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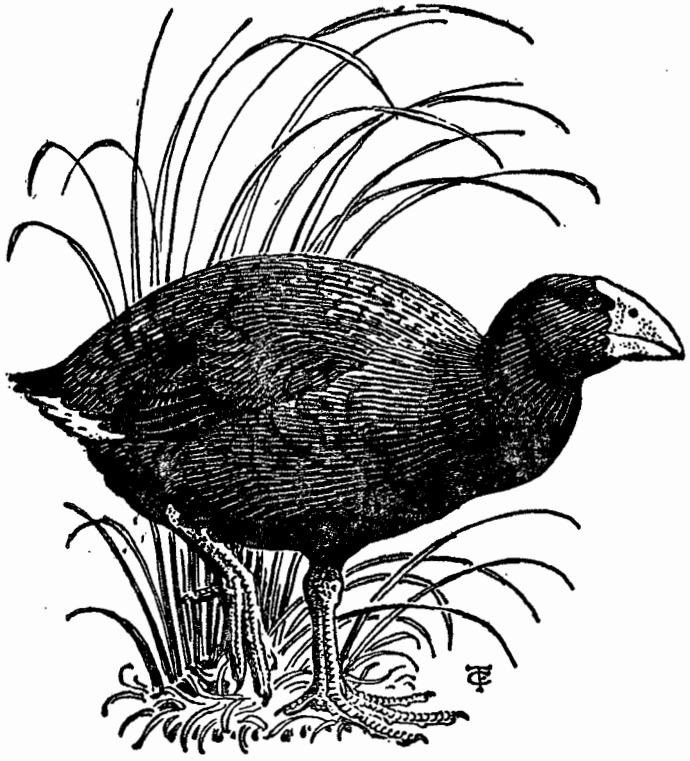

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SURVIVAL RATE OF YELLOW-EYED PENGUIN EGGS AND CHICKS ON THE OTAGO PENINSULA

By C. L. ROBERTS and S. L. ROBERTS

ABSTRACT

Egg-and-chick survival frequency in the Yellow-eyed Penguin was followed for nineteen nests in three breeding areas on the Otago Peninsula. Observations were made through the tenth post-hatching week for each nest. Survival rate was substantially worse than that reported by Richdale in 1957. There were also differences in survival rate among the three breeding areas within the sample. It is suggested that human and farm-animal activity is responsible for the relatively poor survival rates.

INTRODUCTION

Harrow (1971) has reported a substantial population of Yellow-eyed Penguins *(Megadyptes antipodes)* breeding on Banks Peninsula, probably beginning about 1965. This is noteworthy because the northernmost point in this bird's breeding range has been taken to be near Oamaru, some 200 miles (320 km) south of Banks Peninsula (see OSNZ Annotated Checklist 1970). According to Harrow, the increase in numbers of Yellow-eyed Penguins on Banks Peninsula has been rapid and he plausibly suggests that this may be the result of human interference on the breeding grounds of the Otago coast which are adjacent to sizeable cities and towns. Similarly, Richdale (1957) pointed to human and dog interference as responsible for breeding area shifts by Yellow-eyeds on the Otago Peninsula. In light of Harrow's report it would seem important to know whether the population of Yellow-eyed Penguins is declining all along its Otago breeding grounds as it is said to have done at Cape Wanbrow, Oamaru (Harrow 1971). The answer to this question will presumably require systematic observations over a period of several years.

With increase in human activity along the Otago coast and Peninsula since Richdale's extensive work, it is also important to know something about the survival rate of Yellow-eyed chicks in these areas hatched by parents which do nest there. This matter

TABLE 1 Yellow-eyed Penguin Egg-and-Chick Survival Percentages

	Source	Eggs Hatched	Eggs Addled	Eggs Missing	Chicks Missing	10th-week Chick Surviving as % of Eggs laid	10th-week Chick Surviving as % of Eggs hatched
	1971-72	78.9	15.7	5.2	26.3	52.6	66.6
Richdale	Mean	78.1[1]	17.2[2]	1.1[3]	18.2[4]	66.2[5]	78.4[6]
	Range	57-100			4.1-40.3	41.9-82.3	50.9-94.7

1 Based on 16 years for which a range is calculable : 1936-37 to 1949-53, excluding 1950-51 in which Richdale made no observations; 1073 eggs. Richdale's figure for 18 years and 1475 eggs is 79%; no range available.

2 Based on 18 years and 1475 eggs; no range available.

3 Based on 18 years and 1475 eggs; no range available. A remaining 39 (2.6%) of Richdale's 1475 eggs were found out of the nest, broken in the nest, crushed by rockfalls, or deserted by parents.

4 Based on six years for which data are available : 1936-37 to 1940-41 and 1942-43; 269 eggs. If 1938-39 is excluded the mean is 11.5% and the range, 4.2% to 37.5%.

5 Based on six years for which data are available : 1936-37 to 1940-41 and 1942-43; 269 eggs. If 1938-39 is excluded the mean is 73.4% and the range, 62.5% to 82.3%.

6 Based on six years for which data are available : 1936-37 to 1940-41 and 1942-43; 227 eggs. If 1938-39 is excluded the mean is 86.3% and the range, 62.8% to 94.7%.

was the object of the present investigation. We simply followed the mortality frequency of eggs and chicks with time in a sample of nests and compared the frequencies with similar counts from Richdale's findings reported fully in 1957.

RESULTS

Three breeding areas on the Otago Peninsula were chosen for observation. Area 1, that least frequented by people, is a coastal sheep farm located at 45°51'39" S. Areas 2 and 3, the east ends of Sandfly Bay and Boulder Beach, respectively, lie at approximately 45°54' S. They are more commonly visited, especially Area 2, by people in both small and large groups. The egg-and-chick mortality of 19 nests in these areas was observed. Four nests were located in Area 1, six in Area 2, and nine in Area 3. The distance of the nests from the sea, at highwater,ranged from 12 to 203 metres measured over the shortest discernible routes. Each nest was visited at one-to-two week intervals from the last week in September 1971 through to the tenth week after hatching in each nest.

The main observations on egg-and-chick survival in this 1971-72 sample are summarized in Tables 1 and 2. Comparisons with Richdale's data are also shown in Table 1, footnotes showing for which years it was possible to make comparisons with his data. The tenth-week data of the present study are compared with Richdale's weeks 8-11.

