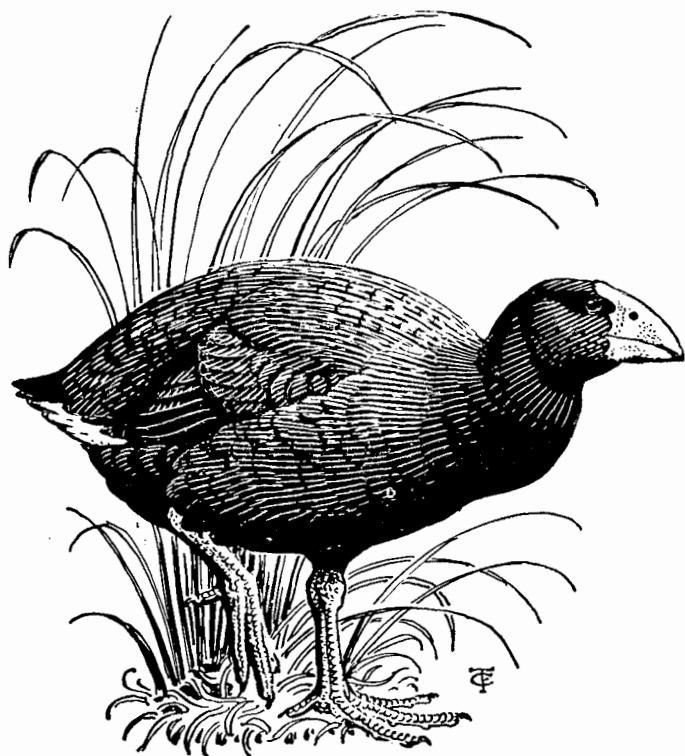


NOTORNIS



BULLETIN OF THE ORNITHOLOGICAL SOCIETY
OF NEW ZEALAND.

PUBLISHED QUARTERLY.

NOTORNIS

In continuation of New Zealand Bird Notes.

Bulletin of the Ornithological Society of New Zealand.

(Incorporated.)

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NOTES.—Donations Acknowledged, 133; Library Fund, 141; Mating of Lesser Redpoll, 148; New Members, 156; The 11th International Ornithological Congress, 156; Checklist, 164; Cyclostyled Issues Reprint, 165.

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ANNUAL MEETING.

The annual meeting of the Ornithological Society of New Zealand, Incorporated, for the year 1952-53 was held in the Dominion Museum, Wellington, on Friday, 15 May, 1953. The president, Mr. R. B. Sibson, presided over an attendance of about 60 members.

No other nominations having been received, the following officers were declared elected, a ballot having been held to determine the length of service under the new constitution (clause 19a):—President, Mr. R. B. Sibson (1 year); South Island vice-president, Mrs. I. Tily (3 years); North Island vice-president, Mr. H. R. McKenzie (2 years); editor, Mr. R. H. D. Stidolph (2 years); treasurer, Miss N. Macdonald (1 year); secretary, Mr. J. M. Cunningham (1 year); Mrs. L. E. Walker (2 years), Dr. R. A. Falla (3 years), Mr. E. G. Turbott (3 years).

ANNUAL REPORT.

The thirteenth annual report, for the year ended 31 March, 1953, stated:—"This year has been another milestone in the history of the society. On 21 January, 1953, the society was registered as a corporate body, after a special general meeting had discussed and adopted a new constitution. The constitution defines the objects and powers of the society and the duties of the council and special committees, and enables the council to appoint regional organisers where it deems them necessary. It is anticipated that in future, additional regional organisers, yet to be appointed, will thus be able to keep in contact more closely with members in their districts and be able to play a more important part in the wellbeing of the society.

"Ornithological research has continued steadily during the year, as a glance through the pages of 'Notornis' will show. The number of contributors to the classified notes is increasing, and the value of these is becoming more obvious as the years pass. In accordance with the main object of the society expressed in the constitution, emphasis continues to be on field observations, and during the year several acceptable sight records have been made of rare species, some of which are new to the New Zealand list.

Regional organisers have had a number of meetings for their local members and mention should be made of the organised field trips to promote census work in the Auckland district. This is an outstanding example, demonstrating the working of the society, which was formed essentially for such co-operative field studies. The year has seen the conclusion of one of the society's earliest co-operative schemes, the gannet census commenced in 1946, with the publication by the organisers of the results of much field work and research. The ample illustrations in the gannet census issue of 'Notornis' were made possible by a substantial grant by the Department of Scientific and Industrial Research. The society's permanent investigations are also progressing. Separate ringing and library reports discuss their respective activities during the year, and many members are beginning to send in beach patrol cards regularly. Though it is a little early to judge the success of the scheme, its potential value is high if members send in records of all their beach walks, on the cards provided. Nest records are building up strongly though the cards show that many members do not take the trouble to make a second visit to nests. The records wanted are primarily of clutch size and dates, and members tend to go into too much detail in the 'remarks' column which is intended to be used only to explain facts in the other columns. Such comments as 'rained heavily during laying of second egg' are unnecessary, but '4 days' heavy rain waterlogged the nest and presumably caused its desertion' is fair comment.

"Following the direction of the last annual general meeting, republication of the early cyclostyled issues is being proceeded with, and delivery is expected soon. Arrangements made during the year by the checklist publication committee for the publication of the 'List of the Birds of New Zealand,' by A. H. and A. W. Reed, Ltd., were confirmed by council, and

advance orders received show that the list is eagerly awaited and will prove a financial success.

"Membership grows apace, and we now have 472 ordinary, 163 endowment, 46 life and one honorary life, a total of 682 members. Of these, 108 have paid in advance, and 33 are in arrears. Despite the highest expenditure on record (the actual cost per member of 'Notornis' was, excluding the D.S.I.R. illustrations grant, 8s. 4d.) we have again been able to transfer a small surplus to the general reserve. Nevertheless, income is barely sufficient for current needs, and a special general meeting authorised an increase in subscriptions from 5s. to 7s. 6d. per annum for ordinary members, from £5 to £6 6s. for life members (over the age of 30 years), and the introduction of a new class, junior members (up to the age of 18 years), with a subscription of 5s. The rate for endowment members who have consistently supported the society over some years by paying a higher subscription remains unaltered at 10s.

INCOME AND EXPENDITURE ACCOUNT for Year ended March 31, 1953

INCOME.			EXPENDITURE.		
	£	s. d.		£	s. d.
Subs., 1952 and Arrears	222	5 0	"Notornis"—		
Donations, General and Illustrations Fund	157	6 8	Vol. 5, Nos. 1-4	156	15 3
Sales, back numbers	15	18 3	Illustrations	137	13 3
Sales, Takaha	8	7 0	Envelopes	21	15 0
Check List, expenses drawn from reserve	2	7 3	Stationery	16	3 3
Interest, P.O.S.B.	10	8 0	Typing Envelopes, Etc.	9	17 6
			Postages	27	6 4
			Library Expenses	7	3 0
			Check List expenses	2	7 3
			Ringing Expenses	11	9 9
			Incorporation Expenses (half cost, balance to be charged 1953-54)	7	11 3
			Sundry	8	3 11
			Excess of Income over Expenditure, transferred to General Reserve	10	6 5
	£416	12 2		£416	12 2

BALANCE SHEET as at March 31, 1953.

LIABILITIES.			ASSETS.		
	£	s. d.		£	s. d.
Subs. paid in advance	236	7 6	Subs. in arrear, estimated to realise	2	15 0
Sundry Creditors (a/cs due but unpaid)	35	12 6	Stationery, Etc. on hand	16	13 4
Ringing Fund	25	0 0	Incorporation Expenses (balance to be charged 1953-54)	7	11 3
Check List Publication Reserve	103	17 0	Cash, P.O.S.B. and Bank of New Zealand	618	4 11
Cyclostyled Issues Reprint	62	8 0			
General Reserve	176	19 6			
	£640	4 6		£640	4 6

(A more detailed Statement of Accounts, certified: "Audited and found to be correct.—F. E. Wells, 5/5/53," was presented to the annual general meeting and copies may be obtained on application.)

"Your council has expressed its appreciation to Miss H. Laing of the great service she has rendered to the society in acting as assistant treasurer during the last two years. Opportunity is taken here to again thank our honorary auditor Mr. F. E. Wells, and Mr. H. Keisenberg, who assists him, who so kindly have audited the accounts during the last seven years.

The report, which was adopted, was presented on behalf of the council, by Mr. J. M. Cunningham.

The convener of the Checklist Publication Committee, Dr. C. A. Fleming, reported informally that the checklist was at the page proof stage, and tabled a copy.

RINGING OPERATIONS.

The report of the Ringing Committee for the year ended 31 March, 1953, stated:—

“The number of operators has not changed during the year (the one new operator being counterbalanced by one resignation), but two new applications are under consideration. Ringing has continued on a scale comparable to that of previous years, and a number of interesting recoveries have been made, thus further demonstrating the value of this technique in solving many kind of ornithological problems. A summary of birds ringed and recoveries made during the year ended 31 March, 1953, is supplied separately.

“Following decisions made at the meeting in Christchurch in May, 1952, P. C. Bull became the new convener of the Ringing Committee, and the Dominion Museum assumed the responsibilities of recorder. Mr. J. M. Cunningham, who was formerly both convener and recorder, handed over the society's ringing records on 3 August, 1952. The society's stock of rings and all schedules, recovery cards and letters pertaining to recoveries are now housed in the Bird Room of the Dominion Museum, while the convener holds only correspondence on administrative matters. The present arrangement has the advantage of safer custody of the society's records and the existence of an alternative authority for dealing with urgent matters in the absence of the convener.

“At the Christchurch meeting last May, the Ringing Committee made five recommendations, and operators were advised of these in Information Leaflet No. 3, of November, 1952 (extra copies may be had from the convener on request). Three of the recommendations refer to technical details of bird ringing, a fourth suggests an annual review of each operator's work and the fifth that a charge be made for rings to provide funds for the purchase of new stocks of rings and to discourage wasteful ringing. During the past year, the committee has given further study to these recommendations and also to ringing policy in general, and in the near future it is intended to submit the results of this work for the consideration of the incoming council.

“There is some evidence that the society's rings may have a relatively short life under certain circumstances. This is particularly so in black-billed gulls where some of the rings were found to be very thin after only two years on the bird. No comparable wear was observed with red-billed gulls, but there is some evidence of it in blackbirds. Information has been sought from the manufacturers of the rings, and at the same time an attempt is being made to determine why the wear is more marked in some species than others.

“For the future, the committee recommends a further year of consolidation to allow an adequate trial of the rings and to make sure that present ringing techniques are not causing any undue distress to the birds. With the benefit of another season's experience, plans for the future development of the ringing scheme can be built on safer ground. Future policy may involve an extension of the use of aluminium rings, but a stricter consideration of projects involving coloured rings since this latter type of work is the one most in need of co-ordination.”

This report, which had been adopted by the council, was read by the convener, Mr. P. C. Bull. Mr. J. M. Cunningham congratulated Mr. Bull on his handling of the many problems concerning the scheme.

Location of next Annual General Meeting.—Mr. J. M. Cunningham, moved, pro forma (on behalf of Mrs. I. Tily, and giving her reasons for the motion), “That this meeting decide where the next annual general meeting should be held, and direct the incoming council accordingly.” Members pointed out that the constitution clearly provided for the council to decide the location of general meetings. It was stated that the council, being national in character, was less likely to be biased in its decisions than a general meeting which had a preponderance of members from the district in which it was held. After some discussion as to the advantages of

holding the next meeting in Auckland, to coincide with another important congress, and in Wellington to facilitate travel arrangements for members in both islands, Dr. R. A. Falla's amendment, "That this meeting recommends the incoming council to give early consideration to the next annual general meeting being held in Dunedin" was adopted.

Auditor for 1953.—Because of the difficulty of finding anyone living in Auckland who would act in an honorary capacity, no nomination had been received, and it was left to the incoming council to make an appointment.

LIBRARY REPORT.

The library report, which council had adopted, was read by Mr. E. G. Turbott, Librarian. It stated: "The year's total borrowings from the library have been 65. Books and pamphlets added total 21, in addition to the regular receipt of current periodicals. The Library Committee has instituted exchange with three further periodicals, *L'Oiseau et la Revue Française d'Ornithologie*, 'Ornithologische Mitteilungen,' and 'Sylvia,' the last being a Czechoslovakian journal with summaries in English. A request for exchange from the Institute of Ecology and Biogeography of the Serbian Academy of Sciences was declined. It has also been arranged to send complimentary copies of 'Notornis' for summarising in the well-known journal 'Biological Abstracts.' Several further requests for exchange have been received and will be considered this year.

"Of the annual sum spent on the library, the only regular payment is the subscription to 'British Birds,' the remaining periodicals being received in exchange for 'Notornis.' The remaining expenditure during the year has been upon binding of current periodicals, and it has also been possible to make a start with the binding of back issues. The binding is being carried out by a member, Master S. Chambers, King's College. The Library Committee is grateful to the K.C.B.C. for a donation towards the cost of binding additional back issues. A total of nine annual volumes of periodicals have been bound to date.

"The Library Committee has arranged to submit current literature on New Zealand birds, and general papers of particular interest, to a panel of reviewers for regular reviews in 'Notornis.' The society is grateful for the help of Miss Enid Evans, librarian of the Auckland Institute and Museum, who has continued to deal with borrowing inquiries, and has given her ready assistance and technical advice."

Some discussion took place regarding the abstracting of ornithological journals for 'Notornis,' and the New Zealand Science Review, and the provision of abstracts of 'Notornis' for Biological Abstracts and the Zoological Record. Referring to 'Notornis,' Mr. Sibson said the society's journal compared favourably with overseas journals, and a vote of thanks to the editor, Mr. Stidolph, was passed by acclamation.

Mr. J. M. Cunningham, in announcing his impending retirement as hon. secretary, gave the meeting his views on important aspects of the society's activities, pointing out the exceptional facilities members have for recording scraps of information (which would not otherwise be published) as classified notes, and on nest record and beach patrol cards. Members had opportunities also for taking part in research through the ringing scheme and various inquiries, and making use of the library. He explained the co-operative nature of the society's inquiries and the importance of field studies, and expressed his gratitude to successive committees and officers for encouragement during his term of office.

Thanks were expressed to Dr. Falla, the Dominion Museum and the Wellington branch of the Royal Society for the use of facilities in the Museum. Formal proceedings concluded at 9.15 p.m., and Mr. R. R. Forster then showed the Canterbury Museum film of a recent expedition to Fiordland, and Count F. C. Kinsky showed a film of black-backed gulls nesting at Baring Head. The films were greatly appreciated by the audience and the evening concluded with a light supper.

During the weekend following the annual meeting, 24 members visited Masterton. On Saturday afternoon, after a visit to the Masterton Central School Museum, which contains many bird specimens, members were entertained by Mr. and Mrs. J. H. Cunningham at their home. In the evening, members and friends totalling over 100 viewed films of nesting black-backed gulls, gannets and others by Count F. C. Kinsky; the Danish research ship Galathea, by Mr. E. G. Turbott, and Campbell Island bird life and nesting white herons, by Dr. R. A. Falla. On Sunday, despite atrocious weather, a party of 31 visited Lake Ferry, Palliser Bay, and though the only bird of note seen was a southern skua, members availed themselves of the opportunity of renewing acquaintances.

