

BIRDS OF THE "TAKAHE STUDY AREA"

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INTRODUCTION

Following the rediscovery by Dr. G. Orbell of Tahake in the upper reaches of the Tunnelburn (since renamed Takahe Valley) during November 1948, an official party visited the locality in January 1949. Takahe were found to be also present in the neighbouring Pointburn Valley immediately south of Takahe Valley and some 4,300 acres (6.7 sq. miles) of the upper reaches and head basins of these two valleys in the Murchison Mts. form the "Study Area" where field research on *Notornis* is carried out. In the 20-year period between January 1949 and February 1969 research and inspection parties compiled 21 species lists during visits to the area.

The first 15 volumes of "*Notornis*" contain about 85 lists of species noted in various localities in New Zealand and on its off-shore islands. Some being compilations of observations from several visits, are probably fairly complete. Others, although titled — "Birds of . . .", are a record of only those birds that the observer(s) could identify among the species seen and heard during what frequently was a short visit. Consequently these lists represent only an unknown portion of the total resident and visiting birds associated with the area.

The incompleteness of a list based on a single visit to an area is convincingly shown from records made in the Takahe Study Area. Whereas the 21 individual lists contain from 16 to 33 species (average: 22), a total of 42 species (excluding Takahe) have been reported by visitors to Takahe Valley and the Pointburn.

FREQUENCY OF RECORDS

Not one species was recorded on all 21 lists. Four (Chaffinch, Kea, Kiwi and Tomtit) were recorded 20 times; four (Bellbird, Blackbird, Grey Warbler and Rifleman) were recorded 19 times; three (Paradise Duck, Scaup and Hedge Sparrow) were recorded 18 times and five (Brown Creeper, Grey Duck, Pipit, Redpoll and Weka) were listed during 17 visits. At the other end of the scale, three species (Shining Cuckoo, Falcon and Black-backed Gull) were recorded four times; the Robin was seen during three visits; three species (Greenfinch, Harrier and Black Shag) were recorded twice and five species (Canada Goose, Crested Grebe, Brown Duck, Goldfinch and Starling) were seen during one visit only.

The first bird list, compiled by B. Wisely during January 1949, recorded 17 species. The second, based on observations by K. H. Miers, E. G. Turbott and G. R. Williams during August 1949, lists 16 species including five (Brown Creeper, Grey Warbler, Kaka, Pigeon and Rifleman) that were not noted by Wisely. Alternatively, Wisely saw six species (Blackbird, Paradise Duck, Fantail, Redpoll, Thrush and Tui) that were not found by K.H.M., E.G.T. and G.R.W. By the end of the second visit the bird list for the area had increased to 22 species but only 11 of these were recorded by both parties.

Table 1 summarizes bird lists made during the last 20 years. Observers, recording the presence of a species, have frequently made qualitative estimates (i.e. rare, common, plentiful, etc.) of numbers. A total of 29 such terms were used but in Table 1 numerals have been substituted to show subjective abundancy rating — i.e. 1 = 'rare' or 'one or two' and successive digits indicate progressively greater numbers of a species until number 9 = 'very abundant' or 'very plentiful.'

In some instances when a species (i.e. Chaffinch, Tomtit, Grey Warbler, etc.) has not been recorded it is doubtful if that species was, in fact, absent from the area at the time. It may have been in lower numbers than usual or the observers may have omitted to note the occurrence. Such oversight does happen with common species. Observers who are quick to note 'first sight or sound of furtive forms' frequently do not record the familiar at the time because they 'will remember.' Alternatively, some species may not be listed by the recorder because 'everyone knows they are common in the area.'

An important adjunct to a bird list is the *negative record* stating that certain species, although expected, are absent. Both Blue Duck and Yellowhammer were seen during all visits prior to February 1950. The species list compiled by a party during that month mentions that neither of these species was seen. Other species recorded as being absent include Long-tailed Cuckoo (Jan. 1965); Robin (Nov. 1952); Rockwren (Nov. 1952); and Weka (Oct. 1950).

