PRELIMINARY RESULTS OF RESEARCH INTO THE PRESENT STATUS OF TAKAHE (Notornis mantelli) IN THE MURCHISON MOUNTAINS

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ABSTRACT

Breeding and post-breeding counts of Takahe *(Notornis mantelli)* were made during 1972-73 and 1973-74 in three study areas within the Murchison Mountains: Takahe Valley and Point Burn, Eyles-Wisely, and Miller Peak. The Takahe Valley and Point Burn population declined markedly between 1966-67 and 1968-69 but only slightly between 1969-70 and 1973-74. Indications are that the Eyles-Wisely and Miller Peak populations may have declined only slightly since 1966 and actually increased in the present surveys. The decline in Takahe Valley and Point Burn is possibly related to suboptimum habitat.

INTRODUCTION

When Takahe *(Notornis mantelli)* were rediscovered in 1948 in a remote valley on the western shore of Lake Te Anau, Wisely (1949) thought there were only seven pairs. Since then expeditions have explored more than 1200 square kilometres of the Fiordland National Park and in 1969 the population was estimated at about 200 pairs with 170 pairs in the Murchison Mountains (Reid 1969). In a recent reassessment of the number of Takahe in the Murchison Mountains during the 1963 to 1967, Reid & Stack (1974) placed the population probably between 435 and 510. At present Takahe are restricted to an area of about 650 square kilometres comprising the Murchison Mountains and a small adjacent area to the north.

The population in Takahe Valley and the adjacent Point Burn has been monitored by the Wildlife Branch (Williams 1957, 1960; Williams & Miers 1958; Reid 1967, 1969) since 1949. An intensive research programme was initiated in 1972 following a marked decline in the population of this area, to ascertain the extent and possible causes of the decline.

This paper presents results of censuses taken during the breeding and post-breeding periods of 1972-73 and 1973-74 in three study areas within the Murchison Mountains and compares them with available data for previous years.

METHODS

The censuses were made in three study areas within the Murchison Mountains: Takahe Valley and Point Burn, Eyles-Wisely, and Miller Peak (Fig. 1). These areas total 65 square kilometres of tussock grassland and fell-field constituting approximately 28% of this type of vegetation in the Murchison Mountains (Table 1).

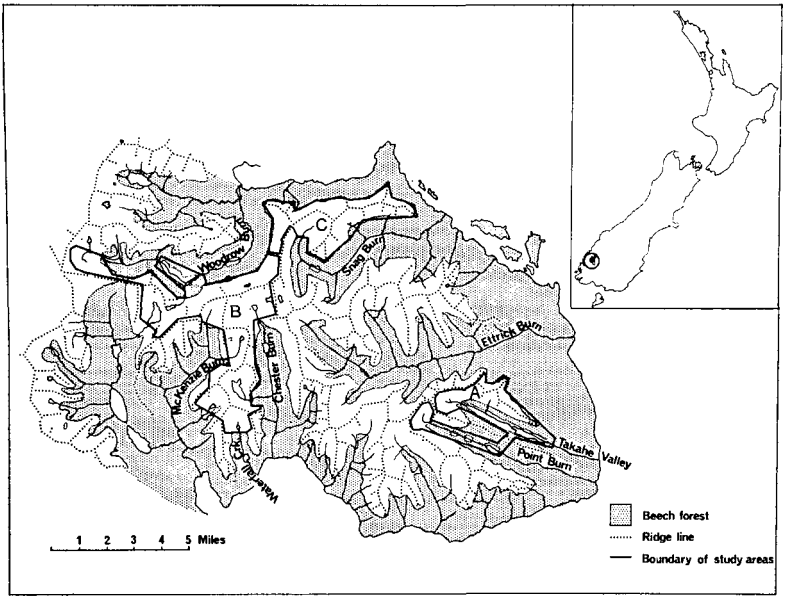

FIGURE 1 — The Murchison Mountains with the three study areas outlined. A. Takahe Valley and Point Burn; B. Eyles-Wisely; C. Miller Peak.