TABLE 2

Yellow-eyed Penguin Egg-and-Chick Survival in Terms of Breeding Area.

Condition	Area 1	Area 2	Area 3	Total
Eggs laid	8	12	18	38
Eggs hatched	6	8	16	30
Eggs addled	2	2	2	6
Eggs missing	0	2	0	2
Chicks missing	4	3	3	10
Chicks surviving 10th week	2	5	13	20
10th-week chicks surviving as % of eggs laid	25.0%	41.6%	72.2%	52.6%
10th-week chicks surviving as % of eggs hatched	33.3%	62.5%	81.2%	66.6%

Clearly, the survival percentages for the 1971-72 sample are substantially worse than Richdale's means, even though the hatching and addling percentages approximate his figures closely. In fact, over a 16-year period of Richdale's work there were only two years in which the percentage of hatched young *reared* was lower than the present sample's 66.6% of hatched young alive in the tenth week (Richdale 1957; Table 67). The present data and, presumably, Richdale's are both conservative. For example, the fact that a chick was noted missing from a nest does not establish its death. However, when a chick's absence was noted, a careful search of the surrounding area was made, and on subsequent visits as well, before it was concluded that the chick was indeed dead.

It is, of course, possible that 1971-72 was a bad year similar to 1938-39, described by Richdale and attributed to a shortage of food. A look at survival rates in terms of the three breeding areas as shown in Table 2 indicates, however, that this was in no way the case. The three areas differed markedly in penguin survival rate, although Areas 2 and 3 are similar physical environments and share the same fishing grounds. The two areas do differ in density of human traffic. On visits to Area 2 we almost always encountered other people, often in groups of five to fifteen and often in the very breeding area. On the other hand, on visits to Area 3 other people were rarely seen, and never in large groups or in the breeding area. Two of the six nests of Area 2 lay immediately next a lateral trail shared by penguins, people and a few sheep. From the first of these

two nests the eggs disappeared; by the nest was found an empty beer bottle. From the other nest, nearby, both chicks subsequently disappeared. Thus both of these nests were total losses. Three nests had one surviving chick in the tenth week and only one had two chicks at that time for a 41.6% survival rate. The much-less-frequented Area 3 had a tenth-week survival rate of 72.2% and no total nest losses. One nest, in a hollow at the base of a bluff, in which only one chick survived showed, however, the clear imprints of sheep hooves. The comparison of Areas 2 and 3 then plausibly suggest that egg-and-chick survival is favoured by "lesser visibility," i.e., fewer people. Area 1, with the highest mortality, is, however, that area least frequented by people. We never saw anyone in this area. The mortality can be accounted for, we think, by the substantial population of sheep, dogs, and cattle. In one of two nests in Area 1 where only one chick survived, cattle grazing at the very entrance to the nest, which was in Lupins *(Lupinus arboreous)* at the edge of a meadow, might easily have trodden on a chick. A third nest, high on an open slope, was readily accessible to dogs. Both chicks disappeared from this nest during the first post-hatching week and no adult penguins were seen in the vicinity of this nest on subsequent visits. In the fourth nest both eggs became addled but here two adult penguins, presumably the parents, were frequently seen in the nest location up to 99 days after the first egg was laid.

CONCLUSIONS

It is our view that Yellow-eyed Penguin egg-and-chick survival on the Otago Peninsula is clearly being adversely affected by farm-animal and human interference. This view is consistent with both the tabled data and the other observations made in the breeding areas sampled. It is, nonetheless, a hypothesis. However, the fact that Areas 2 and 3 are very similar in every apparent way, except for the frequency of human visitors, makes this hypothesis tenable.

The small number of nest areas and nests followed in the present study is, of course, too limited to allow confident conclusions about Yellow-eye survival rates. But the data surely are not encouraging and indicate the need for a long-term population study over a larger number of nest areas which represent both the geographical distribution of the Yellow-eyed Penguin and the variables which may affect the survival of this unique New Zealand bird.

ACKNOWLEDGEMENTS

The observations reported here were carried out while one of us (C.L.R.) was on leave from Colorado College, Colorado Springs, U.S.A., as Visiting Professor of Psychology at the University of Otago We wish to thank Mr John Darby of the Otago Museum and Mr Alan Wright, the Otago Peninsula Ranger, for their help in selecting nesting areas.

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SHORT NOTE

SPOTTED SHAGS NEST AT WELLINGTON

During the summer of 1972, an unusually large number of Spotted Shags *(Stictocarbo punctatus)* were observed feeding and roosting in several coastal situations around Wellington.

On 21 October 1972, Mr Tudor Atkinson of York Bay was passing a small island on the south side of Somes Island in his boat when he noticed a colony of Spotted Shags on a cliff face. Seven were sitting on nests. On 27 October, I visited the colony with Mr Atkinson and on this occasion 13 birds were present and three nests contained chicks a few weeks old. It was not possible to determine whether the four remaining nests contained eggs or chicks, as the parent birds were sitting too closely.

This is the first time that Spotted Shags have been known to breed in the Wellington area and it is to be hoped that the colony will become permanently established and will not be interfered with by people passing it in boats.

J. LISLE KENDRICK

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REACTIONS OF BLUE DUCK TO RECORDED CALLS OF THEIR OWN SPECIES

By ANTHONY J. WHITTEN

ABSTRACT

The technique of using recorded calls in order to induce territorial Blue Duck to show themselves is described. Its value as a census tool is discussed. On the last night of experimenting the Blue Duck mated, possibly caused by the stimulus of 'rival pair' sounds.

INTRODUCTION

Between 3 and 8 August 1971 Blue Duck *(Hymenolaimus malacorhynchos)* were watched on the banks of the Ruakituri River 25 miles (40 km) north-north-west of Wairoa. The aim was to establish whether the reactions of wild Blue Duck to calls of a potential 'rival pair' were such that the technique could be used in census work, and to establish the size of the territory. Blue Duck frequently hide during the day (Kear & Steel 1971) and walking along a river counting those visible may result in a misleading total (I. Hogarth pers. comm.).

The Blue Duck is unusual among waterfowl in being territorial. It will readily attack conspecifics and other species that enter its particular stretch of river, and Kear & Steel (1971) are of the opinion that the drake's voice is the main signal keeping pairs apart. It was wondered whether the birds would react in any way to tape recordings.