Two species reported from the Takahe Study Area but excluded from the list are Orange-wattled Crow (Jan. 1949) and Fernbirds (April 1962). The former identification has been discounted and the latter sighting was shown subsequently to be Hedge Sparrows.

A comparison of records made during the first six years (1949-1954) with those made from 1964-1969 suggests that whereas some species have remained at roughly the same level, others have seemingly either increased or decreased. The method used (mean abundancy rating \times number observations), being based on data from different individuals, can be only approximate. It indicates no difference in numbers of Grey Warbler, Kea, Pipit, Redpoll, Robin, Rockwren and White-eye. There has, however, been an increase in the number of Weka, Yellowhammer and Yellowhead, and Long-tailed Cuckoo are much more plentiful now than 15-20 years ago. Conversely, records show there are now apparently fewer Bellbird, Blackbird, Brown Creeper, Chaffinch, Fantail (big decrease), Hedge Sparrow, Kiwi, Rifleman (big decrease), Thrush, Tomtit and Tui.

NOTES ON SOME SPECIES

Shining Cuckoo: Recorded in the forest below Takahe Valley on four separate occasions between November 1952 and January 1954. Never more than one or two birds.

Black-backed Gull: Two birds first seen in Takahe Valley in January 1964. A pair present in January 1968. During 1968-69 a pair reared two chicks on the Takahe Valley flats. Extensive deer culling operations may have attracted this species.

Kaka: Although recorded during 17 visits, is rare in the study area and is confined mainly to the bush between Takahe Valley and Te Anau.

Kakariki: During six visits Kakariki were recorded but the species was not identified. Four parties have listed Yellow-crowned Parakeet in the area and two parties record Red-crowned as present.

Kea: Numbers recorded have varied from 21 to as few as one bird in Takahe Valley.

Kiwi: In January 1949 and October 1950 six pairs were heard in Takahe Valley. In 1969 Kiwi were in five different areas of the valley. K. H. Miers recorded them as being "more numerous than Takahe . . . three pair within 300 yards of the camp . . . and estimate 10 Kiwi in area A" in November 1949 and in December 1952 he noted "at least 10 pair in Takahe Valley."

Big Black Shag: One bird seen in February 1968 and two birds the following summer.

Weka: Were not seen during the first two visits and a party in November 1949 recorded 'one visitor, no resident birds.' In October 1950 F. Woodrow looked for Weka in Takahe Valley and reported them as 'not present.' By December 1952 there were 5 pairs in the valley. During January 1965 twenty-five (including 10 juveniles) were seen but in January 1969, following a very severe winter, not more than four families were located.

SPECIES NOT RECORDED IN "TAKAHE STUDY AREA"

Excluding groups (i.e. most sea birds and vagrants) one would obviously expect to be absent, at least 19 species (White-throated Shag, the two common herons, Bittern, Kingfisher, Black Swan, Grey Teal, Mallard, Shoveler, Pukeko, *Kakapo, Little Owl, Laughing Owl, Bush Wren, Fernbird, South Island Thrush, House Sparrow and Red-billed and Black-billed Gulls) occurring in the Fiordland National Park have not, as yet, been recorded in the study area. In time some of these species will, doubtless, be noted in Takahe Valley.

Preston's (1960) studies on segments of the rich continental avifauna of North America demonstrate the equivalence of time and area by showing that a comparable extension of either of these dimensions will increase the number of species found breeding in an area by approximately the same amount. His work shows that if the duration of each following observation period is doubled, or if the extent of the area under observation is progressively enlarged at the same rate, then the number of breeding species added to the initial list with each successive doubling of either time or area, tends to remain constant.

Caughley (1965) tested that part of the theory relating to the number of species observed with the extension of time. His bird lists, compiled in the Kaweka Range, confirm that the same rule applies to a depauperate island fauna — viz. — the number of species, irrespective of breeding status, added to the record with each doubling of time does remain roughly constant.

* Kakapo once lived in the study area.

The 21 bird lists from the 'Study Area' span 21 years but observations were not regular. Whereas three lists were made in 1949 and four years (1952, 1959, 1960, 1961) have two lists each; records were not kept during visits in 1955, 1956, 1957, 1958, 1963 and 1966. Although these data, because of inconsistent sampling, are not ideally suited to test whether the effect of comparable extensions to units of time and area give equivalent increases in the number of bird species, they do suggest that this relationship does probably apply within New Zealand.

