SUMMARY OF TAKAHE INVESTIGATIONS FOR 1953-54 STUDY SEASON.

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This is a very brief summary of the work done in the Takahe Valley area from December 1953 to May 1954. Detailed discussion of some particular aspects are expected to appear in due course as special communications prepared by the ornithologists mainly concerned with these aspects. The matter presented here has been culled from the as yet unpublished observations of the following persons: Dr. D. S. Farner, Mr. L. C. Bell, Mr. K. E. Westerskov, Mr. P. C. Bull, Mr. K. H. Miers, Mr. E. Cutler and G. R. Williams. These observations have been made available to the present writer through reports addressed to the Wildlife Division, Department of Internal Affairs.

NUMBER OF STUDY PARTIES.—There were four, made up as follows:—No. 1: Dec. 8th—17th 1953, Dr. D. S. Farner (Washington State College, U.S.A.), L. C. Bell and G. R. Williams (Wildlife Division); the last-named had to withdraw on the eve of the expedition. No. 2: Dec 31st 1953–Jan. 8th 1954, E. Cutler (D.S.I.R.), L. C. Bell and K. E. Westerskov (Wildlife Division). No. 3: Feb. 14th–21st 1954, P. C. Bull (D.S.I.R.), K. H. Miers and G. R. Williams (Wildlife Division). No. 4: May 15th–19th 1954, P. Logan, B. Mangos and K. H. Miers (Wildlife Division).

AIMS.—Parties Nos. 1, 2 and 3 were concerned mainly with continuing the investigations into the various aspects of the breeding biology and behaviour of the takahe and the development of the banding programme. Party No. 4 paid a very short visit to make a later report on the suitability of the bands used so far and to make preliminary observations intended to estimate the relative abundance of the deer population of the area and the effect it may be having on the vegetation. In addition, each party had a number of minor objectives and these will be described later.

RESULTS OF THE MAIN INVESTIGATIONS.

BREEDING BIOLOGY.

(i) NESTS.—Five nests that had been used—or apparently used—for incubation were found; four by Party No. 1 and one by Party No. 2. Only two of these nests contained eggs when found—in each case a clutch of two was being incubated. The other three nests were associated with egg fragments. Only in two instances can a reasonable guess be made about the fate of any of these five nests. In Area M where several fragments of shell and a piece of egg membrane had been found in a nest in mid-December, a chick about one month old was caught and banded in early January. It is very likely that the chick came from this nest. In Area E, in mid-December half an egg shell was found near a nest that had supposedly been used for incubation. The appearance of this shell fragment suggested that the egg may have been destroyed by a weka. That the clutch was indeed destroyed seems more likely when consideration is taken of the fact that another nest containing two eggs and an incubating bird was found in early January within twelve feet of the first nest. This second nest was seen—apparently freshly completed but without eggs—during the visit of Party No. 1. The assumption made by Westerskov and Bell that the same pair had renested is a justifiable one.

(ii) CHICKS.—Four definitely different chicks were accounted for during the 1953-54 season and there is the doubtful record of one more. In Area A two different chicks were seen—one in early December and a recently-hatched one in mid-February. As one of the attendant adult birds was the same in each instance (it was bearing the same colour band combination) it appears that one pair may hatch out two broods in one season. The fate of the earlier chick is unknown.

(iii) BREEDING AGE.—A bird banded as a chick in late December 1952 was found incubating eggs in Area B in early December 1953. This

is the first instance known of a takahe showing reproductive activity in its first year.

(iv.) INCUBATION BEHAVIOUR.—Party No. 1 observed two different birds incubating the nest in Area B. Apparently both sexes take part in this activity; and if this should prove to be the rule, then takahe behaviour in this respect is in line with that shown by other members of the rail family.

BANDING.

This part of the research programme is regarded as very important, for, as a result of continuing with it and even expanding it, we hope to get reliable information about:—(1) Mean annual mortality rates; (2) the mean annual productivity; (3) the age at which breeding first occurs; (4) the fraction of the birds at breeding age which actually breed; and (5) the interchange of birds among the various units of the population (which will include, of course, the usual movement studies). Other aspects of a life history study upon which banding throws light are the study of behaviour and the perfecting of means of ageing and sexing individuals of a population.

(i) NUMBER OF TAKAHE BANDED.—Nine birds were banded in late December 1952 using coloured plastic bands only. During the period under review another nine were banded, using both coloured bands and numbered aluminium bands. Three of the birds banded were carrying bands from the previous occasion so a maximum number of 15 birds are now marked in this way. There is a likelihood that some of the "new" birds are birds banded in December 1952 that have lost the band or bands put on them. As far as is known at present, nine birds bear both aluminium and colour bands and six birds bear colour bands only.