METHODS

The tape used was No. 66 of the Wildlife Service's Library and it was played on a Philips portable tape recorder. The recording consists of a series of simultaneous calls from both sexes starting with the coarse 'cra-ak' (Falla, Sibson and Turbott 1970) of the female.

The experiments were performed at a particular site where the stream was relatively slow because the recording was insufficiently powerful to be heard over breaking water. Blue Duck had been seen in this area in the evening and a terrace enabled the observer to conceal himself.

On the first two nights, around 4 p.m., the Blue Duck were sitting on a boulder about 40 metres (44 yds) away when the recording was first played. They reacted immediately by looking around. The male whistled (the '*whee-ooo*' call of Johnsgard (1965)) and flew out of sight to the right. Having found his expected neighbour absent, perhaps, he returned and landed nearer to the middle of the stream close to his mate who was feeding. He flew again, this time landing within sight, and by flying backwards and forwards, each time reducing the distance he flew, he found the sound source (Fig. 1). Having done so he returned to the rock where his mate was and then flew straight towards the recorder turning when about five feet away, and landing in the river ten feet away. He gazed, 'chin-lifted,'

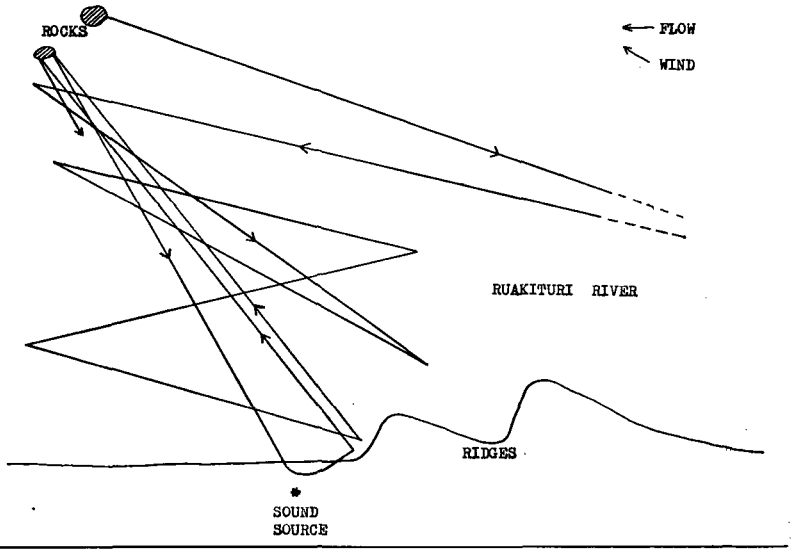

FIGURE 1 — Approximate route taken by male Blue Duck when establishing source of sound and ' attacking.'

whistled and then flew back to his rock only to ' attack ' again. He ' attacked ' five times on the first night and four times on the second. After the third flight on the second night he had what might be described as ' a fit of confusion.' He looked around him, circled twice and flapped his wings all very rapidly.

On the third night the experimenter sat in the same place, wore the same clothes but as a control did not play the tape. Neither bird showed any interest.

On the afternoon of the fourth day, the pair of Blue Ducks were found sleeping behind some rocks 30 metres (33 yds) away on the opposite bank. The tape was played at 4 p.m. and woke them; the male climbed onto a rock and whistled. It was thought that he was about to fly at the recorder for he was ' chin-lifting,' when he slid into the water towards the female. It looked as though they were treading water to stir up sediment as I had seen captive Blue Ducks do at the edge of the duck pond at the Mt Bruce Native Bird Reserve, Wairarapa. This is common waterfowl behaviour not before recorded as occuring in the Blue Duck (Kear & Burton 1971). However, on closer inspection with fieldglasses, it was seen that he was positioning himself over the female for copulation. They were in the shallows with the female almost completely submerged except for her head and the male had his body about 35° to the right of hers. He mounted four times, getting on from her left and leaving on her right, and neither bird was heard to make any sound.

When the male had dismounted for the last time, the female flapped her wings and swam, or floated, downstream as the male drank. The recording had been playing throughout, but when he followed her to some rapids it became impractical to continue. These observations agree with those made by T. H. Steel (Kear & Steel 1971), in that the male mounted on her left and got off on the right, there were no calls and the birds copulated a number of times in rapid succession. There was no elaborate post-copulatory display.

DISCUSSION

The technique of playing recorded calls certainly seemed to make one male agitated enough for him to ' attack ' the sound source. A limitation is that in fast flowing rivers the recording would have to be very loud. However, the technique would probably be quite suitable for censusing the high reaches of streams in the bush.

It is not known whether the mating sequence was caused directly or indirectly by the calls of the ' rival pair.' The observation is of interest in that copulation occured very early in the year. However the pair might conceivably have been close on breeding. A nest with seven eggs, by the headwaters of the Wharekopae River in the Rere area, was visited on 9 August which, according to Kear (1972), is the earliest date ever recorded for a Blue Duck nest with an apparently complete clutch.

ACKNOWLEDGEMENTS

I am most grateful to the Winston Churchill Memorial Trust who financed my trip to New Zealand to study the methods of conserving the endemic birds as one of their 1971 Fellows.

I would like to express my thanks to Mr T. H. Steel who arranged for me to stay and study the Blue Ducks, to Mr P. Morrison of the New Zealand Wildlife Service who lent me the tape, and to Dr Janet Kear of the Wildfowl Trust, Slimbridge, England, who stimulated my interest in the Blue Duck, and suggested this particular line of study.

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THE SUBSPECIFIC STATUS OF THE NEW ZEALAND POPULATION OF THE LITTLE OWL, Athene noctua (SCOPOLI, 1769)

By F. C. KINSKY

ABSTRACT

Two distinct colour phases of the Little Owl occur in New Zealand. A comparison of a specimen of each with large series of European and British skins shows that the New Zealand birds cannot be separated from either the West German or the English specimens. The status of the subspecies of the Little Owl and their European distribution is given with particular reference to the colour phases present. It is considered futile to ascribe a specific status to the New Zealand population before a thorough revision of the European forms of *Athene noctua* is under taken.

INTRODUCTION

The Little Owl *(Athene noctua)* was first introduced to New Zealand by the Otago Acclimatization Society in 1906. Fourteen birds from a consignment of 28 specimens received from Germany were liberated at Ashley Downs, and the remaining fourteen were liberated at Alexandra (Thomson 1922). Following these first liberations more introductions, all by the Otago Acclimatization Society, were made in 1907 (39 birds), 1908 (80 birds) and 1910 (72 birds) respectively. Thomson did not mention where the subsequent (1907-1910) consignments were received from, but it is commonly assumed that probably all arrived from Germany (Vaurie 1965: 611). Since then Little Owls have firmly established themselves throughout the South Island (except for the high Alpine regions), and several unconfirmed reports of their occurrence in the North Island are known.

