NOTORNIS

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INITIAL BANDING OF *NOTORNIS MANTELLI*, 1952

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Introduction

The following notes record the initial colour banding of the Takahe (*Notornis mantelli*), the first few sight records of banded birds and a diurnal movement of one pair. Through banding it is possible to learn something of the size and the shape of the area occupied by individual birds and of the variation of the mobility between Takahe of different sex and age groups. In addition banding should contribute significantly to the development of techniques for comparing relative densities of Takahe, either in the Notornis valley or in similar Fiordland areas. By comparing sizes and shapes of individual or family ranges on a yearly or seasonal basis, the nature of the necessary requirements for the existence of the Takahe should be further elucidated. Also needed are: reliable facts about the Takahe family organization, not only on the nesting grounds but on a seasonal basis, the age at first breeding, the number of broods per year, growth measurements and some indication of the longevity of the bird. The gathering of this and similar information on the natural history of *Notornis* should be greatly accelerated by an intimate knowledge of even a few banded individuals recognizable in the field.

Acknowledgements

Banding was accomplished between 24 and 31 December 1952 by the second of three parties to visit the valley in the 1952 summer season. This party consisted of Prof. Percival, Canterbury University College, and the present authors. Grateful acknowledgement is made to Mr P. C. Bull, Dr R. A. Falla and Mr F. Newcombe for help in obtaining the bands, and to Mr V. Stout for preparation of the map from a series of oblique aerial photographs, and high altitude photographs from the ridges north and south of the valley.

Materials

Bands used were of the type commonly used in ringing poultry, and consisted of celluloid bands of two types, both with an inside diameter of 18mm. (see figure 1). Most of the bands were of a spiral type 11mm. wide and with three complete turns. The other type was a 'flatband' ring, with an overlap of four-fifths of the circumference of the ring. Since the spiral type ring appeared more secure on the leg than the 'flatband' ring, the latter were used only when needed to fill in on a colour combination for which spiral rings were lacking. Colours used were green, yellow, blue, and black.

Methods

Different colour combinations were observed in poor light inside the bush canopy in the late afternoon and those most easily identified were selected. Of these, blue was chosen as the colour to represent the 1952 - 1953 banding season because of a plentiful supply. By using the blue ring as the bottom ring on either one leg or the other and adding other colours as necessary, each bird was thus given an individual colour band marking. Unfortunately

we were unable to procure serially numbered aluminium leg bands for this season.

The exact method of capture depended upon the location of the bird when first observed, on the type of habitat in which it occurred and on the number of observers available for capturing the bird. The young had hatched at the time the initial banding operations occurred and at this time, with small chicks about, little difficulty was experienced in capturing adult Takahe. By keeping between the Takahe and the bush or scrub it was possible to drift the birds into low tussock or clearings where they were readily captured after a short chase. The parent birds hide the chicks in the snowgrass or shrubs at the first sign of disturbance, and finding a chick once hidden proved difficult. Capture of the second chick (No. 4) was greatly facilitated by first watching from a distance, then keeping the adults and chick in sight as a slow approach was made. In this way the adults were seen to hide the chick at the base of a hebe, before moving away. Once a chick is captured the adults come close enough so that they are more readily captured than when encountered on their own. Three adult birds were captured from the nest; in two cases the mate occupied the nest-bowl and continued incubating.

While being banded the Takahe was held by an observer with its head under his arm to reduce the danger of nips from the powerful beak. The birds, for the most part, proved tractable in the hand and offered no serious objection while a systematic search was made by the observer for ectoparasites on the skin and feathers (see fig. 1).

Results

Nine Takahe (two chicks, seven adults) were banded between 24 and 31 December. Colour combinations are shown in table 1, and the location of banded birds is indicated in figure 2.

Banded birds were observed as they were released from the original banding location and on seven occasions subsequent observations were made. Observations of leg bands were easiest made when it was possible to drift the bird from shrub or high *Danthonia* into grassy clearings where the bands could be easily observed. In the field a special effort was made to see the complete colour combination on both legs. Observations were recorded immediately even when they were not complete, for even incomplete observations can sometimes be definitely assigned to an individual bird, provided the key information is observed.

Preliminary observations in December indicate that Takahe adults, after the chicks are hatched, may, at least in certain habitat, range within a few days over an area $\frac{1}{4}$ to $\frac{1}{2}$ mile in one direction. For example, one bird (No. 6) was recaptured 300 yards west of the site of banding. Another bird (No. 7) was identified well over a quarter of a mile from its banding site, across the valley and inside the edge of the bush. Under the dull shady conditions that prevailed where the latter bird was collected, the blue band showed up well, in fact much better than the black band. Two months after the birds were banded E. G. Turbott and party observed two banded adults (Nos. 7 and 9) and one chick (No. 1), all within a quarter-mile of the spot where they were originally banded.

In the present writers' opinion it is important to learn the shape of the home range. This knowledge should facilitate the selection of common environmental elements from a variety of home-range shapes and in this way contribute to an understanding of Takahe environmental requirements. However, in future work in determining home ranges great care will have to be used in order not to over-emphasize the importance of grassland and to include maximum movement in scrub and in bush as well. In this connection it would probably greatly accelerate learning if some kind of foot marking or toe clipping could be used to mark the tracks, or if a satisfactory bait could be found for use in dyeing the pellets.

