands when the opportunity arises.
- Option 3: Continue colour banding with bands of uniform size and thickness, however, rebanding may be needed every 2-4 years.
- Option 4: Explore the possibility of using coloured metal bands or some other more acceptable band.

The main justification for using colour bands to monitor oystercatcher and shore plover numbers appear to be:

1. To monitor population size and stability.
2. To monitor annual productivity.
3. To identify which birds may be used in management programmes.
4. To monitor the success of management programmes.

Some of these objectives could be fulfilled without colour banding the birds. Both oystercatchers and shore plovers are territorial when nesting and the number of breeding pairs could be counted reasonably accurately during the breeding season. This could only be done using the same experienced observers counting over a number of years. Both species have distinct juvenile plumage and annual productivity could be determined by a late summer census. The major drawbacks of unmarked birds would be an inability to count non-breeding adult birds and to count that year's young accurately when they are in the mobile, independent phase. However, non-breeding adults are unlikely to be targeted in management programmes. Future management of shore plover is likely to involve the removal and transfer of eggs or juvenile birds rather than adult birds, which would have been imprinted on Rangatira Island. There is no doubt, however, that colour banding could improve the quality of management decisions. It would allow further information to be obtained on age structure of the population and the identification of the most productive pairs/age classes of birds from which eggs could be taken.

A piecemeal approach should not continue and existing data from colour banding should be used fully. For example, we were surprised at the ages of the shore plover that we caught; ten of the 16 birds being eight years or older. It is important to continually monitor the age structure of the shore plover population. With 83 colour banded birds and nine known age metal banded birds, 92 of the 118 birds counted in autumn 1990 could be aged. If the population is aging due to low recruitment of young birds this would have important long term repercussions for the species.

As part of monitoring the age structure of the shore plover population it is important that metal bands are checked for band wear. Three of the four oldest birds we handled had partly illegible bands and within a few years these would be unreadable. This would result in loss of valuable information on the population structure.

1.5 RECOMMENDATIONS

1. That project managers decide urgently what information is needed from the shore plover and oystercatcher populations for effective management and if colour banding is necessary to achieve this. The benefits and dangers of banding must be carefully assessed before continuing or embarking on any further banding programme.
2. That all colour bands be removed from oystercatchers as a matter of course unless a more durable, long lasting colour band can be found.
3. That the effects of colour bands on shore plover be closely monitored and if colour banding is not deemed necessary for management decisions, that no new birds be colour banded. Metal banding should continue.¹
4. If colour banding continues a programme for regular replacement of bands be instigated (e.g. perhaps every 5 years).
5. That the modelling of the age structure of the shore plover population continue at regular intervals.
6. That metal bands on both shore plover and oystercatchers be checked for wear whenever the opportunity arises and replaced when necessary.
7. There needs to be continual assessment of new developments in banding techniques, materials and products; so that the procedures used for shore plover and Chatham Island oystercatchers can be updated accordingly.
8. If it is decided to discontinue colour banding, colour bands should be removed as the opportunity arises.

¹ As a result of earlier versions of this report colour banding using wraparound bands has been discontinued on shore plover and Island oystercatchers. A new type of butting colour band has been imported and these are being trialled on shore plover. Birds wearing these new bands are given distinctive colour combinations and are being regularly monitored. Bands are "welded" closed using a portable gas powered soldering iron.

1.6 ACKNOWLEDGEMENTS

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1.7 REFERENCES

Davis A. 1988. Chatham Island Oystercatcher Recovery Plan. Department of Conservation, Wellington.

APPENDIX I

NEW BIRDS BANDED

Chatham Island Oystercatcher

K5025	juvenile	1/4/90
K5027	adult	2/4/90

Shore Plover

C26971	adult female	1/4/90
C26972	juvenile	1/4/90
C26973	juvenile	1/4/90
C26975	juvenile	1/4/90
C26976	juvenile	2/4/90

COLOUR BANDS REMOVED

Chatham Island Oystercatcher

	Left leg	Right leg	
K2276	black/metal	green	Green only removed
K3054	red/blue	metal	Both colours removed
K2298	red	green/metal	" " "

OTHER RECAPTURES (alive and well)

Shore plover

C4353	adult male	1/4/90	Rebanded C26974
C22003	adult female	2/4/90	Rebanded C26977
C111154	adult male	2/4/90	Rebanded C26978
C26542	adult male	1/4/90	
C26419	adult female	"	
C4331	adult	"	
C26935	adult female	"	
C26377	adult male	"	
C26572	adult	"	
C26513	adult	"	
C26567	adult male	2/4/90	
C26374	adult male	"	
C26590	adult female	"	
C16603	adult	"	
C26509	adult male	"	
C26589	adult male	"	