Vaurie (1965) under the heading *Athene noctua noctua* mentioned that this race was introduced to New Zealand from Germany and therewith implied that the New Zealand population belongs to, or originated from, the nominate race, *Athene noctua noctua.*

Recently Niethammer (1971) has made an attempt to ascertain the subspecific status of the New Zealand population of Little Owls from specimens actually collected in New Zealand and came to somewhat different conclusions.

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THE SUBSPECIES OF *Athene noctua* AND THEIR EUROPEAN DISTRIBUTION

The distribution of the species *Athene noctua* is a very wide one and its range covers more or less the entire Palearctic Zone, excluding the far northern areas (such as the Scandinavian Peninsula and northern Siberia) and Japan. The Little Owl did not naturally breed (although it is known to have occurred on migration) in Great Britain until its introduction in the 19th Century.

Many subspecies of *Athene noctua* have been described, and Peters (1940) lists a total of 21 subspecies including 6 subspecies inhabiting Europe. Vaurie (1965) reduced the above list to 6 subspecies inhabiting the Palearctic Region, and both Witherby *et al.* (1948) and Vaurie (1965) list only 3 subspecies within the European area, i.e. *Athene noctua noctua* (Scopoli, 1769), *A. noctua indigena* Brehm, 1855, and *A. noctua vidallii* Brehm, 1858. The differences between these three subspecies are mainly based on (comparisons of) plumage characters, i.e. the basic colour of the back and head, the degree of contrast of the light spots on the back and head and the intensity of the dark streaking on the undersides. *A. noctua vidallii* is described as being the darkest, *A. noctua noctua* as being the paler and more rufous in colouring (Witherby *et al.* 1948; Bannerman 1955 and Vaurie 1965) and *A. noctua indigena* as being the palest (Witherby *et al.* 1948) and more rufous than the nominate race (Vaurie 1965).

In broad terms the distribution of these three European subspecies can be stated as follows: for *A. noctua vidallii,* Western Europe, including France, Spain and Portugal, for *A. noctua noctua* Central Europe, from Denmark and Germany to Italy and east to Poland and Central Russia. Finally for *A. noctua indigena* South Eastern Europe, including the Balkan Peninsula and Southern Russia. Most European authors agree on the above general distribution. However, widely differing opinions have been published in recent literature concerning the geographical separation (boundaries) between the central and western European subspecies of *Athene noctua.* Peters (1940), Witherby *et al.* (1948), Bannerman (1955) and Vaurie (1965) included Holland and Belgium, as well as France, Spain and Portugal, in the area inhabited by *A. noctua vidallii* and Vaurie, in addition to the above, stated that the two subspecies *A. n. vidallii* and *A. n. noctua* intergrade in Western Germany. All four authors therefore classify the English population as belonging to the western European race *A. noctua vidallii.* Contrary to these opinions, Niethammer *et al.* (1964), in the Checklist of the birds of Germany, lists only *A. noctua noctua* as occurring in Germany, and the Commissie voor de Nederlandse Avifauna (1962) and Hens *et al.* (1962), came to the conclusion that the population of Little Owls inhabiting Holland also belong to the nominate race, i.e. *A. noctua noctua.* If this is so, the present accepted classification of the English population is questionable, as most of the introductions of Little Owls to England

were made with birds originating from Holland, and the first birds introduced to England in 1843 originated from Italy (Niethammer 1963: 289).

COMPARISONS OF NEW ZEALAND SPECIMENS WITH EUROPEAN SERIES

Within the New Zealand population two distinct colour phases can be separated, i.e. a dark brown form and a paler brown form. No rufous colouring in New Zealand has, up to the present, come to the notice of the writer. To enable comparisons of New Zealand specimens with European and British series, the writer took two study skins (one of each colour phase) to Europe during 1970. These were compared with large series of *Athene noctua* in the Alexander Konig Museum in Bonn, Western Germany, and in the British Museum (Natural History), London, with the following results.

A. A large series of specimens of *Athene noctua noctua* studied in Bonn consisted entirely of specimens collected in Western Germany. In addition smaller series from France, Holland, Italy and Portugal were present, which enabled comparisons between West German and other Western European populations. It was found that within the West German series of Little Owls three distinct colour phases could be separated easily. These were dark brown, paler brown and rufous. The two New Zealand birds on hand, as to general colour, fitted well within the two true brown colour phases and could not be distinguished from these except by their labels. In addition, no differences in colour were found between the darker of the New Zealand and West German birds, and several specimens of the series of Portuguese birds, which were identified as typical *A. noctua vidalli.*

B. The second series to be investigated was the large series of British Little Owls, labelled as *A. noctua vidallii,* in the British Museum (Natural History), London. Two colour varieties were separable in this series, i.e. a dark brown and a paler phase. Comparing the two New Zealand specimens with these two colour phases, it was found that neither of the specimens was distinguishable from the two respective colour phases of the British birds. In fact, the only difference between the specimens in the German series (Bonn) and the British series (London), was that in the latter, one of the distinctive colour phases of the nominate race, i.e. the rufous one was not represented. This might indicate that the rufous colour phase, so common within the nominate race on the Continent, does not occur in England.

Bannerman (1955), although not mentioning that rufous colouring does not occur in the British population of Little Owls, made the following statement: " If a very rufous-plumage specimen should be found in England it would be unsafe to jump to the conclusion that it had come from middle Europe."

Also in the collections of the British Museum (Natural History) there is a good series (26 specimens) of *A. noctua vidallii,* which originated from Spain. From this series it was evident that even in this race described as being the darkest of the races of *Athene noctua* by Vaurie (1965), striking variations in colour occur. Fourteen of the specimens in this series showed the dark brown colouring typical for the western subspecies *(A. noctua vidallii).* However, the remaining 12 specimens (i.e. 1/3 of the series) were much paler. Some of these were similar to the paler phases found in the British and German series, but others were paler again, in fact much paler than any of the palest *A. noctua* encountered either in the German or in the British series. Bannerman (1955: 201) summed up this confused situation very reasonably by the following statement: " Owls more than most birds exhibit a variety of colouring which cannot always be correlated with geographical distribution, and the little owl has suffered through being split up into a number of races on not too reliable characters."