RINGING OPERATIONS.

SUMMARY FOR THE YEAR ENDED 31 MARCH, 1953.

(Compiled by P. C. Bull, Lower Hutt.)

The following is a statistical summary of the birds ringed and recovered during the past year. It includes a number of birds of various species outside the normal scope of the society's scheme, ringed by special permission of the Hon. Minister of Internal Affairs, and also some birds ringed with other than the society's rings, but details of which have been provided by the operators. No distinction is made in either case. The grand totals, by incorporating the totals published in "Notornis," Vol. 5, No. 1, thus include details of all ringing of which the records are on the Society's files up to 31 March, 1953. Recoveries are not given in full detail, some of them being grouped. All recoveries reported up to 1 May, 1953, are included.

BIRDS RINGED. (* Denotes coloured rings also used.)

Species.	Operators and Where Ringed.	Totals for 1952-53		Grand Totals 31/3/53	
		Ringed.	Recovd.	Ringed.	Recovd.
ALBATROSS—Light-mantled sooty		1	23	11
ALBATROSS—Royal		1	374	13
ALBATROSS—Wandering			30	1
BLACKBIRD		32	308	42
*P. C. Bull, Lower Hutt	112			
H. L. Secker, Wellington	29			
CHAFFINCH			4	
CUCKOO—Long-tailed			1	
A. S. Wilkinson, Kapiti Is., 1936	1			
DOTTEREL—Banded			43	
*J. M. Cunningham, Wairpa., Rangitikei	5			
*H. R. McKenzie, Firth of Thames	6			
DOTTEREL—New Zealand			5	2
*H. R. McKenzie, Firth of Thames	2			
DUCK—Grey			1	
DUCK—Paradise			4	
FANTAIL—Pied			19	3
GANNET		10	910	18
P. A. Stein, Hauraki Gulf	259			
K. A. Wodzicki and F. H. Robertson, Cape Kidnappers	161			
GODWIT—Bar-tailed			1	
GREENFINCH			12	
GULL—Black-backed		35	1365	51
J. M. Cunningham, Cape Palliser	17			
G. W. Gummer, Rangitoto Island	565			
L. Gurr, Nelson	9			
F. C. Kinsky, Baring Head	77			
W. R. Marsden, New Plymouth	1			
Mrs. Sansom, Bluff Harbour	6			
R. H. D. Stidolph, Palliser Bay	7			
GULL—Black-billed		9	1229	19
*E. W. Dawson, Ashley River	597			

Species.	Operators and Where Ringed.	Totals for		Grand Totals	
		1952-53	81/3/53	Ringed.	Recovd.
GULL—Red-billed			5	635	20
	*J. M. Cunningham, Wairarapa	120			
	L. Gurr, Nelson	118			
	W. R. Marsden, New Plymouth	9			
	E. G. Turbott, Three Kings Is.	67			
HARRIER			14	175	32
	Mrs. Sansom, Southland	3			
	J. S. Watson, Hawkes Bay	90			
	K. Westerskov, Turangi	1			
HEDGESPARROW			2	29	3
	P. C. Bull, Lower Hutt	4			
KEA				7	
KOKAKO				3	
MAGPIE—White-backed				1	1
MAGPIE—(Species)			1	1	1
	Dept. Internal Affairs, Woodend, 1951	1			
OYSTER-CATCHER—Pied				1	
	Mrs. Sansom, Southland	1			
PENGUIN—White-flipped			3	11	3
	W. C. Clark, Lyttelton	11			
PETREL—Diving			1	52	4
PETREL—Giant				1	2
PETREL—Grey-faced				4	
	C. A. Fleming, Hen Is., 1939	3			
PHEASANT				710	197
PRION—Fairy				51	
PUKEKO				2	
QUAIL—Californian				22	
RAIL—Banded				4	
SILVER-EYE				4782	183
	B. F. Duder, Clevedon, 1951 and 1952	22			
SKUA—Southern				6	
SHEARWATER—Sooty				14	
SHEARWATER—Fluttering				5	
	C. A. Fleming, Hen Is., 1939	1			
	E. G. Turbott, Three Kings Is.	2			
SPARROW—House				7	
STARLING				80	
	*C. A. Fleming, Wellington	4			
	H. L. Secker, Wellington	43			
STILT—Pied			2	31	2
	*H. R. McKenzie, Ardmore	9			
	H. R. McKenzie and F. Murray, Ardmore, 1947	5			
	A. F. Stokes, Ardmore, 1947	2			
STORM PETREL—White-faced				3	
TERN—Caspian				7	
	P. A. Stein, Waiheke Is.	1			
TERN—White-fronted			4	1003	44
	W. C. Clark, Lyttelton	3			
	J. C. Davenport, Auckland	39			
	L. Gurr, Nelson	52			
	W. R. Marsden, New Plymouth	10			
THRUSH—Song			4	83	10
	*P. C. Bull, Lower Hutt	20			
WARBLER—Grey				16	1
YELLOW-HAMMER				4	

Numbers ringed and recovered, 1952-53	2495	124	12079	663
Numbers ringed and recovered to 31/3/52	9584	539		
Numbers ringed and recovered 31/3/53	12079	663		

RECOVERIES.

ALBATROSS, Light-mantled Sooty (*Phoebastria palpebrata*).

49, ringed as an adult by J. H. Sorensen at Campbell Is. on 20/12/42, was reported nesting there during the 1952-53 season.

ALBATROSS, Royal (*Diomedea epomophora*).

A5, ringed as an adult by J. H. Sorensen at Campbell Is. on 10/2/43 was reported nesting there during the 1952-53 season.

BLACKBIRD (*Turdus merula*).

One adult female ringed at Karori by H. L. Secker on 2/1/52, was retrapped at the same place on 21/12/52.

Birds ringed at Lower Hutt by P. C. Bull were recovered as follows:—
Two colour ringed birds were seen (not trapped) where ringed 10 and 13 months after ringing; 19 birds were retrapped where ringed 3 to 14 months after ringing (numerous repeats); 10 birds were recovered dead up to one mile from where ringed and up to 9 months after ringing.

GANNET (*Sula serrator*).

A young bird ringed at Horuhoru (Hauraki Gulf) by P. A. S. Stein on 14/2/53 was recovered at Tutukaka on 28/2/53, and another ringed at the same time was found 120 miles south of Sydney on 23/3/53.

Eight birds ringed at Cape Kidnappers by K. A. Wodzicki and F. H. Robertson were recovered as follows: One bird ringed as a young one on 15/1/51 was seen with unemployed birds at the colony on 1/2/53 (number read with binoculars); three young ringed in January and February, 1952, were recovered dead in May of the same year, one 40 miles north of Kaipara Heads, and two in New South Wales; four young ringed in February, 1953, were recovered dead, one at Whakatane in March, one at Muriwai in April and two in New South Wales in March and April respectively.

GULL, Black-backed (*Larus dominicanus*).

A young bird ringed at Baring Head by F. C. Kinsky on 27/12/51 was shot at Karori Reservoir on 8/1/53.

A young bird ringed at Ngawe Point, Palliser Bay, by J. M. Cunningham on 30/12/51 was shot near Lake Ferry on 6/12/52.

Five young birds ringed by L. Gurr at Boulder Bank, Nelson, were recovered where ringed or at Nelson up to 11 months after ringing.

Young birds ringed at Rangitoto Is. by G. W. Gummer were recovered as follows:—One ringed on 14/12/52 was recovered at Kaipara Flats (Northland) on 19/4/53; another ringed on 9/12/51, was recovered at Pakiri on 4/6/52 (37 miles north of where ringed); nine birds were found near where ringed within four months of ringing and 17 birds were recovered in the vicinity of Auckland City up to nine months after ringing (most of them dead).

GULL, Black-billed (*Larus bulleri*).

9128 ringed as a chick at the Ashley R. by E. W. Dawson on 20/11/51 was caught and released at Picton foreshore on 27/6/52; 10206, ringed as above on 3/12/50 was found nesting on the Waipara R. two miles from the sea on 11/1/53; seven other birds ringed as above were found dead from one to ninety miles from where ringed and up to 18 months afterwards; two were found dead at the mouth of the Ashley R. a week after ringing, which was followed by floods.

GULL, Red-billed (*Larus novaehollandiae*).

11370 ringed as an adult at Great Is. (Three Kings) by E. G. Turbott on 8/1/53 was found dead at Devonport (Auckland) on 10/3/53 (some 250 miles south of where ringed).

Two birds ringed at Boulder Bank, Nelson, were seen about Nelson Harbour, and another followed a trawler in Tasman Bay.

A gull ringed at the Brothers Is. by J. H. Sutherland was seen at Ngauranga (Wellington) a year later (ring number read with binoculars).

HARRIER (*Circus approximans*).

13458 was ringed near Tikokino (Hawkes Bay) by J. S. Watson on 4/4/52 and was recovered at Lake Waitaki (North Otago) on 10/5/52 (about 500 miles south of where ringed). Other records from the Tikokino station are: Seven birds retrapped where ringed up to two years after ringing and six recovered dead from within a radius of about 15 miles of the ringing station and up to two years after ringing.

HEDGESPARROW (*Prunella modularis*).

Two birds ringed at Lower Hutt by P. C. Bull were recovered where ringed up to two months after ringing.

DIVING PETREL (*Pelecanoides urinatrix*).

A bird ringed at the Brothers Is. by J. H. Sutherland on 27/4/51 was found alive at the place of ringing in February, 1953. The ring was removed at the convener's request as an example of the wearing qualities of the society's rings when used on petrels.

MAGPIE (*Gymnorhina* sp.)

A bird ringed by officers of the Department of Internal Affairs at Woodend Lagoon on 28/3/51 was recovered about a mile away during August, 1952.

PENGUIN, White-flipped (*Eudyptula albosignata*).

Of 11 birds ringed at Diamond Harbour (Lyttelton) by W. C. Clark, two were found dead where ringed less than a month later, and a third bird was caught and released with the ring in good condition five months after ringing.

STILT, Pied (*Himantopus leucocephalus*).

8595, ringed by H. R. McKenzie at Ardmore (Clevedon) on 5/10/52 as a young bird, was killed by a hawk at the same place on 30/10/52 at which time the young bird was flying. Another stilt ringed by the same operator at Ardmore on 22/1/47, was seen nesting in an adjacent paddock on 17/9/52, but as the ring number was not read, the exact identity of the bird is open to slight doubt.

TERN, White-fronted (*Sterna striata*).

Three birds ringed by L. Gurr at Boulder Bank, Nelson, were recovered dead shortly afterwards at the place of ringing. One bird ringed by W. Marsden at New Plymouth, was recovered dead a week later at the mouth of the Waiwakaiho Stream, which is close to the place of ringing.

THRUSH, Song (*Turdus ericetorum*).

A bird colour ringed by P. C. Bull at Lower Hutt was seen one mile from where ringed five months later (identified by colour combination). Three other thrushes were recovered dead up to one mile from the place of ringing and up to one month afterwards.

LIBRARY FUND ESTABLISHED.—The society is now receiving large numbers of journals which, to be kept in good condition, should be strongly bound. A beginning has been made with some journals, of which we have issues for 10 or more years, but the grant the council is able to make annually to the library (at present £5) is insufficient for more than the binding of some of the current journals. A Library Fund has therefore been opened and members are invited to contribute to it. Members borrowing books regularly often ask if they can send postage in advance. As this would require keeping an account for each member, this is impracticable, and it is proposed to charge all postages in future to the library fund. Members borrowing books are, therefore, asked to send the approximate postage on each occasion, or if they prefer, to make a suitable donation to the fund.

DESCRIPTION OF A NEW FORM OF NEW ZEALAND WREN

By R. A. Falla, Dominion Museum, Wellington.

The group of small passerine birds comprising the endemic New Zealand family Acanthisittidae has been recognised as divisible into two genera, of which *Acanthisitta* can be distinguished by bill characters from *Xenicus*. In the latter, two species, *X. longipes* and *X. gilviventris*, are recognized and some subdivision of *X. longipes*, the Bush Wren, has been proposed by Stead (T.R.S.N.Z., vol. 6, p. 313, 1936). No subdivision of *X. gilviventris*, the Rock Wren, has as yet been proposed. This species was recognized somewhat late in the history of ornithological discovery in New Zealand during the Canterbury explorations of Von Haast. He sent specimens from unspecified localities, but presumably from the headwaters of the Rakaia, to Von Pelzeln, in Vienna, and to Buller. As a name, *Xenicus gilviventris* Von Pelzeln (Vert. K.-k. Zool.-bot. Ges. Wien, 1867, p. 316) has priority over *Xenicus haasti* Buller (*Ibis*, 1869, p. 37), but both descriptions clearly apply to the same kind of bird. No subsequent worker has found occasion to extend published descriptions of the species nor to review it critically, and there has been very little addition to Haast's short account of its habits with the notable exception of an article by H. Guthrie-Smith (*N.Z. Journ. Sci. Tech.* 1925, p. 303-305) subsequently reprinted in his "Sorrows and Joys of a New Zealand Naturalist."

Recent field work carried out in the course of his official duties by Mr. T. Riney, of the Wild Life Division of the Department of Internal Affairs, indicates clearly the existence of a form of *Xenicus* not described in the literature. Knowing something of the field characters of both bush wrens and rock wrens, Mr. Riney noticed marked difference in habits and habitat of wrens which he found while engaged on biological survey with a field crew near the centre of the West Cape Peninsula (south of Dusky Sound) in April, 1953. He had seen the same bird two years before at Lake Roe, east of Dusky Sound.

Three specimens, two males and one not sexed, have been compared with series of *Xenicus longipes* and found to be clearly separable, having the distinctive hind toe and general proportions of *X. gilviventris*, but they agree neither with the type description of the latter, nor with a series of several specimens from Nelson in the Dominion Museum nor with two from Arthur's Pass in the Canterbury Museum (Stead Collection). I propose, therefore, on the basis of this comparison, new subspecific status as follows:

Xenicus gilviventris rineyi n. subsp. Type No. 2397 (Dominion Museum) male: Lake McArthur, Southland, New Zealand, April 13, 1953. Collected, T. Riney. Upper parts, including outer-webs of all wing feathers and tail, bright olive-green (Ridgway); tinged olive-brown on forehead and crown; lores and line below eye blackish; a pale cream stripe above the eye, more yellowish posteriorly, is bordered above by a blackish stripe; inner secondaries have apical spot of dull olive-yellow on outer webs. Bastard wing (alula) black, forming a conspicuous patch. Underwing coverts, axillaries, and flanks, yellow, shading to fawn on breast and belly; throat whitish (tinged yellow in another specimen). Colours of soft parts (from collector's field notes) eye brown, bill black, feet pinkish, toes olive.