The first bird list gave 18 species (including Takahē). By February 1969 forty-three species were known from the Study Area. Therefore a further 20 (approximately comparable) periods of observation added another 25 species. This represents an additional 5.8 species for each doubling in time. If the same order of increase occurs with each doubling of area 46 species would be recorded by observers placed simultaneously in all valleys of the Murchison Mountains for a period of two weeks. The cumulative time spent by Wildlife exploration parties in these mountains would be equivalent to about 10 days in each watershed and the bird lists from these parties give 45 species — a very close agreement.

Likewise, if 5.8 species are added with each doubling of area, the Fiordland National Park species list should contain 72 different birds. Excluding various sea-birds and vagrants, lists made by Wildlife parties in numerous valleys during the last 12 years have shown at least 63 species present — a mean increase of 4.8 with each doubling. Although this is one less species per doubling than should be expected if time and area are comparable, the agreement is really closer than this discrepancy indicates, as lists have not been made in many regions of the Park.

With an area of 66 million acres New Zealand equals 14 doublings of the Study Area and should contain 99-100 species if most families of sea-birds and vagrants are excluded. The check list gives 107 species, but it is probably valid to exclude the six introduced Galliformes (Pheasant, Quail, Chukor, etc.). Therefore, the number of species present in New Zealand is only one or two more than the number obtained from using the first bird list and the mean rate of species increase with time in Takahē Valley — and then from regarding time and area as equivalent.

ACKNOWLEDGEMENTS

I thank my colleagues for making bird lists and for frequently including fuller details in the text of their reports.

REFERENCES

- CAUGHLEY, GRAEME, 1965: A method of comparing the number of species in areas covered by different periods of observation. *Emu* 65 (2): 115-118.
- PRESTON, F. W., 1960: Time and space and the variation of species. *Ecology* 41 (4): 611-627.

NOTES RE TABLE 1

Number of days refers to length of time each party was in the Study Area.

Detail on Species Lists

— = Species not yet recorded for the first time.

O = Not seen, although previously recorded in the area.

X = recorded as "absent" or "not present."

1 = "rare; one or two" etc.

2 = "few; infrequent" etc.

3 = "several," "scattered," etc.

4 = "quite plentiful," "frequent," etc.

5 = "common," "fairly numerous" etc.

6 = "widespread."

7 = "many," "quite abundant," etc.

8 = "abundant," "plentiful," "numerous" etc.

9 = "very numerous" etc.

S = Species seen but numbers not mentioned.

B = One bird, P = one pair, C = one chick, E = eggs

i.e. P/1C = pair with one chick

13B/E = 13 adults, one nest with eggs

2P/7C = 2 pair and total of seven chicks

Notes on Waterfowl

In addition to the 24 records of waterfowl included in Table 1, counts of these were also made in February 1963, when three Blue Duck (one on Lake Orbell, pair in Point Burn) and seven Grey Duck, including one with three ducklings, were in the Study Area.

TABLE 1 — Species lists compiled by Wildlife Branch parties working in the Takahe Study Area from January 1949 to February 1969