THE STATUS OF THE NEW ZEALAND POPULATION

Comparisons of New Zealand specimens with West German series and with British series of Little Owls, showed that New Zealand birds cannot be separated from either West German nor from English specimens. The only exception is the apparent absence of the rufous colour phase, so common in West Germany, which does not seem to occur either in England or in New Zealand.

However, Niethammer (1971) mentioned very dark specimens, similar to the western European race *(A. noctua vidalli)* occurring exceptionally in the Rheinland and in Westfalia, and therewith he agreed with Vaurie's (1965) statement, that the two subspecies *A. n. noctua* and *A. n. vidallii* intergrade in the westernmost parts of West Germany. Niethammer (1971: 221, 223) also noticed the two distinct colour phases occurring in New Zealand, and therefore expressed the opinion that all Little Owls introduced to New Zealand during the early part of this century probably originated from western Germany. From the small series of New Zealand specimens available to him for study, he found it difficult to make a decision on the taxonomic status of the New Zealand population (" Bei dieser Sachlage ist eine Zuordnung der Neuseelander besonders schwierig "). Nevertheless he implied that both subspecies, *A. n. noctua* and *A. n. vidalli,* occur in New Zealand (" Neuseeland . . . . *Athene noctua* . . . . *vidallii* ≷ *noctua").*

In the present writer's opinion the differences between the two above subspecies are so small and geographically overlap to such a degree, that identification of individual specimens is not only often exceedingly difficult, but in many instances is impossible. The writer agrees with Bannerman (1955) that the characters, as described, " cannot be correlated with geographical distribution," and believes that

it is futile to ascribe a subspecific status to the New Zealand population before a thorough revision of the European forms of *Athene noctua* is undertaken.

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A MANX SHEARWATER (Puffinus p. puffinus) IN NEW ZEALAND

By F. C. KINSKY and J. A. FOWLER

ABSTRACT

The first recorded occurrence of a Manx Shearwater in the New Zealand region, being also the second record from the Australasian region, is reported. A description of the bird is given and a table presented of the main characters separating the Fluttering, Manx, and Hutton's Shearwaters since it seems possible that Manx Shearwaters, when present in New Zealand waters, associate with flocks of Fluttering Shearwaters and may be confused, as beach specimens, with both this species and Hutton's Shearwater. The breeding cycle and post-breeding migrations and movements of the Manx Shearwater are outlined and discussed to account for the southern occurrences of this species.

INTRODUCTION

On June 26 1972, following a prolonged period of cold weather and strong southerly winds, Mr T. L. C. Symmes of Wadestown picked up a freshly dead medium-sized shearwater washed ashore on a beach on the headland separating Karehana Bay from Pukerua Bay, on the Wellington west coast. As the bird was in excellent condition, it was handed to the Dominion Museum, where it was identified as a Manx Shearwater (*Puffinus p. puffinus* Brunnich, 1764). The bird on dissection proved to be a juvenile male with very small (3 x 1mm) black testes, this indicating that it was less than 1 year old, having flown from its home colony about 9 months earlier. Its plumage was in fresh condition and no moult was detected. The bird was thin, but not emaciated and its stomach was completely empty.

The description of the bird is as follows:

Entire upper parts sooty black, including forehead, crown, lores, upper neck, back, upper wing coverts, rump and upper tail coverts. The dividing line between the black upper parts and the white under parts is well below eye level and continues along the sides of neck with only a narrow line of grey suffusion between the two colours. Primaries, secondaries and tail feathers sooty black, outer primaries somewhat lighter brownish black at bases of inner vanes. Under parts pure white. Under wing coverts along leading edge of wing mottled slate grey, forming an obvious dark leading margin, extending in triangular form towards the centre of the under wing in the elbow region. The apex of this triangle nearly reaches the greater under wing coverts, which in that area are grey with dark shafts (Fig. 1). Remainder of under wing coverts pure white. Longest axillaries mainly white, with broad black terminal bands and

slaty dusting on terminal end of white areas. Shorter axillaries same as longest, except for additional white terminal edging. Exposed undertail coverts white, but lateral feathers with outer webs black, forming broad black lateral bands. The two longest, concealed, undertail coverts black, with white bases to inner vanes. Bill dark lead grey, with lower mandible somewhat lighter. Iris very dark brown. Tarsus pink with black edges on outer side, pale flesh on inner side, outer toes black, centre and inner toes pinkish white, webs light grey.

Measurements:

Bill:	35.3mm	Wing:	239mm
Tarsus:	47.1mm	Tail:	72mm
Toe:	50.5mm	Weight:	275g

The colour pattern and the measurements of this specimen conform with published data, except for the presence of the darker triangular area in the under wing which is not mentioned in available literature. The under wing of both adult and immature Manx Shearwaters is described as being pure white, except for darker leading edge and white and black axillaries by Murphy (1936), Witherby *et al.* (1948) and Bauer & Glutz von Blotzheim (1966).

BREEDING DISTRIBUTION OF MANX SHEARWATER

Manx Shearwaters breed on islands and rocky coasts mainly in the eastern North Atlantic, such as: islands off the south coast of Iceland, the Faroes, Hebrides, Orkneys, Shetlands, cliffs off and on the coasts of Ireland, islands off the west coast of Great Britain and off the coast of Brittany, on the Azores, Madeira, Salvages and on Bermuda (Bauer & Glutz von Blotzheim, 1966). Breeding birds start occupying burrows in February and March, eggs are laid in April and May and by late September (exceptionally by October) chicks leave the colonies, after having been abandoned by their parents for up to 2 weeks (Harris 1966).

POST-BREEDING MIGRATION OF MANX SHEARWATER

Immediately following the breeding season adult and immature Manx Shearwaters migrate in a southerly direction, passing the northern coast of Spain into the central Atlantic. The main wintering grounds appear to be in the southwest Atlantic with concentrations along the eastern coast of South America between latitudes 40°S and 38°S (Thomson 1965 and Cook & Mills 1972). Thomson (1965) reported 38 British banded Manx Shearwaters recovered on the coasts of Brazil, Uruguay and Argentina between September and April. Most of these (32) were recovered between October and December. However, immature (non-breeding) birds may remain in the South Atlantic during the northern summer, as Escalante (1970) mentions a specimen collected in Bal. Atlantida (Uruguay) on 17 August 1968.