(ii) SUITABILITY OF BANDS.—At least three of the plastic colour bands put on the birds' legs in December 1952 had been lost by about one year later, one of the plastic wrap on bands was pulled off in February 1954 within a minute of being fitted and another wrap-on band was lost between February and May 1954. The plastic spiral bands are probably not so easily lost although birds were recaptured that had some of the spiral broken off. More time will have to pass before the durability of the aluminium bands can be assessed, but they should be very much more satisfactory than the plastic ones as far as endurance on the bird is concerned. Ways are being sought to ensure greater permanence of the colour bands.

All types of band are being carefully watched in case wear should make them unsuitable. At present it seems that there is no risk of injury to the birds. Colour bands are also being tested for dye-fastness in the field.

(iii) OTHER DATA OBTAINED FROM BANDING.—Some new facts that could have been obtained only by marking wild birds in some way have already been described—e.g., the age at which one particular bird displayed reproductive activity, the sharing of incubation duties at one nest, and the fact that one bird has been seen with two different chicks during the course of one breeding season. Other information on territory size, pair bonds, general movements and behaviour, etc., has already been obtained and will be written-up at length when the amount of information available justifies this. During the coming three-month period of continuous observation, the banding effort is to be persevered with so long as any untoward interference likely to adversely affect survival, breeding behaviour or care of young is avoided.

CENSUS.—It was not a special objective of any of the four parties to carry out a total census in the two main colonies. Party No. 3 accounted for most birds and found a minimum of 20 birds of all ages in Takahe Valley and five adults in the Point Burn.

GRID SYSTEM.—To make all recording of data easier and more reliable, a grid system has been applied to the best map at present generally available of Takahe Valley. Thus within the limitations of accuracy of the map itself, each observation can be placed in relation to others and the extent of movements or of territory can be more precisely defined. The scale and nature of the grid is such that when aerial maps of the Murchison Range become available it should be possible to transfer the grid and the observations connected with it to the aerial photographs with satisfactory accuracy.

SOUND RECORDINGS.—During the February visit, a tape recorder was taken into the Valley and some recordings of takahe adults and a chick (as well as some other native birds) were obtained. The original tapes are now with the N.Z. Broadcasting Service, and of two copies of an abridged version with commentary one is in the N.Z.B.S. record library and the other is in the possession of the Wildlife Division.

SOIL SURVEY.—Mr. E. Cutler, pedologist, D.S.I.R., made a preliminary soil and vegetation survey of Takahe Valley during the stay of Party No. 2 and a report and map have been received.

GENERAL BIRD OBSERVATIONS.—Mr. Westerskov and Mr. Bull specialised in these and their findings will no doubt appear separately in the near future. All expedition members made casual observations which are on file at the Wildlife Division, Department of Internal Affairs.

NOTE ON VOICE OF LESSER REDPOLL.—This bird's calls were investigated at Makara and Karori, Wellington, chiefly between 1947 and 1951, and the following records made. One note which sounds like "tzwee" appeared to be a contact note. This has been heard from birds of both sexes. It has been heard from a bird alighting, from a hen when the cock it was with was chasing another redpoll, from another hen with a cock nearby which had just finished posturing at another cock redpoll, and from birds when completely by themselves. Apart from the common flight calls, which need not be described, and some weak twittering calls, there is in addition a low-pitched trilling note, sounding like "tzur" to my ear, sometimes repeated several times with the common flight call. This trill is heard commonly in summer but rarely in winter. Birds were heard sometimes making this call while flying round in circles and quivering their wings, but while in normal flight at other times. Once, in early January, when a cock and a hen had finished intimidation of another redpoll they perched together on a bush repeating this note. This note is heard mostly between October and January and appears to have the function of expressing threat judged by the circumstances under which it is heard. Throughout the flocking period the redpoll makes a highly pitched rattling note "garr." The note is mostly heard in the months October to December. This is possibly the note syllabised as "geez" in the "Handbook of British Birds." This call has been heard from birds in flight over built-up areas in May and December. It was heard when I approached a cock and hen in October. Courting cocks mobbing a hen have used it and it has been recorded from two birds fighting in conjunction with the low-pitched trilling note "tzur" which has been referred to. There is a shrill call in addition syllabised as "tzlee-tzlee-tzlee-tzlee. . . ." This again is often heard in conjunction with the low-pitched trilling note "tzur." This call, which sounds a little like the common flight call, has been recorded from what were evidently paired birds when strange birds were about. A hen believed to be making this call was seen finally to adopt the posture for courtship feeding. Harsh metallic sounding notes often repeated are also heard. These sound like "tzeu-tzeu-tzeu-tzeu. . ." The writer observed a cock making this call while it was on the wing in front of a perching hen.—H. L. Secker, Wellington, February 15, 1955.