Three field parties, each consisting of two members, covered the study areas on foot from October to March. Tape recordings of Takahe calls were used to obtain responses from birds in dense tussock vegetation.

TABLE 1 - Description of the study areas within the Murchison Mountains.

Study area	Area (sq.km)	Altitude (metres)
Takahe Valley & Point Burn	10.5	900-1500
Eyles-Wisely	36.3	950-1650
Miller Peak	18.1	950-1500

RESULTS

Takahe Valley and Point Burn

Table 2 summarizes results from counts made during the breeding and post-breeding periods in 1972-73 and 1973-74. The number of adult Takahe present in the breeding period decreased by three between years. In January of both years there was temporary immigration of adults from the surrounding areas, which boosted the population. The immigrants remained at least until mid April.

TABLE 2 - The population of Takahe in the Takahe Valley and Point Burn, Eyles-Wisely and Miller Peak areas in the breeding period (October to December) and the post-breeding period (February) during 1972-73 and 1973-74

Study area	Oct.- Dec. No. adults	Oct.- Dec. No. pairs	February No. adults	February No. pairs
(a) 1972-73				
Takahe Valley & Point Burn	17	8	21	9
Eyles-Wisely	44*	19	43*	18
Miller Peak	30*	12	30*	12
(b) 1973-74				
Takahe Valley & Point Burn	14	6	19	8
Eyles-Wisely	41	20	41	20
Miller Peak	38	19	40	20

Note :*Figure possibly includes some yearlings which could not be distinguished from adults

Prior to 1972 the majority of census work in Takahe Valley-Point Burn was done in January and February, when the population could be expected to be at the highest level for the year. These counts indicated a marked decline in the number of adults and yearlings since 1966, but since 1969-70 the population appears to have stabilized at approximately half the 1966-67 level (Table 3). Between 1949 and 1957 the number of pairs on the valley floor of the study area appeared to fluctuate between 10 and 12 pairs (Williams & Miers 1958). Between 1963 and 1967-68 the number of pairs was approximately the same, fluctuating between nine and eleven, but there were only seven

TABLE 3 - The number of adults and yearlings in Takahe Valley and Point Burn between 1963 and 1974. The data from 1963 to 1971-72 are from Reid (1971) and refers to the lowest estimate.

Season	Number of adults and yearlings
1963-64	47
1964-65	45
1966-67	43
1967-68	36
1968-69	26
1969-70	22
1970-71	18
1971-72	19
1972-73	22*
1973-74	20*

Note : * As at 28 February

pairs present in 1968-69 (B. E. Reid pers comm), by 1972-73 the number had dropped to five pairs and by 1973-74 there were only three pairs. Since 1966-67, a commensurate but smaller decline has occurred in the number of pairs occupying territories above bush-line in the Takahe Valley and Point Burn area. In 1963-64 seven pairs were found, by 1966-67 there were eight (B. E. Reid pers comm) and in 1972-73 and 1973-74 there were four and five pairs respectively.

Eyles-Wisely and Miller Peak

These study areas did not have any marked increase in population from temporary residents in January as occurred in Takahe Valley and Point Burn (Table 2). Miller Peak had one extra pair arrive in January 1974. In the Eyles-Wisely and Miller Peak areas there were nett increases of two and four pairs respectively between the 1972-73 and 1973-74 seasons. The census of Miller Peak in 1973-74 included three pairs in an area that was not visited in 1972-73 because of difficulty of access.

Although comparable censuses are not available for Miller Peak and Eyles-Wisely for individual years, Reid & Stack (1974) have produced an estimate of the population in the Murchison Mountains based on feeding sign, droppings and sightings of birds between the years 1963 and 1967. In the map presented by Reid & Stack (1974) there were 31 territories corresponding to the present Eyles-Wisely study area and 21 in the present Miller Peak area. Present counts show 20 territories in each, with one pair per territory. If the estimates of Reid & Stack (1974) reflect the actual population present in a particular year then the Miller Peak area has remained about the same whereas the Eyles-Wisely area has lost approximately 11 pairs. These population estimates, however, are probably an overestimate of the population present for a given year since some territories may not be occupied every year.