FIGURE 1 — Underwing of Manx Shearwater, Pukerua Bay, June 1972. Photo: Trevor Ulyatt, National Museum.

RECOVERIES OF MANX SHEARWATERS

Manx Shearwaters are apparently very rare in the southeast Atlantic and there seems to be only a single record from South Africa, " off Port Elizabeth in the non-breeding season " (Mackworth-Praed & Grant 1962). The species had never previously been reported from the South Indian Ocean or the south Pacific area and therefore the recovery of a British banded Manx Shearwater in Australia in 1961 came as a surprise. Spencer (1962) reported that a Manx Shearwater banded on Skokholm, Pembrokeshire, as a chick in September 1960 was recovered in Venus Bay, South Australia, in November 1961, i.e. during the non-breeding season, just about 14 months after it left its colony the year before. Spencer probably correctly surmised that this bird was caught in the prevailing westerly winds in the South Atlantic and was driven right across the South Indian Ocean, before perishing in the Australian Bight. Thomson (1965) also mentioned this recovery, which he considered a unique exception to its normal distribution pattern.

DISCUSSION OF THE NEW ZEALAND RECORD

The bird found freshly dead on the Wellington West coast on 16 June 1972, although being the first ever Manx Shearwater to be recorded in New Zealand, now constitutes the second specimen reported within the Australasian region. As with the Australian specimen, it may be assumed that it reached the Tasman sea via the South Indian Ocean, although the possibility of a South Pacific crossing against the prevailing winds cannot be discarded. However, while both other records outside the Atlantic area, i.e. Port Elizabeth, South Africa (Mackworth-Praed & Grant 1962) and Venus Bay, South Australia (Spencer 1962) were recorded during the non-breeding season, i.e. during the northern winter, the New Zealand specimen was found in June, i.e. during the breeding season of the species in the northern hemisphere. Harris (1966) found from banding recoveries that very few immature Manx Shearwaters return to European waters following their first winter at sea, and it therefore can be assumed that the majority of one year old birds remain well away from land for at least one more year. Thomson (1965), while pointing out the scarcity of South American recoveries during January and February, speculates that the majority of birds may move to some different waters such as further south to the good feeding areas of the upwelling of the Falkland Current, where chances of recovery would be much less. This suggestion was confirmed by Cook & Mills (1972) during a cruise along the eastern coast of South America in late January 1970. During this cruise Manx Shearwaters were encountered in large flocks off Mar del Plata, latitude 38°S and again, although in smaller numbers, around latitude 49°24'S. This is about twelve degrees further south than the southernmost band recovery of

TABLE

Main separation characters of Fluttering, Manx and Hutton's Shearwaters

Characteristics	Fluttering Shearwater *Puffinus g. gavia*	Manx Shearwater *Puffinus p. puffinus*	Hutton's Shearwater *Puffinus huttoni*
Bill length:			
range mm	28.3 - 37.4	32 - 38	32.2 - 39.4
average mm	33.3		36.4
Wing length:			
range mm	192 - 220	216 - 246	212 - 231
average mm	209		221
Tail length:			
range mm	61 - 67.5	69 - 82	67 - 70.5
average mm	63.4		69
Underwing coverts	From carpal joint outwards *pure white;* between axil and carpal joint *variably smudgy brown*	Mainly *white*, with *mottled slate grey leading edge*	From carpal joint outwards with dark *shafts* and *smudgy brown outer vanes* (immature birds paler outside carpal joint); between axil and carpal joint *uniformly smudgy brown*
Long axillaries	Short, do *not reach* trailing edge of wing; *light buff grey, square-ended* and *white-tipped*	Long, *reach* (almost reach) trailing edge of wing; *mainly white with broad black (or grey) terminal band, oval-ended* and *often white-tipped,* sometimes *pure white*	Long, *reach* (almost reach) trailing edge of wing; *dark brown, oval-ended* and only *exceptionally* white-tipped
Undertail coverts:			
Exposed coverts	*Pure white*	White, but with *lateral feathers* having *black outer vanes* forming black lateral bands to the exposed covert area	White, but with *lateral feathers* having *dark brown edges on outer vanes (exceptionally* pure white) forming variably streaked lateral edges to the exposed covert area
Longest pair (concealed)	Either *pure white* or *white with grey dusting and smudging (exceptionally* light buff-grey all over)	*Black,* often with some *white at base of inner vane*	*Completely* or *mainly dark brown (exceptionally* white with brown smudging)

this species mentioned by Thomson (1965). In these latitudes it is quite possible for some of the birds to be caught by the prevailing westerly winds and to be blown into the South Indian Ocean.

The question inevitably arises of how frequently and in what numbers Manx Shearwaters penetrate into the Indian Ocean. Although numbers may be small, individuals could occur quite regularly in this

area. Of the birds perishing in the Australian region only a small proportion would be stranded on beaches. Accordingly, there is only a chance probability of both retrieval and recognition.

It seems possible that Manx Shearwaters, when present in New Zealand waters, associate with flocks of Fluttering Shearwaters *(Puffinus gavia gavia)*, as a small wreck of the latter species was found to have occurred along the Wellington West Coast at the same time as the Manx Shearwater was picked up.

Manx Shearwaters, although superficially similar to Fluttering Shearwaters can be distinguished from the latter species by being black above, not brown, and being slightly larger, with longer wings and tail. If found in fresh condition identification is not difficult, but if partly deteriorated, or wet and full of sand they can easily be confused with Fluttering or possibly with Hutton's Shearwater *(Puffinus huttoni)*. To help with identification a table was set up, in which the main characteristics and separation points of all these three species are listed. The data on *Puffinus g. gavia* and *Puffinus huttoni* have been obtained from a special study on plumage characteristics of these two species (F. C. Kinsky, in prep.) now nearing completion, and those on *Puffinius p. puffinus* were extracted from Witherby *et al.*, (1948), Bauer & Glutz von Blotzheim (1966), and from specimens in the Dominion Museum collections. A similar table has been presented by Serventy, Serventy & Warham (1971) but faulty type setting has rendered it inaccurate.

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THE BANDED DOTTEREL, Charadrius bicinctus: POHOWERA OR TUTURIWHATU? — CALL NOTES AND BEHAVIOUR

By J. M. CUNNINGHAM

ABSTRACT

The history of the Maori names of the Banded Dotterel is discussed. Some of its call notes are described with the circumstances in which they are uttered. An account is given of some nesting and other behaviour including mating and of a black mutant.