Month and Year		1/49	8/49	10/49	12/49	2/50	4/50	10/50	11/50	12/50	1/51	2/51	3/51	4/51	5/51	6/51	7/51	8/51	9/51	10/51	11/51	12/51	1/52	2/52	3/52	4/52	5/52	6/52	7/52	8/52	9/52	10/52	11/52	12/52	1/53	2/53	3/53	4/53	5/53	6/53	7/53	8/53	9/53	10/53	11/53	12/53	1/54	2/54	3/54	4/54	5/54	6/54	7/54	8/54	9/54	10/54	11/54	12/54	1/55	2/55	3/55	4/55	5/55	6/55	7/55	8/55	9/55	10/55	11/55	12/55	1/56	2/56	3/56	4/56	5/56	6/56	7/56	8/56	9/56	10/56	11/56	12/56	1/57	2/57	3/57	4/57	5/57	6/57	7/57	8/57	9/57	10/57	11/57	12/57	1/58	2/58	3/58	4/58	5/58	6/58	7/58	8/58	9/58	10/58	11/58	12/58	1/59	2/59	3/59	4/59	5/59	6/59	7/59	8/59	9/59	10/59	11/59	12/59	1/60	2/60	3/60	4/60	5/60	6/60	7/60	8/60	9/60	10/60	11/60	12/60	1/61	2/61	3/61	4/61	5/61	6/61	7/61	8/61	9/61	10/61	11/61	12/61	1/62	2/62	3/62	4/62	5/62	6/62	7/62	8/62	9/62	10/62	11/62	12/62	1/63	2/63	3/63	4/63	5/63	6/63	7/63	8/63	9/63	10/63	11/63	12/63	1/64	2/64	3/64	4/64	5/64	6/64	7/64	8/64	9/64	10/64	11/64	12/64	1/65	2/65	3/65	4/65	5/65	6/65	7/65	8/65	9/65	10/65	11/65	12/65	1/66	2/66	3/66	4/66	5/66	6/66	7/66	8/66	9/66	10/66	11/66	12/66	1/67	2/67	3/67	4/67	5/67	6/67	7/67	8/67	9/67	10/67	11/67	12/67	1/68	2/68	3/68	4/68	5/68	6/68	7/68	8/68	9/68	10/68	11/68	12/68	1/69	2/69	3/69	4/69	5/69	6/69	7/69	8/69	9/69	10/69	11/69	12/69	1/70	2/70	3/70	4/70	5/70	6/70	7/70	8/70	9/70	10/70	11/70	12/70	1/71	2/71	3/71	4/71	5/71	6/71	7/71	8/71	9/71	10/71	11/71	12/71	1/72	2/72	3/72	4/72	5/72	6/72	7/72	8/72	9/72	10/72	11/72	12/72	1/73	2/73	3/73	4/73	5/73	6/73	7/73	8/73	9/73	10/73	11/73	12/73	1/74	2/74	3/74	4/74	5/74	6/74	7/74	8/74	9/74	10/74	11/74	12/74	1/75	2/75	3/75	4/75	5/75	6/75	7/75	8/75	9/75	10/75	11/75	12/75	1/76	2/76	3/76	4/76	5/76	6/76	7/76	8/76	9/76	10/76	11/76	12/76	1/77	2/77	3/77	4/77	5/77	6/77	7/77	8/77	9/77	10/77	11/77	12/77	1/78	2/78	3/78	4/78	5/78	6/78	7/78	8/78	9/78	10/78	11/78	12/78	1/79	2/79	3/79	4/79	5/79	6/79	7/79	8/79	9/79	10/79	11/79	12/79	1/80	2/80	3/80	4/80	5/80	6/80	7/80	8/80	9/80	10/80	11/80	12/80	1/81	2/81	3/81	4/81	5/81	6/81	7/81	8/81	9/81	10/81	11/81	12/81	1/82	2/82	3/82	4/82	5/82	6/82	7/82	8/82	9/82	10/82	11/82	12/82	1/83	2/83	3/83	4/83	5/83	6/83	7/83	8/83	9/83	10/83	11/83	12/83	1/84	2/84	3/84	4/84	5/84	6/84	7/84	8/84	9/84	10/84	11/84	12/84	1/85	2/85	3/85	4/85	5/85	6/85	7/85	8/85	9/85	10/85	11/85	12/85	1/86	2/86	3/86	4/86	5/86	6/86	7/86	8/86	9/86	10/86	11/86	12/86	1/87	2/87	3/87	4/87	5/87	6/87	7/87	8/87	9/87	10/87	11/87	12/87	1/88	2/88	3/88	4/88	5/88	6/88	7/88	8/88	9/88	10/88	11/88	12/88	1/89	2/89	3/89	4/89	5/89	6/89	7/89	8/89	9/89	10/89	11/89	12/89	1/90	2/90	