DISCUSSION

The Takahe Valley and Point Burn population has declined markedly between 1966-67 and 1968-69 but only slightly between 1969-70 and 1973-74. Although comparable counts are not available, indications are that the Eyles-Wisely and Miller Peak populations may have declined only slightly since 1966, and actually increased between 1972-73 and 1973-74. It is suspected that these different trends are at least in part related to differences in habitat. The Takahe Valley and Point Burn valley floors approximately 150 metres below bushline are almost unique in Fiordland in that they are treeless and covered with Red Tussock *(Chionochloa rubra)* (Mark 1973). The vegetation of the valley sides, head basins and cirques above bushline (1100 m) are, however, similar to those of the Miller Peak and Eyles-Wisely areas, containing the tall tussocks *Chionochloa pallens, C. flavescens* and *C. crassiuscula.* Red Tussock is the least nutritious of the tall tussocks (Connor *et al* 1970), and the birds feeding on this species on the valley floors of Takahe Valley and Point Burn are possibly

in sub-optimum habitat. Because of this Takahe Valley and Point Burn may have a high population only when the more preferred areas are fully occupied. This hypothesis would account for the smaller decline in numbers of Takahe in the more nutritious tussock communities above the bushline in Takahe Valley and Point Burn and the apparent smaller decline of the Eyles-Wisely and Miller Peak populations. At this stage it is not known whether the decline in Takahe numbers in Takahe Valley and Point Burn will continue or whether it represents a low in a cyclic fluctuation. To be a cyclic fluctuation there would have to be higher production in some years which expand into Takahe Valley and Point Burn. High survival of chicks may be related to the periodic seeding of the tall tussocks which they prefer when available. The irregular flowering of *Chionochloa* species occur on average every three years, and is largely environmentally controlled, usually occurring following a warm summer the previous year (Connor 1966, Mark 1968).

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LITERATURE CITED

CONNOR, H. E. 1966. Breeding systems in New Zealand grasses VII. Periodic flowering of the snow tussock, *Chionochloa rigida*. N.Z. Journal of Botany 4: 392-397.

CONNOR, H. E.; BAILEY, R. W.; O'CONNOR, K. F. 1970. Chemical composition of New Zealand tall tussocks *(Chionochloa)*. N.Z. Journal of Agricultural Research 13: 534-554.

MARK, A. F. 1968. Factors controlling irregular flowering in four alpine species of *Chionochloa*. Proceedings of N.Z. Ecological Society 15: 55-60.

MARK, A. F. 1973. Vegetation in eastern and western sections of the Murchison Mountains, Fiordland, in relation to habitat requirements. Unpub. report to the Wildlife Branch, Department of Internal Affairs, Wellington.

REID, B. 1967. Some features of recent research on the Takahe *(Notornis mantelli)*. Proceedings of N.Z. Ecological Society 14: 79-87.

REID, B. 1969. Survival status of the Takahe, *Notornis mantelli* of New Zealand. Biological Conservation 1: 237-240.

REID, B. 1971. Takahe — a vanishing species. Wildlife 1971 — A Review. Department of Internal Affairs, Wellington: 39-42.

REID, B.; STACK, D. J. 1974. An assessment of the number of Takahe in the " Special Area " of the Murchison Mountains during the years 1963-1967. Notornis 21 (4): 296-305.

WILLIAMS, G. R. 1957. Some preliminary data on the population dynamics of the Takahe (*Notornis mantelli,* Owen). Notornis 7: 165-171.

WILLIAMS, G. R. 1960. The Takahe: a general survey. Transactions of the Royal Society of N.Z. 88: 235-258.

WILLIAMS, G. R.; MIERS, K. H. 1958. A five-year banding study of the Takahe. Notornis 8: 1-12.

WISELY, B. 1949. Reconnaissance of the *Notornis* area. Unpub. report. Wildlife Branch, Department of Internal Affairs, Wellington.

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