INTRODUCTION

It is a frequent fact that the more common and well-known a bird is, the less is recorded of its habits. In some respects, this is true of the Banded Dotterel, a rather friendly, quiet but colourful wader well known on New Zealand shingle riverbeds, lake shores, sandy beaches and estuaries. I have spent countless hours watching this charming bird, its nests and chicks, and have simply taken for granted its varied calls. However, hearing a completely strange call from what in early twilight appeared to be a cock Banded Dotterel (J. M. Cunningham MS) prompted me to examine the literature to see if this strange call had been recorded. It was with no sense of surprise that I found published descriptions sadly wanting.

ITS MAORI NAMES: A REVIEW OF THE LITERATURE

It is widely believed that the Maori name Tuturiwhatu, in common usage in modern ornithological works, is an onomatopoeic rendering of one of its calls. But this name was not always applied to the Banded Dotterel. According to Oliver (1930: 283) who gives no description of its call notes other than " a plaintive cry " the species first appeared in New Zealand literature in Gray's account (1844). Gray (p. 12) described it as *Hiaticula bicincta* (syn. *Charadrius bicinctus*) but did not quote its Maori name or its call. For the New Zealand Red-breasted Dotterel *(C. obscurus)* he stated (p. 11) " This is called, according to the drawing of Forster, Hapoho-era, by the natives of Dusky Bay " though Percy Earl called it Moakura. Under *C. virginianus* (syn. *xanthocheilus*), however, which was the name of the Golden Plover, *Pluvialis dominicanus, (vide* Mathews 1927: 157) he gave the Maori names as Tuturiwhata, Takihikaki or Tuturuata. I am unable to find any further reference to Takihikaki but the former spelt Tuturiwhatu is now commonly regarded as the Maori name of the Banded Dotterel and Oliver (1930) used it for both this species and the New Zealand Dotterel, reserving Tuturuatu for the Shore Plover *Thinornis novaeseelandiae.* This bird was recorded by Gray (1844: 12) as Doodooroo attoo (Forster) or Kukuruatu (Percy Earl). Hutton (1871: 24 also used Kukuruatu for the Shore Plover, giving Tuturiwata for the New Zealand Dotterel and Pohowera for

the Banded Dotterel but not naming the Golden Plover. Buller (1882: 49) followed this (with the spelling Tuturiwatu) and Hutton & Drummond (1904: 204) repeated the same names, with a further alteration to Tuturiwhatu in the third edition (1923).

The same authors by the way, give Tuturipourewa for *Himantopus leucocephalus,* the White-headed Stilt. A further source of confusion is the similarity of Pohowera with Forster's Hapoho-era for the New Zealand Dotterel.

Dictionaries are not usually regarded as being outstandingly correct in the niceties of natural history nomenclature but it is of interest to note that none of these names is given in the 2nd edition of Williams' Maori dictionary (W. Williams, 1852). The 4th edition (W. L. Williams 1915), however, includes " Pohowera. Charadrius bicinctus, a bird " and also " Turuatu, a bird." The 5th edition (H. W. Williams 1917) gives " Pohowera. Ochthodromus bicinctus, banded dotterel; a bird = tuturiwhati " while under this latter name the reader is referred to Turiwhati. This is given as the leading synonym of a long string of variant spellings including tuturiwhati and tuturuwhatu, and refers to Octhodromus [*sic*] obscurus, dotterel." *Ochthodromus* was used by Hutton & Drummond for *Charadrius* and, as acknowledgement is made to Hutton & Drummond, it is not surprising that their nomenclature is in agreement. The 6th edition (H. W. Williams 1957) is much the same and as Oliver was consulted, and his help with the scientific names acknowledged, it is a wonder that he did not bring the edition into line with his own writing.

It appears that Oliver in 1930 was the first to depart (unjustifiably, unless he considered that early records of the Shore Plover really referred to the Banded Dotterel, which is not beyond possibility although he does not hint at it) from the long established usage of Pohowera for the Banded Dotterel and variants of Tuturiwhatu for the other plovers. These names, however, were probably used for any small plover-like birds seen in a suitable habitat and it is doubtful if there is any validity in tagging any of them to a particular species. Most recent publications, notably the New Zealand Checklist (OSNZ 1970) have followed Oliver and it is suggested that Pohowera be reverted to for the Banded Dotterel.

THE CALLS

Aggressive: The call in question may be heard on the Bigwoods' record (1959). I have for many years been recording this as " che-ree-a-ree " repeated quickly several times. The timbre of the call is very scratchy, reminiscent of a fantail's. This is what Stidolph (1971: 72) describes as flight calls, " quickly repeated notes " chair-kik-kiker, chair-kik-kiker." It is curious that although he has probably studied Banded Dotterel more than anyone else in New Zealand he does not mention that this is a territorial call which in my experience, is used only when one bird is chasing another from its territory. My notes record it between August and November, and, though it can probably be heard later than that, I certainly have never heard it outside the

breeding season. I suspect both sexes use it but Soper (1963: 53) said " when a male Dotterel chases another Dotterel out of its territory the chase is often accompanied by a call note for which the Maori name of the Dotterel ' Tuturiwhatu ' is an onomatopoeic description, the accent being on the second syllable, the final ' u ' silent, and the call rapidly repeated four or five times." Modern research, however, shows that the final " u " on such Maori names (c.f. Paraparaumu) used not to be silent. Why should it be?: Europeans first spelt Maori names as they heard them. Forster wrote " Doodooroo attoo " and this has apparently now evolved through various spellings into " Tuturi-whatu " which should therefore not have the final " u " silent. Thus, this name cannot justifiably be said to represent the call of the Banded Dotterel.

Unless this is what Moon (1960: 102) described as " a rippling liquid note sounding like 'qreep'," I am unable to find any other description of this call although, of course, every observer of Banded Dotterels will know it. Moon also stated: " a high pitched whistling ' twrip ' is also sometimes used " but I cannot identify this call.