3/90	4/90	5/90	6/90	7/90	8/90	9/90	10/90	11/90	12/90	1/91	2/91	3/91	4/91	5/91	6/91	7/91	8/91	9/91	10/91	11/91	12/91	1/92	2/92	3/92	4/92	5/92	6/92	7/92	8/92	9/92	10/92	11/92	12/92	1/93	2/93	3/93	4/93	5/93	6/93	7/93	8/93	9/93	10/93	11/93	12/93	1/94	2/94	3/94	4/94	5/94	6/94	7/94	8/94	9/94	10/94	11/94	12/94	1/95	2/95	3/95	4/95	5/95	6/95	7/95	8/95	9/95	10/95	11/95	12/95	1/96	2/96	3/96	4/96	5/96	6/96	7/96	8/96	9/96	10/96	11/96	12/96	1/97	2/97	3/97	4/97	5/97	6/97	7/97	8/97	9/97	10/97	11/97	12/97	1/98	2/98	3/98	4/98	5/98	6/98	7/98	8/98	9/98	10/98	11/98	12/98	1/99	2/99	3/99	4/99	5/99	6/99	7/99	8/99	9/99	10/99	11/99	12/99	1/100	2/100	3/100	4/100	5/100	6/100	7/100	8/100	9/100	10/100	11/100	12/100	1/101	2/101	3/101	4/101	5/101	6/101	7/101	8/101	9/101	10/101	11/101	12/101	1/102	2/102	3/102	4/102	5/102	6/102	7/102	8/102	9/102	10/102	11/102	12/102	1/103	2/103	3/103	4/103	5/103	6/103	7/103	8/103	9/103	10/103	11/103	12/103	1/104	2/104	3/104	4/104	5/104	6/104	7/104	8/104	9/104	10/104	11/104	12/104	1/105	2/105	3/105	4/105	5/105	6/105	7/105	8/105	9/105	10/105	11/105	12/105	1/106	2/106	3/106	4/106	5/106	6/106	7/106	8/106	9/106	10/106	11/106	12/106	1/107	2/107	3/107	4/107	5/107	6/107	7/107	8/107	9/107	10/107	11/107	12/107	1/108	2/108	3/108	4/108	5/108	6/108	7/108	8/108	9/108	10/108	11/108	12/108	1/109	2/109	3/109	4/109	5/109	6/109	7/109	8/109	9/109	10/109	11/109	12/109	1/110	2/110	3/110	4/110	5/110	6/110	7/110	8/110	9/110	10/110	11/110	12/110	1/111	2/111	3/111	4/111	5/111	6/111	7/111	8/111	9/111	10/111	11/111	12/111	1/112	2/112	3/112	4/112	5/112	6/112	7/112	8/112	9/112	10/112	11/112	12/112	1/113	2/113	3/113	4/113	5/113	6/113	7/113	8/113	9/113	10/113	11/113	12/113	1/114	2/114	3/114	4/114	5/114	6/114	7/114	8/114	9/114	10/114	11/114	12/114	1/115	2/115	3/115	4/115	5/115	6/115	7/115	8/115	9/115	10/115	11/115	12/115	1/116	2/116	3/116	4/116	5/116	6/116	7/116	8/116	9/116	10/116	11/116	12/116	1/117	2/117	3/117	4/117	5/117	6/117	7/117	8/117	9/117	10/117	11/117	12/117	1/118	2/118	3/118	4/118	5/118	6/118	7/118	8/118	9/118	10/118	11/118	12/118	1/119	2/119	3/119	4/119	5/119	6/119	7/119	8/119	9/119	10/119	11/119	12/119	1/120	2/120	3/120	4/120	5/120	6/120	7/120	8/120	9/120	10/120	11/120	12/120	1/121	2/121	3/121	4/121	5/121	6/121	7/121	8/121	9/121	10/121	11/121	12/121	1/122	2/122	3/122	4/122	5/122	6/122	7/122	8/122	9/122	10/122	11/122	12/122	1/123	2/123	3/123	4/123	5/123	6/123	7/123	8/123	9/123	10/123	11/123	12/123	1/124	2/124	3/124	4/124	5/124	6/124	7/124	8/124	9/124	10/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