The pattern is basically similar to *X. gilviventris gilviventris*, but the colours are more vivid. The green of the upper parts is brighter, extending further down the sides of the neck and upper breast. There is a strong suffusion of yellow on the underparts, this colour being confined to the flanks in *X. g. gilviventris*. None of the three specimens nor any others seen by the collector resemble the drab brown birds which predominate in any of the known populations of rock wrens. There is some indication in the series available of a cline in colour from Nelson, all available specimens from which district are brown, through Arthur's Pass, from which one of the two available specimens is greenish, to the extreme south-west represented by the three bright-green birds just described. Some dimensions tabulated below suggest also a cline of decreasing size from north to south,

but the series is too small for satisfactory dimensional analysis, and the Lake McArthur birds have barely completed a moult. The significant environmental factors associated with the apparent cline could well be humidity rather than latitude.

Measurements of Three Specimens (millimetres).

No.	Sex	Wing.	Tail.	Tarsus.	Hind toe.	Culmen
		47.5	17	24.5	18	11
		49.5	18	26	21	12
		49.0	20	24	20.5	11

Treating the small comparative series from Arthur's Pass and Nelson as typical *X. gilviventris gilviventris* and giving extreme and average measurements, the result is:—

X. g. gilviventris (9 specimens)—Wing 50-53.2 (51.5), Tarsus 23-28.5 (26.5), Hind toe 20-24 (21.6), Culmen 10-11.5 (10.75).

X. g. rineyi (3 spec.)—Wing 47.5-49.5 (48.7), Tarsus 24-26 (24.8), Hind toe 18-21 (19.8), Culmen 11-12 (11.3.)

The collector has recorded useful over-all measurements in the flesh of his specimens, those of the type being—total length 81mm., wing-spread 140 mm.

Summary of diagnosis of the subspecies *rineyi*:—Differs from *X. g. gilviventris* in average smaller dimensions except bill, which is less stout and tapers to a finer point, and in having upper parts uniformly brighter olive-green extending conspicuously on sides of neck; also more yellow in under-parts.

It is likely that the status of this newly-described form will be better defined when rock wrens in general are better known. Meanwhile, notes on habits and habitat preference being published elsewhere by Mr. Riney, appear to be of significance in establishing it as a distinguishable form.

Grateful acknowledgment is made to the Director of the Canterbury Museum, Christchurch, for the loan of comparative material.

PURCHASE OF BACK NUMBERS.—Stocks of some issues of the Bulletin are nearly sold out, and members who wish to complete their files are urged to do so without delay. Prices are obtainable from the secretary. As there may be some members who do not require all the past issues, the council invites them to make these available to the society by returning them to the secretary. For those who desire it, payment is offered at prices fixed by the council.

STOAT AND STILTS.—On the morning of November 16, 1952, when passing at Taieri Mouth an area of swamp land covering about 20 acres and divided by a channel of water about the centre, we noticed that the area was dotted with pied stilts which appeared to be nesting. We stopped to observe them, and there the following incident was noted by M. E. Hickman (D.N.F.C.), J. Hickman (O.S.N.Z.) and myself:—Swimming strongly up the channel towards the area occupied by the stilts was a stoat. When it came to a bend in the channel where some rushes grew—the nearest covering to the breeding area of the stilts—it climbed the bank. The nearest stilt saw it, and, making a great outcry, flew at the stoat. All the stilts in the immediate neighbourhood joined in the attack, calling loudly and diving at the stoat, which seemed terror-stricken. It raced from rush to rush seeking cover, and, until it found adequate concealment, was followed by screaming, diving stilts. When the stoat was no longer visible, the stilts dispersed over the swampy ground, settling down on nests or hunting for food. There were at least 15 birds in the attacking party, and over 30 stilts in the area. Birds in the two localities further from the channel to the north and to the south did not join in the attack.—I. Tily, Dunedin.

NOTES ON NOTORNIS, 1951-1952.

The following report has been prepared by the Wildlife Division of the Internal Affairs Department for the general information of research workers in ornithology and covers the status of *Notornis hochstetteri* from 1 October, 1951, to 8 April, 1952.

Data has been obtained from reports made by officers engaged on guard and conservation work in the habitat of the takahe and also includes information from reports supplied by the Director of the Canterbury Museum, Dr. Roger Duff, Dr. W. R. B. Oliver and Mr. Baughan Wisely. These observers were authorised to enter the area on research work.

Eight inspections of the habitat were made comprising the following personnel:—

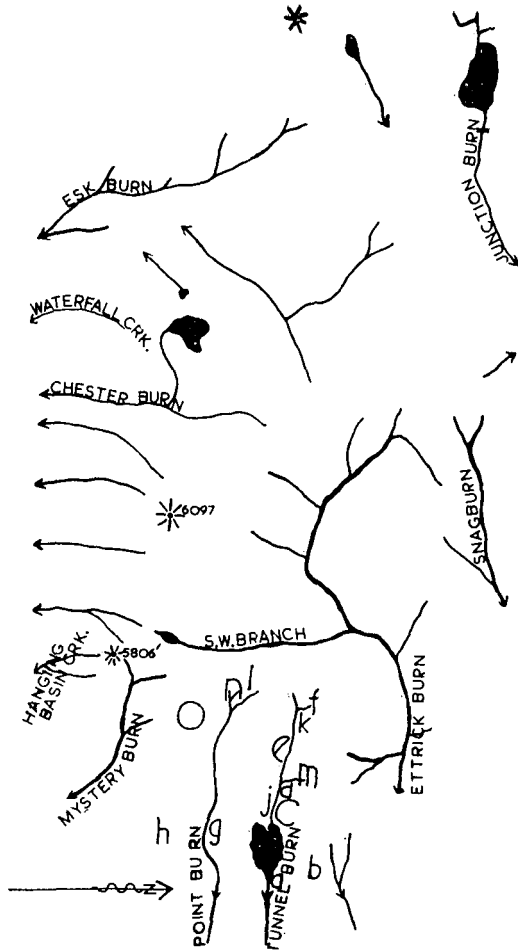
- (1) 1/10-11/10.—Messrs. Woodrow and Morgan. Takahe—Point Burn Valleys.
- (2) 1/11-11/11.—Messrs. Woodrow and Morgan. Mystery Burn—Takahe—Point Burn Valleys.
- (3) 19/11-30/11.—Messrs. Woodrow and Morgan. Waterfall Creek—Esk Burn Valleys.
- (4) 7/12-20/12.—Messrs. Woodrow and Wisely. Waterfall Creek—Esk Burn—Junction Burn Valleys.
- (5) 7/12-20/12.—Messrs. Bell, Duff and Morgan. Takahe, Point Burn, Mystery Burn, adjacent valleys and Ettrick Burn valleys.
- (6) 27/12-25/1.—Mr. Woodrow. Same valleys as (5).
- (7) 16/2-20/2.—Messrs. Woodrow, Morgan and Dr. Oliver. Takahe and Point Burn valleys.
- (8) 18/3-8/4.—Messrs. Woodrow and Morgan. Takahe, Point Burn and Mystery Burn Valleys.

In November some new country was explored in an endeavour to plot the range of the bird. Two headwater basins of the Esk Burn were examined by Departmental officers and the head of the Chester Burn was also investigated. In December the search was extended to more branches of the Esk Burn and to the head of one branch of the Junction Burn. A hanging valley adjoining the Mystery Burn was partly explored in December-January and the valley next to the hanging valley was looked at from a distance but not actually entered; the sides were steep and broken and the country at the head of the valley appeared suitable for takahe. In January a long traverse of the Ettrick Burn was made at a higher altitude than the traverse carried out in 1950; and a further penetration westward was made from the South-West Branch to a saddle at the head of the Snag Burn. The rough sketch map appended to this report gives an idea of the areas covered by the various parties.

CLIMATE OF HABITAT.

Climate of the takahe habitat during the late winter has been discussed by E. G. Turbott (1951), *Notornis* 4 (5). Snow fell to a depth of two feet at the entrance to the Takahe Valley on 1 October, 1951, and the water of the lake at the head of the valley was frozen over. This was at the commencement of the breeding season. The ice broke up about 11 October, when another fall of snow took place. Again during the nesting season snow fell to a depth of 5 inches on 2 November, and a further light fall took place on 7 December. In the Mystery Burn there was snow and rain on 1 January and on 6 January heavy snow fell all day. Two feet of snow lay on the pass between the Mystery Burn and the Ettrick Burn on 9 January and on the 17th of the same month there was further snow and rain in the area. A further fall of snow fell on 24 and 25 March. On 19 February the whole Point Burn Valley Flat, which is adjacent to the Takahe Valley, was swept by a flood.

If the above climatic conditions are to be accepted as the usual over this period of the year the weather might constitute a hazard during the breeding season of the bird.



SKETCH MAP OF NOTORNIS AREA.

BEHAVIOUR.

Mr. F. Woodrow, a Departmental officer, traversed the Takahe and Point Burn valley area in October, 1951, and reported having sighted a number of pairs of birds in places described by workers as occupied by A, J, C, D, E and G pairs.* The location of these and other pairs is disclosed on the appended sketch map. The "A" pair had a nest with one egg in when again sighted on 14 December and the hen was still sitting on 31 December, but when a further examination was made of the nest later in January there was no sign of egg shells. A nest, with a bird sitting, was found in mixed scrub and tussock on the side of a sink hole above the northern cliffs on 18 December. It was presumed to belong to pair "B," as it was within the range of that pair. One bird of pair "C" was seen in January and it was accompanied by a chick. A chick belonging to pair "D" was heard on 18 December, but it was not seen and on 23 January a bird of "E" pair was still sitting upon an addled egg which was removed.

* Location given on map Notornis 4 (5) : 117.

In October, Mr. Woodrow saw the cock bird of "G" pair trying to tread the hen. The cock fanned and depressed the tail in the same manner of a cock blackbird (*Turdus merula*) courting a hen blackbird. The tail, when fanned, was not held erect like that of the turkey (*Meleagris gallopavo*). This same pair was again seen on 9 December and they were still calling on the 18th. They were again sighted on 1 January and on 19 February but they were not accompanied by any chick, but it is to be noted that it was over their nesting area that the flood mentioned above swept in early February.

Fresh signs were found on a sunny face of the head basin of Takahe Valley in mixed scrub and tussock which could have resulted from either the "F" or "K" pairs, but there was no recent sign in the locality where the "K" pair was seen in March, 1951. Of the "H" pair no trace was found, but on 1 November the "J" pair was found to have two eggs and as on 8 December, when one bird was seen, egg shells lay about, it is likely that both eggs had hatched although when again sighted in January only one chick was associated with the pair.

Two nests were discovered in the Point Burn head basins, one of which could have belonged to "L" pair and the other which has been attributed to the pair designated "N." A further nest was found in the first basin on 16 December. Although built in the scrub and made of tussock grass the nearest tussock was situated six feet away. The pair associated with the nest was still nearby and from the evidence of uprooted tussock roots and general signs about the nest, the existence of a chick was suggested. Signs were also seen in the basin to the north where the "L" pair was seen in March 1951 and later on 17 December. Again on 3 January an adult bird with one chick was seen in the basin and later, on 31 March, a nest was found with a chick nearby some seven days old and there was evidence around to show that a parent had been obtaining insects for the chick. Much recent sign was found on 19 December in the hanging valley on the northern side of the Takahe Valley in the form of two living or practice nests. These evidently belonged to the "M" pair.

On 6 November a bird, presumably belonging to the pair now called "O," was seen in the corrie leading to the saddle between the Point Burn and the Mystery Burn. The pair of birds was seen on 10 December and the nest, on which one bird was sitting, was in a clump of mixed tussock and sub-alpine scrub. On 13 December a bird was still sitting, also on 16 December but the nest was empty and a broken added egg was lying outside of the nest yet on 4 January a chick was reported in this locality. ...

In the Mystery Burn and Hanging Basin Creek to the south, a bird was at the camp site between 1 and 11 November and signs of a nest were noted. Three birds were also recorded at the head of the basin. In early December old signs were found along the ridge tops between the two valleys and along the upper part of the eastern branch of the creek where an old nest was also found. During this same period three practice or living nests were found in the Mystery Burn head basin and one bird was seen at the top of the scrub line while in January a takahe with a chick was reported between the two branches of Hanging Basin Creek.

In the south-west branch of the Etrick Burn, just below the small lake, sign was seen on 13 December and on 11 January three birds were seen in this basin and one was heard calling below. Again on 12 January two birds were seen close to the camp. A pair with a chick were reported at about 4,000ft. altitude in the second west fork on 13 January, and three days later another pair and chick were seen in the third north fork at about the same altitude, while in the third west fork, leading to the Snag Burn, signs were noted shortly afterwards.

In the Waterfall Creek—Esk Burn—Junction Burn area, three birds were heard in different places in November in the basin at the head of Waterfall Creek and in the open valley, some one and a half miles long at the head of the east branch of the Esk Burn, one bird was seen and two more heard. During the period 19–30 November six single birds were seen. In the head basin of Waterfall Creek and in Hebe and *Dracophyllum* scrub

a pair of birds about eight feet apart each having one chick was found on 8 December. In the head of the east branch of the Esk Burn a bird and a nest were also seen and sign was observed in the next basin to the north. In a valley, presumed to be a branch of the Junction Burn, no sign was found and no suitable food was present, in the area traversed. However, in April, 1951, two deer stalkers reported fresh droppings and an old nest in this general area. Two more high basins of tributaries of the Esk Burn were viewed through binoculars and the country appeared to be suitable habitat for the birds.

The pairs seen during this period are, of course, not the total of those located from discovery of the birds to the present time

RELATIONSHIPS WITH OTHER ANIMALS.

Stoats.

Signs of the one stoat (*Mustela erminea*) were found in the snow in October at the Point Burn—Takahe Valley Saddle. Although traps were set up in these two valleys no stoats were caught nor were any further signs found. Five stoats were, however, caught about the landing in February and April. No signs were found in the Waterfall Creek—Esk Burn area.

Opossums.

Seven opossums (*Trichosurus vulpecula*) were caught near the landing and at access points to the Takahe Valley and two were caught in snares near the Point Burn camp.

Falcons.

Whether these birds (*Falco novaeseelandiae*) are a threat to the survival of the takahe is not known, but on 1 April a black teal (*Aythya novaeseelandiae*) was killed by a falcon at the lake in the Takahe Valley.

Deer.

As was indicated by Williams, *Notornis* 4 : 207, 1952, red deer (*Cervus elaphus*) which range throughout the area, might constitute a danger to the welfare of the takahe as they modify, by their browsing and movement, the habitat of this species. Observations indicate that deer have not been long in the Esk Burn. Fivefinger trees (*Nothopanax* sp.) are not damaged to the extent prevailing in Waterfall Creek. Dr. Oliver reports that while to the casual observer the forest was intact in Takahe Valley, plants such as Anisotome, Hebe and others were only found on cliffs and this suggests that they had been eaten out elsewhere. Lace-bark and fivefinger were practically exterminated because there was no regeneration from seedlings.

Large wallows were found on the Mystery Burn—Point Burn Saddle by a departmental officer, and these, through destruction of the vegetative cover, may progressively endanger the adjoining land. A kiwi nest set in a burrow in the Takahe Valley was destroyed by deer trampling; a large area of sub-alpine scrub and tussock above the bush line on the south-west side of the Etrick Burn showed definite signs of being modified; destruction of snow grass was evident in many places. The departmental observer felt that areas of mixed scrub and tussock on sunny places may be of importance to takahe in the winter as this scrub is not crushed down by the snow.