Another kind of evidence of the nature of the size and shape of the area occupied by Takahe can be gathered by continuous observation of undisturbed

individuals for daily periods. One example of such an observation is here recorded for one pair with a chick. Figure 3 shows the route taken by this pair (Pair A) over the 16 hour 15 minute period of 26 December (4.45 a.m. to 9.30 p.m.). As can be seen from the figure, the route taken by these three Takahe was a meandering one, into the edge of the hebe, on again into the snowgrass. During this period the birds were initially disturbed at 9 a.m. by an observer, but this disturbance did not cause them radically to shift their range. They were disturbed again at 3.20 p.m. by a male paradise duck who made a series of warning calls as an observer appproached the area in which the Takahe were feeding. But the birds did not shift at this time, although one of them was seen to look in the direction of the human. Between 4.30 p.m. and 6.30 p.m. the family group had been alternately resting and feeding, but in a very restricted area. At 6.35 p.m. they started feeding in a westerly direction at a rate of somewhat less than 50 yards per hour. This was the most rapid undisturbed movement recorded in the day. As they moved, occasionally all three birds could be seen at the same time, and when this was possible it was observed that they were normally not over about 10 feet from each other when they were moving steadily in one direction. When watched for several hours, movements incidental to feeding were characteristically meandering movements. Meandering about the central line of movement varied during the day, from about three yards to a maximum of about 50 yards. This group roosted in the edge of the scrub about 25 yards from the site where they were last seen on a previous day. The following morning at five o'clock this family group was observed in the same small patch of scrub. A day later this same group roosted about 200 yards from the roosting site of the previous day. The overall distance covered by Pair A on 26 December was paced at 375 yards, although the actual distance travelled would be more than double this distance due to the meanderings of the group.

Disturbance behaviour

Attempts were made on several occasions to determine the minimum distance at which Takahe would tolerate the presence of man. Although considerable varaition occurred, it was observed that this distance was about 20 yards when in clearing, and when in snowgrass it was 10 to 15 feet. As an observer approached the location of a chick the minimum of toleration greatly decreased as the parent birds became increasingly concerned for their chicks. Parents of chick No. 4, for example, approached to within five feet of the observers banding the chick.

Distraction display, instead of manifesting itself in simulated broken wing or other mock crippled behaviour, takes the form of a slow deliberate pacing in full view of the intruder. One of these birds was thus followed slowly about 50 yards before the adult ducked behind a clump of tussock and quickly doubled back in the direction from which both of us had come.

It was found that the Takahe, when pressed, tired quickly and would turn and double back or circle. On one occasion an adult suddenly stopped in full flight and hid its head and neck in the snowgrass although the rest of the body was fully exposed to view. This bird was, of course, easily caught for banding.

As an example of a more typical chase, an adult was flushed from beneath a hebe and dashed away fast towards the river. After about 15 yards it tried out-manoeuvring its pursuer around the bases of the snowgrass and then kept within a circle of about 20 feet until it was caught.

On one occasion when chased a bird was seen to run into the stream and swim rapidly under a large overhanging tussock growing on the bank. It was collected in the water. This was the only example observed this season in which a Takahe voluntarily took to water.

Calls observed associated with banding activities were of three types, although there may prove to be several others.

1) A single loud squawk was made by several birds when first caught.

2) Soft distress cries were made by one bird (No. 2) as it was handled. This brought another bird (a larger, slightly more brightly coloured, more wary bird, presumed to be the male) from a distance of about 25 yards to within 40 or 50 feet. No. 2 was typical of the other adults handled in that it kicked a bit when first picked up but was not at all vicious to handle.

3) The normal contact call used when feeding in an entirely undisturbed condition is noticeably louder (oomph). It is somewhat more frequent when the bird is disturbed. These calls, although of the same general nature as the contact calls, had the effect of alerting other Takahe.

SUMMARY

Seven adult Takahe and two chicks were banded with coloured poultry type rings. Preliminary notes in the first few days following banding indicated movement up to a quarter-mile from the original tagging site. Three observations of banded birds two months after banding were made in the same general areas used by these birds at the time of banding. Daily movements were recorded for one pair, the overall distance covered in a 16 hour 15 minute period being 375 yards. Roosting of one pair with chick was observed both in the same locality on two successive nights, and on two other nights the same birds roosted in different localities. Several aspects of the disturbance behaviour were described.

Table I

Colour combinations of banded *Notornis*

Date	Map	Colour Combination		Age	
Dec., 1952	Number	Left	Right	Chick	Adult
		0	0		
24	1	B	0	x	
		0	0		
	2	0	B		x
		Y	0		
26	3	B	0		x
		0	Y		
27	4	0	B	x	
		G	0		
29	5	B	0		x
		0	G		
	6	0	B		x
		Bk	0		
30	7	B	0		x
		0	Bk		
	8	0	B		x
		W	0		
31	9	B	0		x

G green, Y yellow, B blue, Bk black.