Seventy-two animals were destroyed by shooting and snaring, of which number fifty-eight were destroyed in the Takahe and adjoining valleys. The bulk of these were taken in the rutting season.

Wekas.

A single weka was seen in the Takahe Valley in October and was later caught, and another bird was seen in the Mystery Burn in November, while some birds were also reported beyond the south-west branch of the Etrick Burn in January. They were also reported from the Esk Burn in November and in the following month two pair, each with a single chick, were reported. It was noted on one occasion that an intruding weka was quickly put to flight by the takahe. Field observations indicated that over several days the two species would commence calling almost simultaneously but if the takahe was close at hand the weka calls ceased and did not

resume until the takahe had moved on. Whenever a weka called, the takahe, if visible, was seen trying to locate the weka.

Kiwis.

These birds were heard in Waterfall Creek and in the Esk Burn, and in November kiwi were reported as nesting in the Takahe Valley—Mystery Burn area. Four nests were definitely located and they were usually in a hole in the ground near water. In January, two hatchings were reported and one chick was seen in the nest. Another kiwi was also seen that same month near the upper camp in the Point Burn.

Other Birds.

In the Takahe Valley—Mystery Burn area the following birds were reported in December: Keas, riflemen, pied tits, kakas, grey warblers, fantails, waxeyes, blackbirds, chaffinches hedge sparrows and rock wrens. In the same month there were seen in the Waterfall Creek—Esk Burn area: pair of brown duck and five young, eight wekas (two pairs each with a single young), grey ducks, keas, kakas, tomtits, wrens, bellbirds, pigeons, moreporks and the common introduced birds, such as blackbirds and chaffinches. One bat (sp.) was also seen and on the Junction Burn, two pairs of blue ducks. In January, four young paradise ducks, three young blue ducks, five young black teal and a brood of grey ducks were on the Takahe Valley lake.

REFERENCES.

- Turbott, E. G.—“Notornis” 4 (5), 107-113, “Winter Observations on Notornis in 1949.”
- Williams, G. R.—“Notornis,” 4 (8), 202-208, “Notornis in March, 1951—A Report of the Sixth Expedition.”

MATING OF LESSER REDPOLL.—P. J. Conder, quoting Lack, “Ibis,” 90 : 4, states that cardueline birds mate in the flock, but there is reason to believe that mating in the flock is often not practised by redpolls (*Carduelis cabaret*) resident in the Wellington area. Some birds in winter are only loosely attached to flocks and may never join one for mating. Individual birds call loudly in summer breeding habitats in August when they should, it seems, be with a flock, cf. “Notornis,” 4 : 64. In flocks in October sex ratios are not equal; hens predominate. Significantly single birds retire in mid-spring across Karori, a suburb of Wellington city to breeding habitats from winter haunts in a nearby reservoir reserve. Lone hens were seen on 1 September 1951, scattered throughout the usual breeding places, perching on cassinia bushes and one on a ngaio tree (*Myoporum laetum*). In mid-October, 1951, ten birds were seen together on the banks of a stream. Two were cocks with faint pink breasts, several looked to be in immature plumage but were probably young hens, and the remainder were old hens. A cock redpoll was watched crouching low, winding through the short grass toward a nearby hen. This cock once took up the slim, craned stance before the hen, of the domestic Belgian canary. It appeared to be trying to mate with the hen. At the same time lone cock redpolls were flying out of nearby scrub-filled gullies, suitable for nesting in, over the flock, calling loudly. This flock shortly afterwards broke up. The hen redpolls moved off independently in the direction of these particular cocks. Several fast chases then took place. On these grounds, it is difficult to agree with the statement that cardueline birds pair up in the flock.—H. L. Secker, Wellington.

OBSERVATIONS ON A MARKED POPULATION OF BLACKBIRDS AT LOWER HUTT.

By P. C. Bull, Lower Hutt.

INTRODUCTION.

A small-scale ringing study of blackbirds (*Turdus merula*) was started in Lower Hutt during July, 1951. From this work it is hoped to obtain information on length of life, movements, population composition and causes of mortality in these birds. A considerable amount of work of this kind has already been carried out overseas, but it is not yet known to what extent the results are applicable to the same species in New Zealand.

In Great Britain, Thomson (1949) records a recovery percentage of 5% on 64,187 blackbirds. From an analysis of recoveries, Lack (1943) found that 55% of first year blackbirds die during their first year, but that in older birds (second to fifth year of life) the annual mortality is fairly constant at about 40% in each age group. The oldest blackbird recovered had survived ten years which is only half the potential age of twenty years which has been reported for captive birds. Information on the movements of this species is given by Werth (1947) who showed that of the blackbirds ringed as nestlings in Great Britain and subsequently recovered, 93% were found within five miles of where they were ringed. Similarly, Venables and Venables (1952) found that the blackbird population of the Shetland Islands was surprisingly sedentary—several ringed birds being seen the year round within five miles of their birth place.

Although the present work has been in operation for less than two years, it was decided to publish this interim report in the belief that the experience so far gained will be of interest to other workers in this country where a national bird-ringing scheme has recently been organised (Cunningham, 1949). The results obtained show a general similarity to those already reported for blackbirds in Great Britain, but the number of birds handled is still inadequate to demonstrate any but the main features of behaviour.

METHODS.

Blackbirds were trapped, marked with leg rings and then released at the place of capture. Subsequent records were obtained by re-trapping, by sight records of colour-ringed individuals and by the return of birds found dead.

The traps used were similar to the single cell Potter trap which is fully described by Hollom (1950). Briefly, it consists of a cage with a vertically sliding door which is held open by a prop attached to a treadle perch inside the cage. The weight of a bird entering the cage is sufficient to depress the perch, thus releasing the prop and allowing the door to shut. On a few occasions a hand-operated peg and cord release of the kind described by Cunningham (1946) was used, since this allows the operator to select the birds trapped and thus avoid unnecessary frightening of birds which are already ringed. A further disadvantage of the automatic mechanism is that the trap is frequently sprung by species which are not required. Flocks of white-eyes visited the traps in winter and made it almost impossible to use the automatic mechanism with traps set out in the open. House-sparrows, starlings, thrushes, hedge-sparrows, yellow-hammers and chaffinches were also trapped from time to time. If, however, the trap was set under the shade of low-growing bushes it was rare to catch species other than blackbirds, thrushes and hedge-sparrows. The automatic traps also have several advantages, more than one can be operated at the same time, they do not require continuous observation and they can be used in many places not suitable for the peg and cord technique.

Bread, fruit and fat were used as bait, and trapping was largely confined to the early mornings, weekends and holidays. At other times the traps were locked open and baited with an adequate supply of food.

Each time a bird was caught it was weighed and its plumage recorded by comparison with a set of study skins. During the second year an

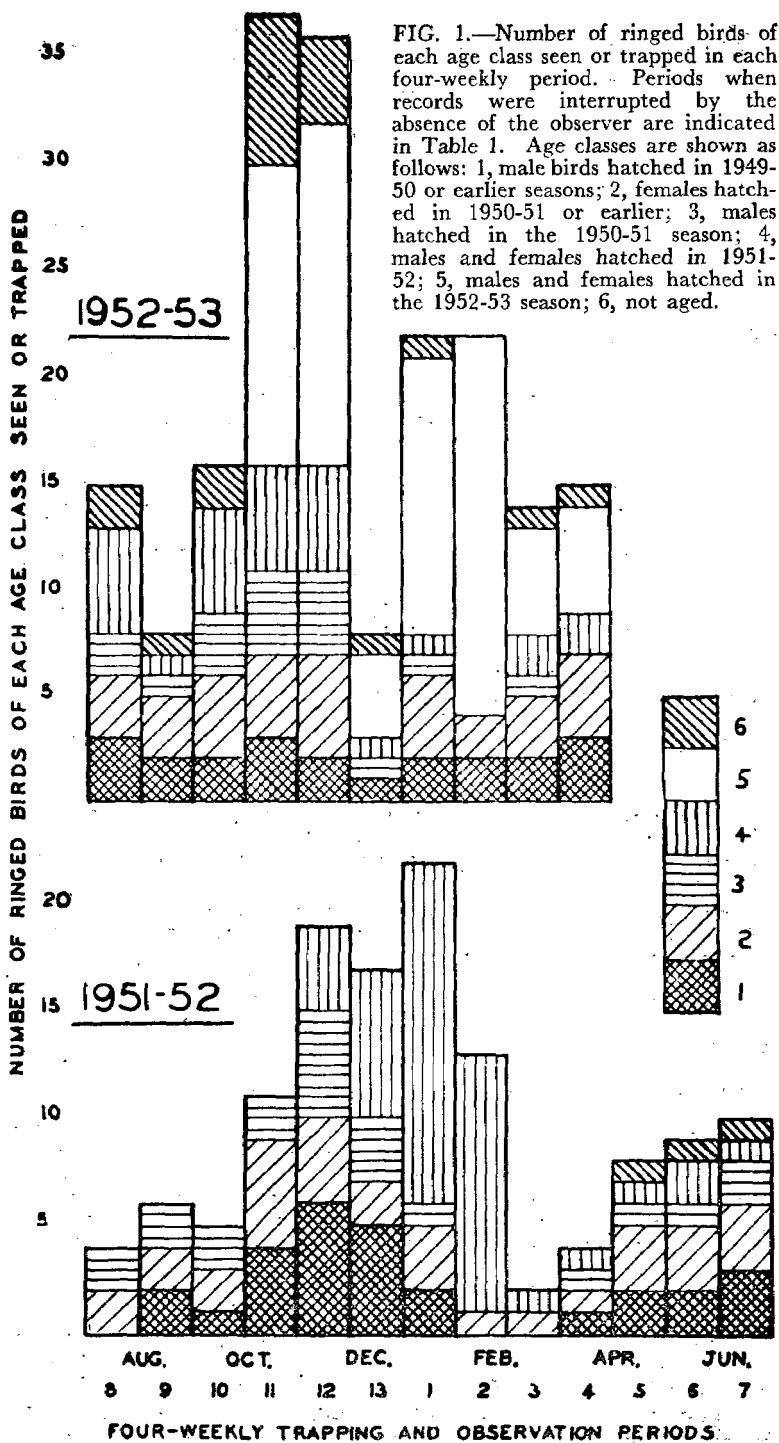


FIG. 1.—Number of ringed birds of each age class seen or trapped in each four-weekly period. Periods when records were interrupted by the absence of the observer are indicated in Table 1. Age classes are shown as follows: 1, male birds hatched in 1949-50 or earlier seasons; 2, females hatched in 1950-51 or earlier; 3, males hatched in the 1950-51 season; 4, males and females hatched in 1951-52; 5, males and females hatched in the 1952-53 season; 6, not aged.

attempt was made to record the extent of trapping effort, the unit being the "trap hour" (one trap set for one hour). Such a record has limitations because all trap hours are not of equal catching value. The causes of this are not fully understood, but temperature, time of day and the period elapsing since the trap was last left open appear to be important. Provided that these limitations are remembered, the trap hour record is of value as a rough indication of the intensity of trapping effort.

A single, numbered, aluminium ring stamped "Send Dom. Museum, N.Z.", was used on every bird, and, in addition, coloured rings were also employed for adults. The coloured rings were used in different combinations with the aluminium ring, so that each bird could be identified in the field without retrapping. Young birds were not colour ringed because the high mortality in this age group would be wasteful of both rings and combinations; any of these birds retrapped after the moult were then colour ringed as by that time the most severe mortality was over. Colour combinations were recognised in the field with the aid of a pair of 9x35 Ross binoculars, but even then it was difficult to be certain of them at distances greater than about twenty yards. Combinations involving a conspicuous colour over a darker colour, such as yellow over blue, were especially liable to error as it is easy to overlook the bottom ring unless the bird is standing on bare ground. It was also difficult to identify yellow and pink rings correctly as these colours appear much alike under certain lighting conditions.

Trapping was started at the author's home in Waterloo Road, Lower Hutt (station A) on 16 July, 1951. Two traps were used during most of the first year, but this number was later gradually increased to five. Intermittent trapping was also undertaken at five sub-stations located within three miles of the main station. These sub-stations were set up in the hope of recording the frequency of movements between stations. The trapping stations are situated in an extensive residential area in the Hutt Valley. Birds can move several miles north or south from the trapping stations and still remain in the densely settled floor of the valley, where they are liable to be caught by domestic cats. Birds moving east or west, however, soon reach the steep, scrub-covered hills where their movements cannot be followed. Station A includes an area of about half an acre of lawns, shrubs and fruit trees and adjacent properties are also fairly spacious and well planted. Good views of two lawns could be obtained from the windows of the house, and records from beyond the station were sometimes obtained by driving slowly along the roads in a car in the early morning. Observation effort was recorded each day on the basis of the number of hours the observer was in a position from which he could reasonably expect to see any birds appearing on one or other of the lawns. A daily record was kept of trap hours, observation hours and the ring numbers of birds seen or trapped.

RESULTS.

During the period 16 July, 1951, to 25 March, 1953, a total of 139 blackbirds was ringed at station A. This figure is made up of 28 males (16 of them first-winter birds), 19 females, 86 birds in juvenile plumage and 6 nestlings. A further 50 birds were ringed at the various sub-stations giving a grand total of 189 blackbirds. The following account is confined to the results obtained at station A except where otherwise stated.

Some information on the age structure of the population is given in Fig. 1, but these data will become more complete as the study progresses. When the work began, males reared during the previous season could be readily distinguished from older males by their plumage, but this was not so with females. Three groups were thus recognized, viz., (1) male birds hatched in 1949-50 or earlier seasons; (2) females hatched in 1950-51 or earlier; and (3) males hatched in the 1950-51 season. Two other groups (4 and 5) were identified by ringing during the subsequent two breeding seasons and these included both males and females. Group 6 (not aged) consisted mostly of un-ringed females trapped during the second year of

work and which could not then be assigned to any one of the other five classes.

The number of birds trapped in each four-weekly period is set out in Table 1 which shows a marked seasonal variation in trapping success.

TABLE 1.—Number of Blackbirds Trapped or Seen in each Four-Weekly Period.

Period No.	Dates	No. of New Birds Trapped.	No. of Birds Retrapped ¹	Total No. of Birds Trapped.	Trap Hours	Total No. of Birds Seen. ²	Observation Hours
8	Jul. 16–Aug. 12, 1951	4	1	5	—	4	—
9	Aug. 13–Sep. 9, 1951	3	0	3	—	6	—
10	Sep. 10–Oct. 7, 1951	0	0	0	—	5	—
11*	Oct. 8–Nov. 4, 1951	7	0	7	—	8	—
12	Nov. 5–Dec. 2, 1951	9	7	16	—	12	—
13	Dec. 3–Dec. 31, 1951	11	3	14	—	5	—
1	Jan. 1–Jan. 28, 1952	16	5	21	—	5	—
2	Jan. 29–Feb. 25, 1952	6	9	15	387	0	16
3	Feb. 26–Mar. 25, 1952	2	0	2	199	0	17
4*	Mar. 26–Apr. 22, 1952	1	0	1	86	3	6
5	Apr. 23–May 20, 1952	1	1	2	356	7	7
6	May 21–Jun. 17, 1952	1	1	2	490	7	10
7	Jun. 18–Jul. 15, 1952	0	0	0	94	10	30
8	Jul. 16–Aug. 12, 1952	3	1	4	143	13	28
9	Aug. 13–Sep. 9, 1952	1	1	2	78	7	18
10	Sept. 10–Oct. 7, 1952	4	3	7	272	11	30
11	Oct. 8–Nov. 4, 1952	19	23	42	456	14	36
12	Nov. 5–Dec. 2, 1952	16	19	35	359	13	20
13*	Dec. 3–Dec. 31, 1952	4	2	6	189	2	6
1*	Jan. 1–Jan. 28, 1953	12	4	16	167	8	8
2	Jan. 29–Feb. 25, 1953	13	9	22	270	4	102
3	Feb. 26–Mar. 25, 1953	0	9	9	497	10	79

Note.—* Indicates observations confined to one half of the period.

1 The same bird trapped more than once in the period is counted on each occasion.

2 Excludes birds trapped but not otherwise seen.

In both seasons the birds were trapped more freely during the 20 weeks 8 October to 25 February, and, over the two seasons, 84% of the total trappings occurred during this period which represents only 45% of the entire trapping period. Variations in trapping effort do not account for this fact since in the second year, when trap hours were recorded, 82% of the trappings were achieved during only 42% of the total trap hours. From October to February the ratio of trap hours to birds caught was 12:1, whereas during the rest of the year it was approximately 75:1. The table also shows that more birds were trapped during the second year than the first, but this is largely because more traps were used in 1952-53. During the eight weeks 29 January to 25 March, the only period for which trap hour data are available for both years, the ratio of trap hours to birds caught was 34:1 in 1951-52 and 24:1 in 1952-53, and little significance can be attached to this difference since the trap hour record has considerable limitations. Similarly, the earlier trapping of the first juveniles in the 1952-53 season is largely, but not entirely, accounted for by the fact that no trapping was done during the period 1-20 October, 1951. Fig. 1 shows the seasonal variations in the age composition of the population on the basis of the birds trapped or seen about the station during each four-weekly period, and it is apparent that the period of improved trapping success (October to February) coincides with a time when the population contains a high proportion of juveniles, and this section of the population does in fact account for much of the successful spring and summer trapping, but not all of it. By omitting the juveniles it was found that 70% of the remaining trappings occurred during the October-February period—a time when the birds were breeding. When the traps were left locked open it was not uncommon to see birds removing beakfull of bait and flying off to their young with it, and it appears that birds are less trap shy at this time. Finally, there is evidence (detailed below) that blackbirds have a wider foraging range when feeding young so that more

individuals visit the trapping station than at other seasons. The increased trapping success during the October-February period is due then, firstly to the large numbers of inexperienced juvenile birds, secondly to the less cautious behaviour of adults feeding young, and thirdly to an increased foraging range of adults at this time.

Some indication of the movements of adult blackbirds can be obtained from the subsequent history of the 26 adults ringed prior to 18 January, 1952. Of these, 6 (3 males and 3 females) were seen several times each month except during the period January to March, when they were moulting and appeared to remain in cover. The total sight records (number of days on which they were recorded) for the three males numbered 70, 72 and 91 respectively, and for the three females 40, 48 and 50. Nine birds were never seen again at the station after ringing, but one of these was caught by a cat less than 100 yards from the station six months later. Five other birds were absent for nearly a year after ringing and then appeared occasionally over a few weeks carrying off beaksfull of food; they then disappeared again. The remaining six birds were seen for a few weeks after ringing and were then lost or else appeared briefly at irregular intervals. One of these birds was subsequently seen about 100 yards from the trapping station. Four behaviour groups can thus be recognized, viz., the residents, the spring visitors, the birds of irregular appearance and finally those which were not seen again after ringing. The facts available fit the hypothesis that the adult population is rather sedentary and that frequency of occurrence at the trapping station is the effect of proximity of home range, and that this latter increases in size when the birds are feeding young.

Observations on the movements of young birds were confined to the results of retrapping and the occasional return of dead birds, because coloured rings were not added until after the moult. Juveniles were frequently retrapped several times within a week or two of ringing and occasionally over a longer period; two birds were each retrapped twice with periods of absence of about four weeks between recoveries. Of the 30 juveniles ringed during the summer of the 1951-52 season only five reappeared at the trapping station during the period May to December, 1952. Two of these reappeared in May and June respectively and became resident in the garden (at least one of them bred successfully), but the other three were not seen until the spring although they may have been present in a neighbouring garden. Three other birds ringed as juveniles were recovered dead during the months February, April and October at distances of up to one mile from the trapping station. A young bird ringed at sub-station B (about a mile distant from station A) on 24 October, 1952, was retrapped at station A three days later. This was the only instance of a bird being retrapped at a station other than the one at which it was ringed. Small numbers of unringed birds of the year continued to enter the traps all through the winter and spring. The juvenile population thus seems to be rather less sedentary than the adult one but the movements occur within a relatively restricted radius of the trapping station. Further evidence of the sedentary nature of the blackbird population (or of its high density) is provided by the fact that a person only half a mile from station A shot 30 blackbirds in his garden during December, 1952, and January, 1953, and not one of them was ringed. (The birds were shot because they were destroying fruit.)

During the spring and early summer, juveniles form a high proportion of the blackbird population (Fig. 1), but in subsequent months the proportion of birds of the year drops to a level comparable to that of the other age classes. It is evident, therefore, that many of the young die or move away from the station. There is no reason to suppose that the number of birds leaving the station exceeds that of birds entering it from outside. The declining proportion of young birds must, therefore, indicate a substantial mortality. In considering Fig. 1 it has to be remembered that the data are influenced by their manner of collection. For instance, the number of young birds recorded is a measure of trapping success, since,

lacking coloured rings, the young birds cannot be recognised in the field. The number of adults recorded during the early part of the year also declines, not necessarily because there are fewer birds, but because they enter the traps less readily and remain under the cover of bushes where they cannot be seen. A fair comparison is between the latter part of two successive years which is a time when the birds trap readily and a high proportion of young of the previous year is colour ringed. Such a comparison shows that by the spring of 1952, the number of birds of the 1951-52 age class is little more than one-third what it was in the previous summer, and this suggests a mortality of the order of 60%. This figure must be considered as little more than a rough indication of the extent of mortality, and much larger figures would be needed before it could be regarded with any degree of confidence.

Of the 26 adult blackbirds ringed during the 1951-52 breeding season, 14 were known to be still alive during the following season, suggesting a survival rate somewhat greater than 50%. Of the remaining 12 birds, only one is known to be dead and it is likely that some at least of the remainder are still alive. Indeed, colour-ringed blackbirds have been reported at two localities, respectively one and two miles distant from station A, but their identity is uncertain because the observers did not note the colour combinations. The 26 birds included a few which were not yet a year old and thus probably subject to greater dispersal and mortality than older birds. The percentage of final (dead) recoveries on birds ringed up to 31 March, 1953, is 7% for birds ringed in juvenile plumage and 2% for older birds (one recovery).

The term "home range" rather than "territory" has been used in the foregoing account because the latter term suggests a degree of aggression not observed during the present study, but each bird nevertheless lives in a fairly restricted area. During a period of 20 months, 133 blackbirds (86 of them juveniles) visited the half-acre of garden comprising station A, yet comparatively little antagonism was observed. The only display definitely identified as territorial was observed when a male, gathering food for its young, approached within ten feet of a tree in which a second male had a nest of young. The owner of the nest then postured aggressively and the other male withdrew a few feet and then both returned to the task of hunting for worms without taking further interest in each other. On other occasions brief encounters were observed between birds of either sex or any age, but these seemed to result from one bird approaching another too closely and were not obviously related to any territorial defence. On the morning of 3 August, 1952, five males (two first-winter birds and three adults) indulged in a communal display which closely followed that described by Lack (1941).

Data collected on changes of weight, plumage variations and moult are not included here since the number of birds handled is still relatively small. Two isolated observations on birds with white feathers are, however, of some interest in view of the fact that such characteristics, are sometimes cited as a means of permanent identification of the individuals showing them. The first concerns an adult male first ringed on 15 August, 1951, and retrapped on five occasions between then and 28 October, 1952, its plumage being jet black. During March, 1953, the bird was seen several times after the moult and showed a conspicuous white feather on the left wing butt. The exact identity of the feather will remain in doubt until the bird is retrapped, but there is no doubt about the fact that there was no white feather on the wing during the two previous seasons. The last time the bird was caught it had a deep flesh wound on the upper part of the right leg and a large piece of skin was hanging down loose and dry with the feathers still attached. It is possible that the white feather is the result of an injury to the wing at the same time. A second bird, a female, had a white feather on the breast when first trapped in November, 1951, but there was no sign of it when the bird was retrapped nearly a year later. It thus seems that in some instances white feathers do not persist from year to year.

DISCUSSION.

The kind of information emerging from the present study has been indicated in the previous section, and, allowing for the relatively small number of birds handled, the results conform to those already reported for blackbirds in Great Britain. This appears to be so with regard to the figures for survival and mortality (Lack 1943), the limited extent of movements (Werth, 1947; Venables and Venables, 1952) and communal display (Lack, 1941). The lack of strict territorial defence is in agreement with the findings of Colquhoun (1940) and contrary to those of Lack and Light (1941). These last authors trapped 38 blackbirds of which about 66% were males, and suggest that males enter the traps more freely than females. Of 47 adults trapped during the present work, 60% were males, but ringed females were retrapped just as frequently as were ringed males and this suggests that the sexes do not differ in their readiness to enter traps. Possibly the males have a rather wider feeding range so that more males than females would be trapped at a given point. Certainly males are seen more frequently than are females; three ringed males resident in the garden during most of the study period were seen on an average of 78 days, whereas the comparable figure for three females was only 46 days.

Relatively few adults were trapped after the end of the breeding season and during the period of moult many individuals were rarely seen at all. This is in agreement with the finding of Colquhoun (1940), who noted a late summer decline in the number of blackbirds seen in an area of English woodland and thought it was the result of a decline in conspicuous behaviour following the termination of the breeding season. Since few birds are seen or trapped during the late summer, there is a break in the records of most individuals at this time, and this break can be used to separate one year's records from those of another.

Lack's (1943) work was based on recoveries of birds ringed as nestlings but in the present instance the birds were ringed some time after they had left the nest. This means that, although the approximate age of the bird could often be determined by its plumage, the exact birthplace was rarely known. It is not possible to ring a sufficiently large number of nestlings in an area consisting of numerous small, privately-owned gardens. On the other hand, a substantial human population, together with its attendant cats, is necessary if recoveries are required from places other than the ringing station. The percentage of recovery of ringed blackbirds in Great Britain is only 5% (Thomson, 1949) despite the dense human population and the existence of bird observatories along migration routes.

It was originally hoped to trace the movements of colour ringed individuals by using the reports of people who saw them in their gardens, but it soon became evident that the correct observation and recording of colour combinations is a task for which special experience is required. The number of incorrect combinations reported was so great that none of the reports could be accepted. Better results might be expected if a ringing study were undertaken in a fruit-growing district where there would be a chance of finding ringed birds among those destroyed in orchards, and coloured rings would not then be required. Since it is probable that trapping success is to some extent a measure of food shortage, it would be interesting to determine whether or not the variations in other districts coincide with those found at Lower Hutt. Continuation of the present work will provide further information on movements, length of life and the extent of mortality, but a comprehensive answer can only be obtained from a study involving the ringing and recovery of much larger numbers of birds than is possible in the present instance.

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SUMMARY.

Methods and preliminary results are given of a study involving the ringing of 189 blackbirds (*Turdus merula*) at Lower Hutt, New Zealand, between 16 July, 1951 and 25 March, 1953. Results generally follow those already reported from blackbirds in Great Britain. Adult birds were resident about the trapping station, but defence of territory was not marked; the size of the home range increased when the birds were feeding young. Of 26 ringed adults, 14 were retrapped at the station a year later, but only one of the rest was known to be dead; mortality among birds of the year was much higher. Young birds were recovered from up to a mile from where ringed. There was a marked seasonal variation in trapping success of both adults and juveniles, 84% of the birds were caught between October and February.

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NEW MEMBERS.

* Life member.

- | | |
|--|---|
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THE 11th INTERNATIONAL ORNITHOLOGICAL CONGRESS, presided over by Sir Landsborough Thomson, London, will be held in Basel (Switzerland) from 29 May to 5 June, 1954. During the week of the congress, five days will be devoted to meetings and two to excursions. Before and after the congress (25-28 May and 7-19 June) excursions will be arranged to enable members to become acquainted with the Swiss avifauna, especially of the Alps and Lower Alps. The congress fee is 30 Swiss francs. The prospectus, containing registration form and detailed information, will be distributed this summer. Applications to attend, and to contribute scientific papers, should be sent in before 28 February, 1954, and addressed to: XI. International Ornithological Congress, Zoological Garden, Basel, Switzerland, which is at disposal for any inquiries needed.

PHEASANT BANDING IN NEW ZEALAND, 1948-51.

By Kaj Westerskov, Wildlife Division, Department of Internal Affairs.

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1. HISTORY OF PHEASANT BANDING IN NEW ZEALAND.

Pheasants have been banded in New Zealand by various acclimatization societies prior to 1948 as well as later. The only detailed account published of banding results is Gurr's report (1950) on the liberation of 710 banded pheasants in Otago.

The Wildlife Division of the Department of Internal Affairs began pheasant banding in 1948, and since then all pheasants released within the Rotorua Acclimatization District have been banded, and pheasant bands have also been supplied to various acclimatization societies in the North Island.

The bands used have been the ordinary bird-ring type of aluminium with the inscription: Return—Wildlife Serv. Govt. Bldgs. Wgtn. N.Z. and a serial number. Two sizes were used, one for cocks, with an internal diameter of 13 mm., and one for hens, with an internal diameter of 9 mm.

2. LIBERATIONS.

Over the four years, 1948-51, a total of 3485 pheasants were banded, 384 in 1948, 518 in 1949, 2086 in 1950, and 497 in 1951.

(a) Age and Origin of Stocked Birds.

The banded pheasants liberated from the Ngongataha Game Farm near Rotorua, are of mixed breed. Three pheasant subspecies are found on the farm: The English blackneck (*Phasianus colchicus colchicus*); the Chinese ringneck (*Phasianus colchicus torquatus*); and the Kirghiz or Mongolian pheasant (*Phasianus colchicus mongolicus*); none of these subspecies are represented by "pure" specimens, i.e., all the birds are interbred to some extent, but many pheasants are found which have all the characteristics of the blackneck or ringneck or Mongolian. The mutant or green pheasant (*Phasianus colchicus mut. tenebrosus*) is also found on the game farm; it is a mutant of the English blackneck. The dominating type of pheasant found on the farm is predominantly ringneck-looking; these birds have a white ring around the neck and light, greyish-bluish forewing; the females are rather light coloured.