Figure 1. Showing the wrap-around (above) and spiral (below) types of coloured plastic bands.

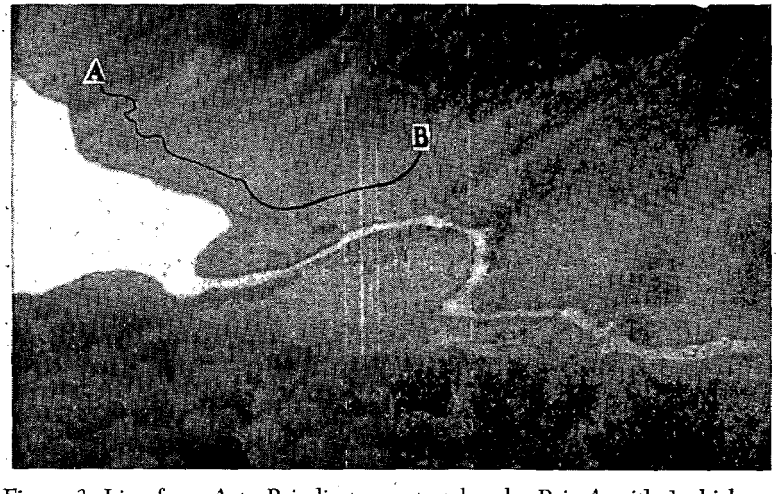

Figure 3. Line from A to B indicates route taken by Pair A with 1 chick on 26 December 1952.

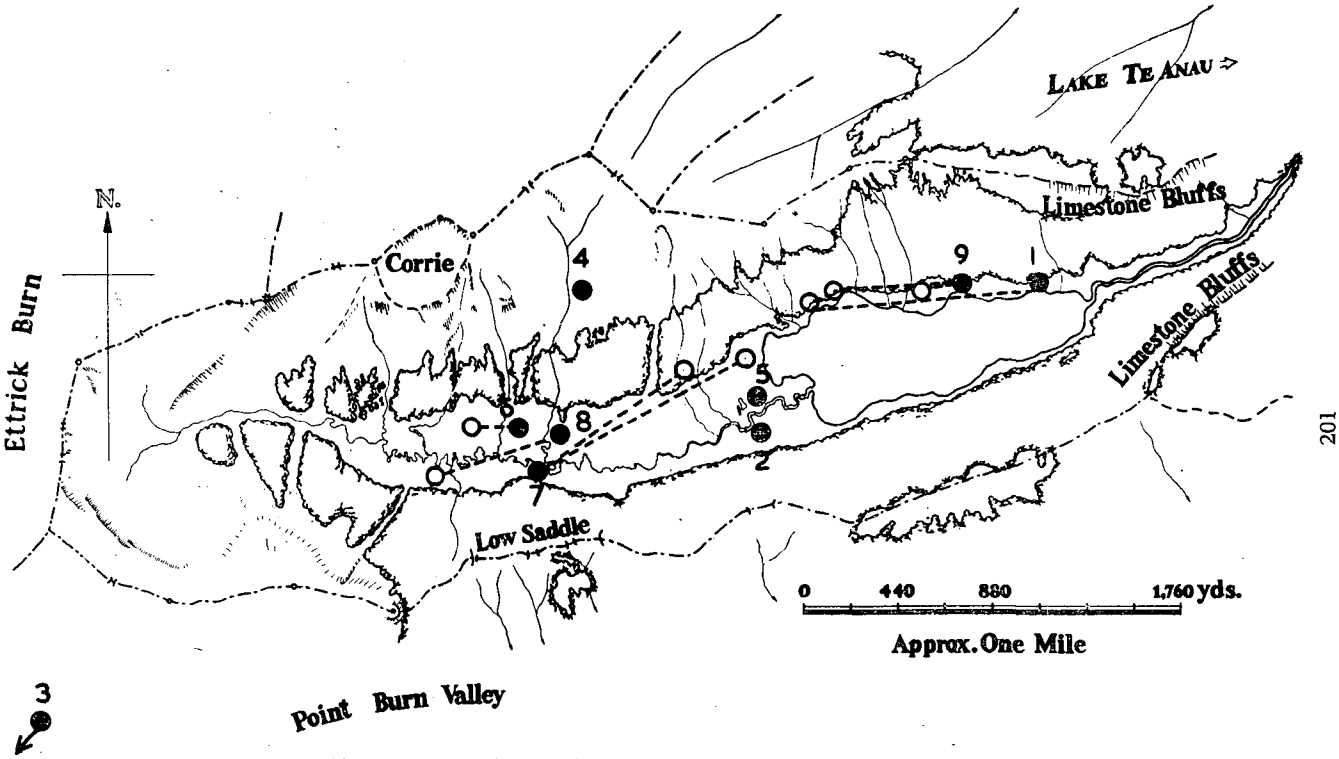

Figure 2. Map showing location of banded birds. White circles indicate sight records or recaptures and are connected by dash-line to the location of original banding (black circle).