Most of the released pheasants were three months old when liberated (40 per cent.). The birds for which ages were recorded are listed in Table 1.

TABLE 1.—Ages at Release of 2252 Banded Pheasants.

Ages of Pheasants in months.	Total Number of Birds.	Number of Liberations.	Per Cent.
3	899	44	39.9
4	224	15	9.9
5	6	1	0.3
6	14	1	0.6
7	219	14	9.7
8	81	7	3.6
9	114	9	5.1
10	253	26	11.2
11	51	11	2.3
12	217	19	9.6
13	56	3	2.5
14	4	2	0.2
16	38	3	1.7
18	69	5	3.1
Older	7	1	0.3
Total	2252	161	100.0

(b) Liberations in Various Districts.

In order to compare pheasant liberations in various parts of New Zealand to see whether any different survival rates were apparent, the North Island was divided into ten arbitrary districts. The number of pheasants liberated in each district and in isolated areas is shown in Table 2.

TABLE 2.—Number of Pheasants Liberated and Number of Liberations, 1948-51, by Districts.

District Number	District	Number of Liberations.	Number of Birds Liberated.	Average No. of Birds per Liberation.
1	Dargaville	11	38	3
2	Waiuku	8	175	22
3	Rotorua	74	457	6
4	Whakatane	215	1213	6
5	Galatea	20	108	5
6	Taupo	13	63	5
7	Wairoa	67	580	9
8	Napier	27	174	6
9	New Plymouth	43	209	5
10	Opunake	9	35	4
11	Isolated areas	51	366	7
12	Not traceable	11	67	6
Totals		549	3485	
Average number of birds per liberation of total				6.3

It will appear from Table 2 that banded pheasants have been liberated in many parts of the North Island. It will also be seen that the average number of birds per liberation in these districts varies between three and 22, with an average 6.3 birds per liberation for all releases.

3. RECOVERIES.

(a) Total Recovery Percentage.

Out of the 3485 banded pheasants only 117 were recovered by 1 June 1952. That means that 3.36 per cent. were recovered, which is a very low percentage and lower than in most other places where pheasant liberations are carried out.

Believers in pheasant propagation may argue that the 3.4 per cent. recovery is not a true indicator of survival rates, and that a number of banded pheasants are recovered without being recorded. It is possible that more banded birds are recovered, indicating a higher survival. Only more banding work on a larger scale will in future years provide the necessary data for a final consideration and evaluation of the pheasant liberation programmes. The need for sportsmen to co-operate by sending in of pheasant bands is evident.

But a strong point against the postulate, that not all pheasant bands are turned in and the survival of the birds therefore is higher, is found in the duck banding results in New Zealand. There is little reason to believe

that duck hunters should return a many times higher percentage of duck bands than pheasant bands, and often the sportsman hunts pheasants as well as ducks. The duck recoveries for the 1948-51 period are shown in Table 3, from which it will appear that the average return of all duck bands for all years is 22.7 per cent., or about seven times higher than pheasant returns; for grey ducks banded in 1949 no less than 40.7 per cent. were recovered and reported! A surprisingly high kill and a surprisingly high return of bands.

The reason for this startling difference, to my way of thinking, is the fact that the ducks are wild-bred (and therefore much more hardy and able to fend for themselves) and the pheasants are artificially propagated (less hardy, unaccustomed to new surroundings, unfamiliar with new foods, enemies, etc.). The greater glamour attached to the widely ranging ducks is also a factor to be considered.

We need much more detailed data to get a true picture of the survival of pen-reared pheasants. Until then, we must regard the 3.4 per cent. survival of propagated pheasants as an indicator of survival to be compared with the 23 per cent. recovery of banded wild ducks. The ratio between returns of pheasant and duck bands should be approximately the same, and it is very unlikely that very many more banded ducks are shot than are reported upon—the duck population could not possibly stand a much higher annual drain.

TABLE 3.—Record of Ducks Banded and Recovered by the Wildlife Service, 1948-51.

Species	Year	No. Banded.	No. Returned.	% Recovery
Grey Duck	1948	342	29	8.5
Grey Duck	1949	403	164	40.7
Grey Duck	1950	2796	885	31.7
Grey Duck	1951	1199	248	20.7
Mallard	1948	274	15	5.5
Mallard	1949	613	149	24.3
Mallard	1950	1349	254	18.8
Mallard	1951	743	58	7.8
Grey x Mallard cross	1948	10	0	—
Grey x Mallard cross	1949	57	6	10.5
Grey x Mallard cross	1950	386	53	13.7
Grey x Mallard cross	1951	32	4	12.5
Totals		8204	1865	
Average recovery of totals				22.7%

(b) Recovery in Various Districts.

In order to see whether the banding data might give any indication of different survival rates of pheasants liberated in various parts of the North Island, the releases and subsequent recoveries were grouped in districts as mentioned above. The number of birds liberated, recovered and recovery percentages are shown in Table 4.

TABLE 4.—Number of Pheasant Recoveries in Various Districts, 1948-51.

District No.	District.	Number of Birds Liberated.	Number of Recoveries.	Per cent. Recovery
1	Dargaville	38	4	10.5
2	Waiuku	175	6	3.4
3	Rotorua	457	12	2.6
4	Whakatane	1213	28	2.3
5	Galatea	108	1	0.9
6	Taupo	63	0	—
7	Wairoa	580	14	2.4
8	Napier	174	4	2.3
9	New Plymouth	209	11	5.3
10	Opunake	35	2	5.7
11	Isolated areas	366	35	8.1
12	Not traceable	67	0	—
Totals		3485	117	
Average				3.4

It will appear from the data presented in Table 4 that the recovery percentages from the ten districts has varied between 0 and 10.5 per cent.

Dargaville is well-known as a pheasant-hunter's Mecca, and the Dargaville liberations also show the highest returns, namely 10.5 per cent. Other areas with fair returns are: Opunake (5.7%), New Plymouth (5.3%) and Waiuku (3.4%). Very poor was Taupo with no returns.

The material at hand is not conclusive and large enough for any general statements on this matter. Several more years of extensive banding will be necessary to build up a solid amount of data; but it should be possible, however, to use the recovery rates presented to give some indication of the suitability of the various areas for pheasant liberations.

(c) Causes of Mortality.

Of the 117 pheasants recovered and reported upon, 92 were shot (=78.6 per cent.). It is only natural that by far the highest proportion of the birds reported were shot and bagged, as it is rare in nature to find birds killed in other ways. It is interesting in this connection that Ginn (1947) from Indiana, U.S.A., records 73.8 per cent. of all recoveries from shot birds, a figure fairly close to the New Zealand figure.

Six birds were found dead and another nine were reported upon without information as to cause of death. One bird got entangled in scrub and was killed. Two birds were killed by hawks, presumably harriers (no information as to the condition of the birds when preyed upon).

Man accounted for the highest toll. Two pheasants were killed flying against viz., a car and a truck; two birds were killed by mowing machines, and man's friends, cat and dog, each killed one of the banded pheasants; one bird was caught in a rabbit trap.

(d) Mortality Periods.

Accurate data were given for 60 pheasants shot during the open season. The highest number of any date was killed on the opening day (as may be expected), namely 18 per cent. The first three days of the open season accounted for 27 per cent. of the birds being bagged.

It is conspicuous that the following four days account for only two (= 3%) after which another peak follows, accounting for no less than 23 per cent. in four days. This must undoubtedly be interpreted as the kill being highest in weekends, and the kill following the weekend cycle.

More than half of all the birds recorded were killed during the first two weekends of the shooting season.

(e) Age of Birds at Recovery.

Complete records showing age of the banded pheasants at the time of liberation were given for 36 birds bagged. Of these birds 8 (=22%) were killed in their first year, i.e., within twelve months from hatching; 27 (= 75%) were killed in their second year; and 1 (=3%) was killed in its third year.

As, however, the ages at release of the banded pheasants varied between 3 and more than 18 months, these survival percentages are not true indicators of life lengths of liberated pheasants. Of more interest is the period between liberation and recovery which is the time the birds have survived in the wild. This information for a total of 69 pheasants is given in Table 5.

TABLE 5.—Periods Between Liberation and Recovery of 69 Banded Pheasants.

Period between Liberation and Recovery.	Number.	Percentage of Total
1 month	5	7.3
2 months	7	10.1
3 months	8	11.6
4 months	8	11.6
5-9 months	7	10.1
10 months	11	15.9
11 months	10	14.5
12 months	3	4.4
13-24 months	9	13.0
Above 24 months	1	1.5
Total	69	100.0

From Table 5 it will be seen that 85 per cent. of the pheasants were recorded within the first year after liberation; 13 per cent. in their second year, and 2 per cent. in their third year. It might be of interest to compare this data with survival figures for pheasants in Wisconsin, U.S.A., and two other game birds, the common partridge (*Perdix perdix*) in Denmark, and the willow ptarmigan (*Lagopus lagopus*) in Norway (cf. Table 6).

TABLE 6.—Survival Rates in Various Game Birds as Indicated by Banding Data.

Species.	Area	Newly Banded yr. class	Return of birds newly banded.				Authority
			1yr. ago	2yr. ago	3yr. ago	4yr. ago	
Pheasant	Wisconsin	100	16	6	3	0.4	Buss, 1946
Pheasant	New Zealand	100	15	2	0	0	This study
Partridge	Denmark	100	19	5	0	0	Westerskov, 1951
Willow ptarmigan	Norway	100	25	5	2	0	Westerskov, 1950

It should be pointed out that the New Zealand pheasant data is not large enough for a direct comparison with the Wisconsin data, and furthermore that the latter data was collected by trapping of released birds on a study area, whereas the New Zealand records are based on birds liberated in a variety of habitat types, and information on recoveries is left to the interest and mercy of the person who happens to shoot or find a banded bird.

In Table 6 the data from New Zealand pheasants have been converted to a scale comparable with the one used in the other studies referred to by giving the recovery percentage of the newly banded year class the value of 100, and raising the other figures proportionately.

As the pheasant banding programme in New Zealand, on which this study is based, only dates back four years, the possibility for recoveries in the fourth year group is consequently limited to the birds liberated during the first year of liberations. The next few years may provide the data to fill the gaps for the missing second, third and fourth year groups.

The New Zealand data shows that out of 100 released and banded pheasants (which survive the heavy death period following release) there will be 15 left the following year and two another year ahead. Possibly more data on later age groups will appear during the coming years, making the survival pattern of New Zealand pheasants more like the one found in Wisconsin, where banded pheasants have been recorded in their fourth year.

The Danish partridge data refer to artificially raised birds, whereas the willow ptarmigan were caught in the wild and banded.

(f) Dispersal of Birds.

Accurate information about the distances travelled by pheasants could be extracted from 63 records. Of these 63 birds, 32 or 50.8 per cent. were recovered within a mile from the release point; this figure is, however, possibly not quite correct as some of the information supplied on cards was not specific enough so that in a few cases the birds might have travelled a little further. A total of 76 per cent. of the released birds were recovered within five miles from the liberation point.

Of special interest are two cocks, of which one, in three months, travelled from Galatea to Awakerei (ca. 30 miles as the crow flies), and the other cock travelled from Broadlands to Mamaku (about 35 miles directly). Birds liberated in inferior habitat seem to travel much further than birds liberated in better suited areas, but the material at hand to substantiate this point is too meagre for any general statement.

TABLE 7.—Distances Travelled from Release Point by Pen-reared Pheasants, released 1948-51.

Recovery.	Total	Per cent.
Within a mile	32	50.8
1-2 Miles	6	9.5
2-3 Miles	2	3.2
3-5 Miles	8	12.7
5-10 Miles	11	17.4
10-20 Miles	2	3.2
Over 20 Miles	2	3.2
Total	63	100.0

4. DISCUSSION.

It has been pointed out above that the pheasant banding data is not comprehensive enough for general and definite conclusions.

This paper has been presented, however, in order to stimulate interest in the banding programme, to tell co-operators and sportsmen a little about what can be found out and what good can come out of the work, and finally, to present the facts found so far as they provide information of interest.

The data collected give some indication of various phenomena in pheasant populations, phenomena which are of interest in pheasant management.

One of the points of main interest in pheasant liberations is the economy and value of the programme: "Does it pay to release birds? Do they survive?"

The recovery of only 3.4 per cent. pen-reared pheasants indicates a very low survival rate which must be considered, if not proof, at least a very strong indication of the high costs and low value of this management procedure, especially when birds are liberated in all kinds of habitats.

Whereas the pen-reared pheasants only gave 3.4 per cent. return, the wild-bred and trapped ducks gave an average of 22.7 per cent. return, seven times higher. It is in this connection also worth mentioning what has been found in America on the question of wild-bred versus pen-reared pheasants.

Hicks (1937) in Ohio, says: "Research data now on file would indicate that these choice naturally produced birds (i.e., wild-bred, trapped birds.—K.W.) have a stocking value equal to at least 1.5 to 2.0 typical game farm adults and equal to 3 to 8 artificially propagated baby pheasants of 8 to 12 weeks of age due to greater survival and reproductive ability."

In Wisconsin, Buss (1946) found that trapped pheasants "showed a year-to-year survival two to three times that of the artificial pheasants herein described."

And Harper et al. (1951) in California, found that: "Returns from transplanted wild birds were considerably greater than from game farm birds when both were liberated at comparable ages three months or more before the season." As an example it may be mentioned that two groups of birds, 6-10 weeks old were released about the same time before the opening of the season. Of the pen-reared birds 12.0 per cent. were recovered, whereas 34.9 per cent., or almost three times more, of the transplanted wild birds were recovered.

No trapping and transplanting of pheasants has so far been carried out in New Zealand, so comparable data is not available. A practical suggestion therefore, is to try trapping of wild-bred pheasants for release, in which way possibly the economy as well as the practical value of pheasant stocking might be considerably improved.

If we view the pheasant liberations as a means of providing birds for shooting—and a fair number of sportsmen have that opinion—it may pay to calculate the actual cost of birds bagged this way.

Of the 117 bands returned, 71 were from cocks and 11 from hens, and no information as to sex was given about the remaining 35 birds. If

we assume a similar ratio between cocks and hens in the 35 birds not accounted for, there should have been 101 cocks and 16 hens. Of the 3485 banded pheasants, 2129 were cocks and 1356 hens. So, 101 cocks out of 2129, or 4.7 per cent., were recovered.

Of the birds actually killed and bagged by shooters, 62 were cocks, 4 were hens, and no information was given about 26 birds shot. Although there is a possibility that no sex was recorded because the bird killed was a hen in some of these cases, most of these records were from a series of cards with very incomplete information. So we should be justified in assuming a similar ratio of bagged cocks and hens among the 26 birds not accounted for, which would mean that 86 cocks and 6 hens were shot. Pheasant hens are not legal game in the North Island, and have undoubtedly been killed accidentally (the reporters are to be congratulated for information about this kill, in spite of it being illegal; during field work I have happened to encounter a sportsman who accidentally shot such a banded pheasant hen; he had reported the case, but had omitted signing his letter about the kill).

When, therefore, 86 out of 2129 liberated cocks are eventually bagged, it shows that no more than 4.0 per cent. of the released cocks were shot, and 6 out of 1356, or 0.4 per cent., of the hens were shot, too, or one hen for every ten cocks.

The value of liberated pheasants must, therefore, be as seed stock to produce in the wild; but also here is the survival rate the all dominating question.

5. ACKNOWLEDGMENTS.

Thanks are due to all who have co-operated in this scheme, game breeders and field officers of the Wildlife Service and members of acclimatisation societies who have banded pheasants for release; and sportsmen for reporting the kill of banded birds. Well-kept records and detailed information on recoveries are the two essential factors in bird banding work.

6. SUMMARY.

Over the four-year period, 1948-51, a total of 3485 pen-reared pheasants were banded and liberated in the North Island. They varied in age between 3 and 20 months, but 40 per cent. of the birds were three months old when released. The average number of birds per liberation was six.

A total of 117 band returns were received up to 1 June 1952, representing 3.4 per cent. of the total release. It is pointed out that the recovery of banded ducks in New Zealand is 23 per cent., or about seven times higher, which difference undoubtedly mainly is due to the much higher survival rate of the wild-bred (trapped and released) ducks. The band returns seem to give an indication of the suitability of various districts for pheasant liberation. Of the birds reported upon, 78.6 per cent. were killed by shooters. More than half of these birds recorded were killed during the first two weekends of the open season.

Eighty-five per cent. of the birds recovered were killed within the first year after release; 13 per cent. in the second year; and 2 per cent. in the third year.

Distances travelled by 117 pen-reared pheasants between the points of liberation and recovery were as follow: 50.8 per cent. recovered within a mile of liberation point; 25.4 per cent. from 1 to 5 miles; 20.6 per cent. at distances from 5-20 miles; and 3.2 per cent. over 20 miles

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A RECENT ATTEMPT TO INTRODUCE VIRGINIAN QUAIL INTO NEW ZEALAND.

By L. Gurr, Nelson.

Virginian quail or "Bob-White" (*Colinus virginianus*) were first introduced into New Zealand in 1898 when the Wellington Acclimatisation Society imported about 400 birds. These and another 756 birds imported by the same society in 1899 were distributed throughout the country from Auckland to Southland. They failed to establish themselves and disappeared in most districts within about ten years (Thomson, 1922). Nothing more was heard of them until 1923 when, according to the annual report of the Auckland Acclimatisation Society for 1923, a number of Virginian quail were caught during the winter between Waingaro and the sea coast and these were liberated at the Cambridge Game Farm. Thomson (1926) states: ". . . the local Acclimatisation Society is now distributing them through the Waikato country." Apparently they managed to maintain a small population in the Auckland district, and the secretary of the Auckland Acclimatisation Society (in litt.) states that they still do in some areas, especially where the bush or scrub has recently been burnt off.

No more attempts, to the author's knowledge, were made to establish the bird until 1947, when the Otago Acclimatisation Society obtained a permit to import 1000 eggs from the United States of America. Two separate consignments each of 200 eggs were forwarded by air freight from Oakland, California. They arrived at Dunedin on 19 June, 1947 and 3 July, 1947, respectively, the journey taking five days in each case. The eggs were allowed to stand for 48 hours, then placed in the incubator at the society's Game Farm at Waitati. Many of the eggs were infertile and others, although they began to develop, died before hatching. From the first consignment 33 and from the next consignment 31 chicks were hatched. Only 40 of these birds survived the difficult stage of the first fortnight. Thereafter, the numbers dwindled until early December, when the six remaining birds died, all within three days of one another. Three of these dead birds were sent to the Animal Research Station, Department of Agriculture, Wallaceville, for examination. Although the birds showed certain pathological conditions of the gut no obvious signs of a recognisable disease were present. The society has not made any further attempt at importation.

I am indebted to Mr. Leonard Millar, the manager-secretary of the Otago Acclimatisation Society, for placing the records of the society at my disposal and permission to publish this account of their attempt to introduce the bird into New Zealand.

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CHECKLIST.—The Checklist Publication Committee advises that the Checklist will soon be ready for distribution. Until July 31, orders from members can still be accepted at the prepublication price of 7s. 6d. per copy; after that date the price will be 10s. 6d.

BROWN BOOBY IN THE HAURAKI GULF.

By P. A. S. Stein, Auckland.

A year ago, we recorded the finding of a brown booby in immature plumage, among the gannets on Horuhoru (Waiheke Island) on 8 March, 1952 (*Notornis*, Vol. 4, No. 8, page 213). When we returned to the island three weeks later, equipped with a camera, most of the gannets had gone and the booby with them. On our first visits in the 1952-1953 season we kept a close look-out, but we saw no signs of this bird and finally gave it up for lost.

On 21 January, 1953, we crossed the Gulf from Waiheke to count the gannets on the islands near the Colville Coast. We came first to Motutakapu, which lies about twenty miles to the east of Horuhoru, and has over three hundred pairs of breeding gannets. As we were rowing in from the launch to count the chicks, P. F. Stein noticed a booby on the western bluff overlooking the landing place. The bird flew off as we came ashore, but circled with the adult gannets for over a quarter of an hour.

We had time to climb to the top of the North-West Ridge, which the booby crossed each time it circled the island. When it was over the sea to the west it was below us, and we could see its back and the upper surface of its wings. As the bird approached us it rose and passed twenty-five to thirty feet above our heads, affording us an excellent view of its colouring from below. Three times the bird paused as it passed overhead, hovering and fluttering down a few feet. During this manoeuvre it partly closed its wings and spread its tail until every feather spread out, fantail fashion, a narrow inverted V showing between the two middle feathers. I had time to sketch the extent of the coloured areas of the plumage before the bird finally settled for a short time and then flew off to the north with a number of adult gannets which were disturbed by our further ascent of the rock.

The booby had many colour differences from the immature bird of March, 1952. The beak was yellow, approaching closely the orange of the feet; there was no trace of blue. From above, the head and tail were chocolate and between them the back was brown, not a uniform shade, but lighter on the shoulders and becoming deeper on the wings, which were tipped with chocolate. From below the belly was a pure milk white, changing abruptly to chocolate on the breast and tail. The chocolate breast feathers gave the appearance of a ruff round the neck, as they bulged out slightly over the white belly. The wings were mainly white underneath, edged all round with chocolate. The leading edge of the wings was exactly level with the ruff on the neck so that an unbroken line of chocolate ran right across the breast from one wing-tip to the other.

On our return to Waiheke, I compared our notes and sketches with reference books, and it was evident that we had been watching an adult brown booby (*Sula leucogaster*). One marking we noted on the under surface of the wings is not mentioned in any of the reference books I have seen. Halfway along each wing there was a chocolate stripe running two-thirds of the way across the white. It ran from front to rear diagonally towards the body.

I think that there can be little doubt that our immature bird, blown south from Fiji by the strong northerlies of March, 1952, spent the winter among N.Z. gannets, and during that period developed its mature plumage. On 5 April, 1953, we again visited the Colville Islets, but saw no trace of the booby. There were only six adult gannets seen within five miles of Motutakapu, and only one chick remained on the island.

CYCLOSTYLED ISSUES REPRINT.—This is now ready, and has been distributed to all who ordered it. Copies are available from the secretary, price 10s. The format is in similar style to 'Notornis,' and the reprint represents the first three years' publications of the society.

NOTES ON THE IMMATURE PLUMAGES OF *LARUS BULLERI* AND *L. NOVAEHOLLANDIAE*.

By J. M. Cunningham, Masterton.

From 21 January, 1945, to 12 January, 1946, I was able to make some rather cursory observations of the juvenile plumages of a black-billed gull, *Larus bulleri* and a red-billed gull, *L. novaehollandiae*. On the former date the birds were almost at flying age. In view of the fact that many ornithologists are studying these birds in the field, it is felt that publication (which has been delayed owing to the notes being mislaid) of some of the features, however meagre, of the plumage sequences throughout the year on individual birds will be of benefit. The identification of these two species when immature is notoriously difficult, and further field and laboratory work is being carried out to enable the differences to be clearly described.

On 21 January, 1945, both birds were not long out of the downy stage. Observations on other downy chicks showed that the down, which varied tremendously in colour and pattern, is indistinguishable in the two species, but *bulleri* had pinkish-grey legs and bill, while *novaehollandiae* had dark grey legs and bill without any pinkish tinge. The gape of both was a light pink. The iris was a dark brown, irides dark grey and the pupil, rather a light blue at first, rapidly became a dark blue-black. The table of measurements shows that even at first flying stage the bill of *bulleri* was much longer but thinner than that of *novaehollandiae*, which grew but little during the following year. In the first plumage the wing coverts of both were heavily spotted brownish.

These spots gradually disappeared, faster in *bulleri*, which on 25 August had many fewer spots left visible. At this date, the legs of *bulleri* had darkened and were only slightly pinker than those of *novaehollandiae*. In the bills, black was extending slowly from the tip to the base which was flesh coloured, and had reached about halfway in both, the base of the bill in *bulleri* being slightly pinker.

On 12 November the brown spots on the wing coverts, still prominent in *novaehollandiae*, were not visible in *bulleri*. The legs of *bulleri* were still flesh coloured, but not as pink as the legs of *novaehollandiae* had become. At this stage the bill of *bulleri* was entirely black (though not the glossy black of adults) while *novaehollandiae* still had a dark-tipped bill with a fleshy-coloured base. The voice of *novaehollandiae* during early November also developed to almost full adult tone.

On 12 January, 1946, when the final observations were made, *novaehollandiae* still had brown spots on the wing coverts, the legs of both were similar, a darkish flesh colour, and both bills were again similar, flesh at the base and dark-tipped. It was then noted that the gape was pinkish in *bulleri* and orange in *novaehollandiae*.

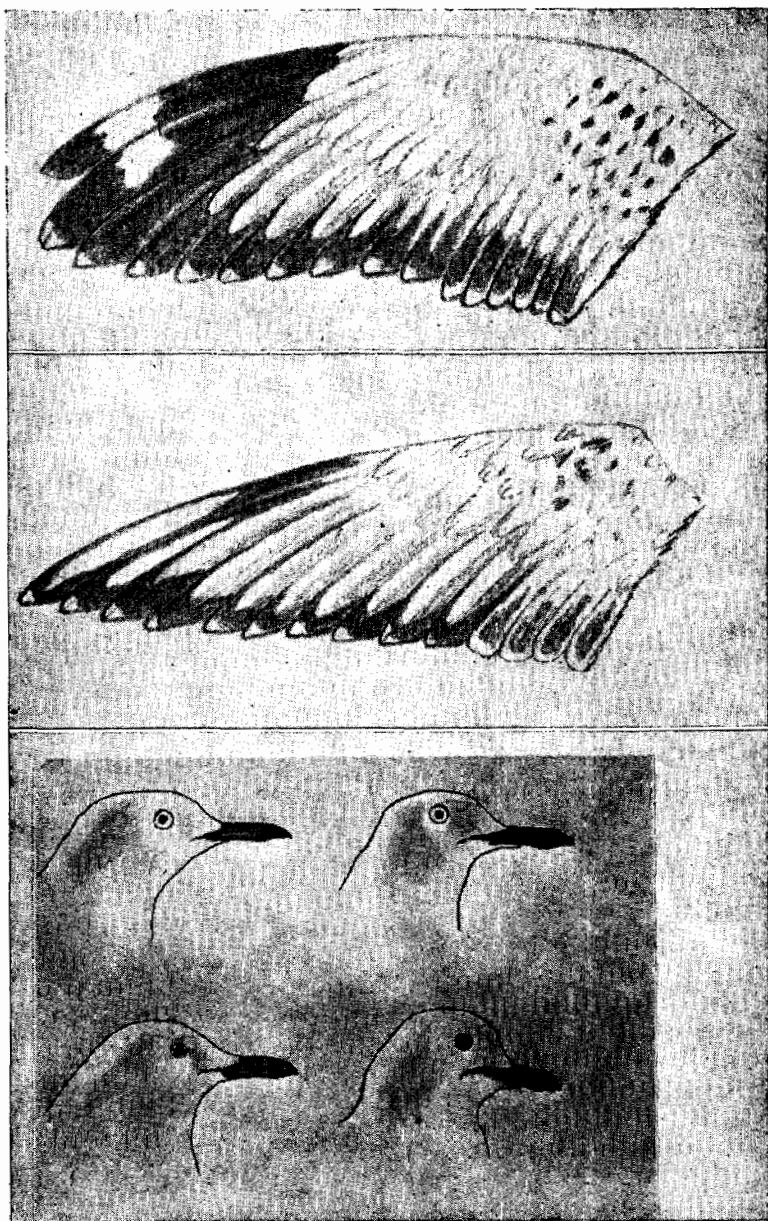
At all stages, the pattern of the primary feathers was different, *novaehollandiae* showing much more black with small white "mirrors" near the tips of the two outer primaries. These "mirrors" were elongated along the shafts in *bulleri*, giving the tip of the wing a whiter appearance.

MEASUREMENTS (mm) 29/1/45.

	<i>L. bulleri</i>	<i>L. novaehollandiae</i>
Bill length	297	272
Bill depth at base	76.2	86.4
Bill width at base	55.9	73.7
Bill depth at gonys	69.9	78.8
Wing	1981	1968
Tail	699	813
Tarsus	503	523

SUMMARY.

Cursory observations on the plumage sequences and the colours of soft parts, together with some measurements, are given for one individual each of *Larus bulleri* and *L. novaehollandiae*, during their first year. Features which are of especial interest are the pinkish bill and legs of *bulleri* and the dark grey bill and legs of *novaehollandiae*, and the much thinner and longer bill of *bulleri* at first flying age, the blackening of its bill in November, the more rapid disappearance of its wing covert spots, and the different wing patterns in the two species.



WINGS OF GULLS AT FIRST FLYING AGE, 10/2/45,
AND TYPICAL BILLS.

Top.—Red-billed Gull.

Middle—Black-billed Gull.

Lower.—Bills of typical Black-billed (upper) and Red-billed (lower) Gulls.
(Immatures on left, adults on right.)

(Adapted by J. M. Cunningham from photographs.)

BIRD POX IN A NEW ZEALAND PIPIT.

By Kaj Westerskov, Wildlife Division, Department of Internal Affairs,
Wellington.

Introduction.

Fowl pox or any other pox has not so far been recorded from wild-living birds in New Zealand, but it is likely that the disease is more common in the Dominion than realised, and this record of bird pox in a New Zealand pipit (*Anthus novaeseelandiae*) is presented in the hope that the information will attract attention among ornithologists, sportsmen and other people who study and handle birds so that possibly more material on the matter may be published in the future.

The occurrence of pox in wild birds is of more than pure scientific interest as it has been recorded overseas from a number of wild birds, including game birds, and as the possibility exists for spread of this disease to poultry through wild birds, but further experiments on this aspect are necessary.

Pox in a New Zealand Pipit.

On March 13, 1952, when I went along the highway near the Tongariro State Hatchery, Turangi, N.I., a pipit on the roadside attracted my attention. Even without the use of binoculars it was possible to see that there was something wrong with it, and a tumor was visible on one leg. I watched the bird through my 10x50 binoculars and saw a hazel-nut sized tumor on the leg, while it was evident that the bird's right eye was closed and covered up by greyish tumor-like growth. The bird was somewhat hindered in its movements because of the tumor on its leg, but did not look really sick. I suspected that the bird was attacked by fowl-pox, a disease I have had the opportunity to see in partridges (*Perdix perdix*) and wood-pigeons (*Columba palumbus*) a number of times in Denmark, so I shot the bird for closer examination.

Unfortunately the bird was somewhat damaged by the shot. In my diary the following was recorded during examination of the bird: On the left leg there was a tumor about the size of a hazel-nut; it was attached to the underside of the tarsus (see Fig. 1) and measured 17 mm in length, 14mm. high and 16mm. wide; it was grey and hard as a rubber ball. The right leg had a small node as if the leg were broken and it looked like the beginning of a tumor. The left eye was open, but all of the right side of the face was covered with greyish, tumor-like processes. The right eye was completely blind and covered, and feathers around the eye and on the side of the neck were missing. Under the right eye there was a tumor measuring 7mm. in diameter.

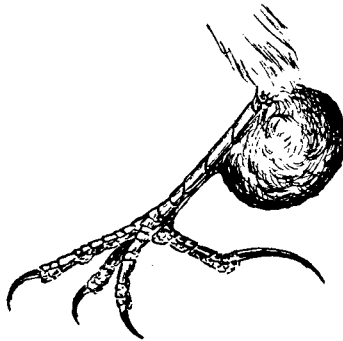


FIG. 1.—Pox Tumor on Leg of New Zealand Pipit.

During earlier work at the Danish Game Research Station, I had had the opportunity to see a number of partridges and wood-pigeons suffering

from pox, as diseased game birds were frequently sent in for examination (and turned over to Professor M. Christiansen, the Royal Veterinary and Agricultural College at Copenhagen, who was the specialist on game diseases). I had also myself shot two wood-pigeons with heavy pox infestation. Based on what I had seen in the way of pox in birds, I thought that this bird also suffered from pox, but to make sure, the bird, or rather what remained of it, was sent to Wallaceville Animal Research Station.

Mr. R. M. Salisbury, Veterinary Research Officer, examined the bird and reported that "the histology of the lesions was practically identical with that seen in cases of fowl pox," and that the bird "was suffering from a form of pox."

This appears to be the first recorded case of pox in any wild New Zealand bird.

Fowl Pox in New Zealand.

Fowl pox is a feared poultry disease in any country. According to Mr. R. M. Salisbury fowl pox has never occurred in the South Island, but in the North Island the disease has three strongholds—the Hutt Valley, near Wellington, the Hawke's Bay area, and the Auckland area.

Howse (1949) describes the symptoms and control of fowl pox in New Zealand. In 1948 there were many outbreaks of pox in different parts of the North Island, some of which resulted in considerable loss. As fear was expressed in the report on the examined pipit: "That native birds may possibly be responsible for the spread of the disease in the North Island," it may be of interest to see what is found in the literature about the communication of pox from wild birds to poultry.

Pox in Wild Birds.

There appear to be three varieties of pox found in birds. The more common and more important strain is the fowl pox, found in domestic fowls, turkeys, guinea fowls, ducks, geese, pheasant and other species. Of less importance is pigeon pox, found in pigeons; and finally the bird or canary pox is found in canaries and other small birds. Christiansen (1949) in Denmark found a pox in crows (*Corvus corone*) which he considers belongs to a special type, different from the varieties listed above.

It is the common fowl pox in fowls which is feared. Christiansen (1949) has examined two black grouse (*Lyrurus tetrix*) and 75 partridges suffering from fowl pox. Christiansen (1941) mentions that pheasants also may get the disease, as recorded abroad, but hitherto not in Denmark. Pox was also reported from bobwhite quail (*Colinus virginianus*) in America by Stoddard (1931), and from ruffed grouse (*Bonasa umbellus*) by Bump et al. (1947). The "bumblefeet" and "fibroid tumors on the side of the head" found by Portal & Collinge (1932) in English partridges are possibly also due to pox.

Fowl pox in game birds is hardly anywhere an important factor in checking production but nonetheless it is a disease which must be considered of some influence when it occurs. In its worst cases the diseased birds may die from hunger because their bill grows with tumors; the legs may develop such heavy tumors that walking becomes painful and difficult; and the birds may be blinded and thus completely helpless in the cases when the tumors develop on the head. Another factor is that the disease is easily communicated from individual to individual as seen from the fact that all birds within a covey regularly have been reported sick. Game birds with pox are usually of no value as game; they are either sent away for examination because of their queer look, or they are thrown away because of their unhealthy look and poor condition. Christiansen (1941) advocates only one way in dealing with this disease in game birds—the killing of every member of a diseased covey.

Wood-pigeons fairly often have pox; in Denmark no less than 45 were sent in to Professor Christiansen for examination. It is also recorded from wood pigeons in Sweden, as reported by Hulphers et al. (1943).

Pox has also been recorded by Christiansen from as different birds as: Two lapwings (*Vanellus vanellus*), 1 golden plover (*Pluvialis apricarius*) and common gull (*Larus canus*), and in addition to 8 crows as mentioned above, one raven (*Corvus corax*) and one rook (*Corvus frugilegus*).

Small birds recorded with pox are: One skylark (*Alauda arvensis*); 1 wren (*Troglodytes troglodytes*); 1 song thrush (*Turdus cricetorum*), and 1 lesser white-throat (*Sylvia curruca*). The bird or canary pox, to which variety the pox found in the mentioned passerines may belong, is found in canaries, and experiments have shown that this virus is transmissible to, for example, sparrow (*Passer domesticus*) and chaffinch (*Fringilla coelebs*), but not to fowls and pigeons (Christiansen, 1949).

Conclusion.

A heavy infestation of bird pox has been recorded from a New Zealand pit at Turangi, N.I. The bird's one eye was blind, and it had a hazel-nut large tumor on one leg. Attention is drawn to the case, as pox in wild birds has not been recorded from New Zealand before, but the disease is undoubtedly more common here, and birds with such wart-like tumors should be sent to the Wallaceville Animal Research Station for examination. Overseas, different groups of birds such as e.g., pheasants, partridges, gulls, wild pigeons, crows, rooks, skylarks, thrushes and wrens, have been recorded with pox infestations.

Sportsmen should look out for pox in bagged pheasants and quail; bird ringers who trap passerine birds such as silvereyes, thrushes, etc., should watch for pox tumors on the birds handled; pheasant breeders should look out for pox in their birds; and bird trappers who trap introduced song birds to be kept as cage birds should also watch out for pox in the caught birds.

Overseas experiments have shown that pox found in small passerine birds is not transmissible to fowls, but further investigations are of importance, and it is still not known to what extent the pox occurring in, for example, gulls and shore birds can be communicated to poultry. Further experiments are needed, and any pox-infested wild birds should be sent in for examination and transmission tests.

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REVIEWS.

Stomach Contents of New Zealand Inland Shags, by P. Dickinson. Aust. J. Marine and Freshwater Res. 2 (2) : 245-53, 1951.

A study of 29 stomachs of *Phalacrocorax carbo* and 61 of *P. brevirostris* from Rotorua-Taupo district in which fish otoliths were used to determine the species and number of food fish. Lake-feeding shags in July feed almost entirely on fish (particularly bullies, *Gobiomorphus*) and crayfish. One of the *P. carbo* stomachs contained two salmonid fish, probably trout.—C.A.F.

A Review of the Frigate Petrels (*Pelagodroma*), by R. C. Murphy and S. Irving. Am. Mus. Novit. No. 1506, 1951.

A systematic and biogeographic study of the white-faced storm petrel of New Zealand bird books. Five sub-species are recognised, from Tristan

da Cunha (*marina*), New Zealand (*maoriana*), Australia (*dulciae*), north Atlantic islands (*hypoleuca*), and the Kermadec Islands (*albiclunis* n.sub.sp.), and there is a suspicion that the bird formerly nested on St. Paul and Amsterdam islands. Races entering subantarctic seas (*maoriana* and *marina*) have longer, more forked tails, shorter tarsi and bills than subtropical races. The Kermadec subspecies alone has white rather than grey upper tail coverts.—C.A.F.

The Populations of the Wedge-tailed Shearwater (*Puffinus pacificus*), by R. C. Murphy. Am. Mus. Novit. No. 1512, 1951.

A statistical study, from abundant material, of size and plumage phases and a summary of breeding biology. *P. p. pacificus* breeds at Kermadec, Norfolk and Kandavu islands, *P. p. chlororhynchus* at many other Pacific islands and in the Indian Ocean.—C.A.F.

Larger Petrels of the Genus *Pterodroma*, by R. C. Murphy and J. M. Pennoyer. Am. Mus. Novit. No. 1580, 1952.

Systematic, distributional, behaviour and breeding data for 15 species are reviewed. The following conclusions affect New Zealand species:—*P. macroptera gouldi* includes Western Australian as well as New Zealand birds, and the American Museum has one or more old skins from the Auckland Islands. The name *Pterodroma solandri* (Gould) is used for the "Bird of Providence" because Gmelin's description of *P. melanotus* cannot be reconciled with the characters of this species. *Pterodroma lessoni* is perhaps replaced by *P. incerta* as a representative species in the Atlantic. *P. brevirostris* is considered more akin to *P. inexpectata* than to the subtropical *P. mollis*. The mottled petrel, (*P. inexpectata*) before predatory animals restricted it in New Zealand, had one of the most extensive breeding ranges of any member of the genus, and its enormous distribution at sea may be due to its large population in primitive times. Judging from 500 specimens of the variable *P. neglecta*, a subtropical Pacific species with variable or prolonged breeding season, the authors recognise two subspecies: *P. n. juana* Mathews (Juan Fernandez and San Ambrosio) and *P. n. neglecta* (central and western South Pacific between Ducie Island and the coast of Australia). *Pterodroma alba* (Gmelin) (*parvirostris* of Oliver's "New Zealand Birds") is a typically tropical zone petrel, and the only Kermadec specimen is considered an accidental record (though Oliver mentioned four birds on the ground in the forest on 7 March, 1913.)—C.A.F.

The Manx Shearwater, *Puffinus puffinus*, as a Species of World-wide Distribution, by R. C. Murphy. Am. Mus. Novit. no. 1686, 1952.

Eight forms of medium-sized shearwater characterized by similar proportions and plumage pattern, previously classed as several species and subspecies, are linked as subspecies of the Manx shearwater and fall into two groups, one black-backed, the other brown-backed. The latter group includes the New Zealand fluttering shearwater (*gavia* Forster) and Hutton's shearwater (*huttoni* Mathews). No additional Australasian races are recognized. The type of *huttoni* was originally labelled "*Puffinus gavia*" in ink and "Snare Isl." in pencil by Dannefaerd, but a second specimen so labelled is *gavia* (not *huttoni*) and doubts concerning the source of the type are thus strengthened. The axillaries, dark to the tips (as noted by Clark and Fleming, in 1948) are completely diagnostic of the 18 specimens of *huttoni* in the American Museum, which include birds collected at sea off Banks Peninsula in January, 1926. Since *huttoni* has not been found breeding, it is hard to see how Murphy can be confident (p. 5) that it breeds in the Southern Hemisphere spring in months corresponding to the April to June season of Northern Hemisphere forms.—C.A.F.

The "Pealea" Phenomenon and other Notes on Storm Petrels, by R. C. Murphy and J. P. Snyder. Am. Mus. Novit. no. 1596, 1952.

Examination of the five known specimens of storm petrels with ventral streaking (*Fregetta lineata* Peale of Oliver's New Zealand Birds) has shown that they represent aberrations of at least three different kinds of storm

petrel. The type of *lineata* (allegedly from Samoa) is associated with (i.e., identified as) the subantarctic *Fregetta tropica*. The Whitney South Sea Expedition specimen from the Marquesas group (identified by Murphy as *lineata* in 1924 and named *Fregettornis guttata* by Mathews in 1933) is identified as *Fregetta grallaria*. The two Paris Museum specimens and the type of *Pealeornis maoriana* Mathews (all three from off Banks Peninsula, not East Cape, as some have translated "Promontorio Orientali") are listed under *Oceanites oceanicus* because the authors "strongly suspect" that they are a "Pealea" phase of that species. Mathews (1933) had already demonstrated that three distinct species were involved, and had related two of them to *Oceanites* and *F. grallaria*, but he preferred to name them distinct species.

The white-bellied storm petrel (*Fregetta grallaria*) has a tenuous place on the New Zealand list, based on a specimen from "off New Zealand" (H. Whitely coll.) described by Mathews (1932) as *F. g. deceptis*. Murphy and Snyder have re-examined and measured the New Zealand specimen but it cannot be attributed to a definite breeding population because there are insufficient skins to characterize more than two contrasting subspecies of *grallaria*, one from Juan Fernandez (small), the other from Rapa (large). Other specimens from breeding areas (Tristan, Lord Howe, etc.) are intermediate, and so is "*deceptis*," although it approaches the Rapa form in some dimensions.—C.A.F.

Rare and Extinct Birds of Britain, by Ralph Whitlock. F.Z.S., M.B.O.U., 224 pp., with 85 monochrome plates. Published by Phoenix House, Ltd., London. (N.Z. agents, A. H. & A. W. Reed). N.Z. price, 26/3.

A surprisingly large number of birds are included in this volume under the headings of "lost breeding species, rare and local nesting species, local subspecies, Continental and allied subspecies, rare birds of passage and seasonal visitors, migrants and eccentricities." A short introductory chapter discusses the subject from a general viewpoint and refers to the vast changes in environment in Britain as a result of man's activities and their effect on bird life. The epilogue gives a more optimistic view of future possibilities, of species returning to former haunts and the prospects of new arrivals, in a period which indicates a trend to warmer climatic conditions, a gradual but vast process, in which many birds are appearing in more northerly lands than formerly. It seems likely on present evidence that these birds may form a new group of species which may become established as breeding birds in Britain. A feature of this book is the exceptionally fine series of plates illustrating 84 species; it is evident that great care has been taken in choosing photographs of the highest standard. The result is an attractive volume that should be of wide appeal to an increasing band of bird-minded people.—R.H.D.S.

Fair Isle Bird Observatory Bulletin, No. 9, 1953, edited by Kenneth Williamson, director, issued to the Friends of Fair Isle. Subscription £1/1/- per year.

Many New Zealanders no doubt look forward to the day when this country has at least one bird observatory comparable to that established at Fair Isle, between Shetland and Orkney islands. Fair Isle is exceptionally well placed in relation to migratory movements, as a perusal of this number of the bulletin shows. Much valuable information on migration is being brought to life by the activities of this station, and all members interested in this absorbing subject can become acquainted with the work of the Fair Isle Observatory and at the same time assist the project by subscribing to its bulletin. The director's address is: 1 April to 31 October, Fair Isle Bird Observatory, by Lerwick, Scotland; 1 November to 31 March, Fair Isle Bird Observatory Trust, 17 India Street, Edinburgh, Scotland.—R.H.D.S.

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