Warning: There are ample references to the commonest call, variously described as " pwit pwit," " twit-twit," " twink-twink " and so on. Stead (1932: 81) gave the best description: " Their call at all seasons is a staccato, high-pitched " Pit," sometimes repeated twice quickly, but often uttered as a single syllable at intervals up to thirty seconds, though much more rapidly when in flight then when on the ground. If a bird is standing still, it gives its head and body a little upward jerk every time it calls, the effect being exactly as though it had an attack of hiccoughs." This note is clearly a warning call and may be heard at any time of the year when an intruder, man or dotterel, appears. When uttered other birds often look up and become more alert to possible danger. However, on occasions, particularly outside the breeding season, when birds, often in small flocks, are sitting still and are almost invisible in the surrounding stony or grassy ground, it is a single " pwit " which gives them away and makes their presence known. If their nest is approached however, the pair will wheel round and round, sometimes settling at a distance but soon taking off again. Their calls become much more rapid and change their character so they may then be described as " peet peet." Again, my notes record this only in the breeding season and it is an almost invariable indication of the presence of eggs near hatching or young chicks, and I have found many a nest or chick by recognising this call which becomes more agitated the nearer the nest or chick is approached. Both sexes call " pwit " in the same pitch, and although both call " peet " the cock's is usually a deeper clanging cry usually followed by the thinner higher pitched " peet " of the hen. This answering call is a sure indication of the presence of young chicks.

Distress: When eggs are near hatching or have just hatched, either or both birds of a pair may indulge in distraction displays when " pitiful-sounding distress noises " (Soper 1963: 53) may be uttered while the bird fans its tail and quivers its opened wings, perhaps

lopsidedly, the so-called "broken wing trick." Quite frequently, however, this may be a silent display, and occasionally " tiny little squeaks " or " peet peet " calls are given. Very rarely the hen has been heard to make what can only be described as a " moaning " noise, not at all like a bird call and I believe this is the most extreme stage of her anguish for the chicks' safety. It was noticeable that one hen would display fully only when she was behind me, about a yard away, as I was kneeling beside her nest. She immediately ceased when I swung round and she caught my eye, and ran behind me again to recommence her flutterings. It was ludicrous to try to photograph her by holding the camera over my shoulder and putting my eye to the view-finder at the last moment.

Communication: There remains but one call which for want of a better name, I have labelled a " communication " call. It may be heard when a small group of birds takes off and I have not heard it in the breeding season. It is likely however that small groups of non-breeding birds would utter the call at any time. Each bird probably gives but one note repeatedly, and as the birds fly there is heard a continual quiet but melodious " twittering." It is hard to imagine any purpose for the calls other than to keep the birds of the flock together.

THREAT DISPLAY AND DISPLACEMENT ACTIVITIES

When a cock Banded Dotterel enters the territory of a nesting pair, there will often be a lot of excited chasing and calling of " che-ree-a-ree." Before rising, all three birds may stand up high displaying their breasts at each other. In this display the bands are displayed to best advantage, and are widened, particularly the black upper one, because of the upward stretching. They must surely look intimidating to each other at ground level and at close quarters. Sometimes however the intruder may stand his ground and the other cock may perhaps be torn between the desire to drive the other bird away, return to the nest, or " order " the hen to, as described by Stead (1932: 88). He may then indulge in a displacement activity of picking up and playing with small stones or pieces of grass. On one occasion it was a 2″ square of crumpled paper, the wrapping from a sweet, which was carried past the hen and put down three or four yards away. Stidolph (1971: 73) described this as " false feeding." In the episode he referred to, which I was also fortunate to witness, the behaviour was apparently also brought on by a conflict of possible actions for the cock, to drive the intruding cock away or to protect the nest (in the absence of the hen) from the nearby observers.

MATING

One morning I was watching a pair beside their nest when the cock quietly mounted the hen. The third and final egg of this clutch was in the nest next morning. Mating, however, may occur at any time of day, perhaps more usually in the late afternoon, with apparently no preliminary display, and the act itself is completely

silent. The cock remains mounted, absolutely motionless, for a long time. One pair was watched for 10 seconds, another for a half minute and a third for 40 seconds. The cock then slips down, both birds usually shuffle their wings for a few seconds, and he may peck at her. They then stand quietly beside each other or a yard apart for a little while. This may be half a minute or longer without movement, and in one case, 5 minutes 10 seconds. The hen is usually the first to move and may eventually feed nearby, lead both birds in flight, form a scrape, or sit briefly on a nest with an incomplete clutch. Mating probably usually occurs close by the nest, and I have never observed it outside the birds' territory, although, of course, they often feed away from it, perhaps on a small lagoon or backwater in amicable company with other birds from neighbouring territories.

A MELANISTIC DOTTEREL

In January 1969 I had under observation what appeared to be a melanistic Banded Dotterel. It was first seen at the Seaview Reclamation, Wellington Harbour, on 4 January and very complete notes were taken on the spot. These were read to Dr R. A. Falla who later studied the bird and agreed it was exactly as he visualised it from the description. It was observed at close quarters on several occasions over the next 15 days and subsequent notes agreed with those taken on the first sighting.

When first seen it was with a cock and a full-grown Banded Dotterel in a sparsely grassed area of the reclamation. This alone would have served to distinguish the bird as unusual because birds from the various territories on the reclamation, which were under close observation at the time, always avoided this area. Its subsequent movements, however, showed that it ranged fairly widely.

It was a very dark bird, not unlike a starling in colour in a quick glance. Its head was ashy grey with the back darker. As the coverts had brownish tips it had a slightly speckled appearance which led me to believe it was a young bird. Young Banded Dotterels have this speckled appearance and can be thus distinguished for several weeks after first flying. Another characteristic of young birds is that they have buffy head markings and this bird had indeterminate buff eyestripes, one above and behind the eye and another larger one below the eye extending to the nape. Its neck, breast, belly and sides were quite dark although with the slightest russet tinge. However, where the lower red band should have been the breast was much darker, almost black but still with a russet suffusion. The black was lop-sided, higher on the left than on the right. The tail above and below was dark but the under-tail coverts, seen clearly when the bird dipped its head to feed, back to the observer and covering an area of about 2″ long and 1¼″ wide were of a light fawn. This area is white in a normal bird. In flight the entire upper surface appeared uniformly dark but the underwings, coverts and axilliaries, were lighter. The bill was black, perhaps a fraction larger than normal, and gave the impression of the slightest upturn at the tip.

Legs were dark with a greenish toning. At all times it appeared slightly larger than the other Banded Dotterels with which it associated, and its legs certainly were longer. In addition, it lifted its feet higher at each step, thus having a springy stride so much so that twice I recorded it as " bouncing " and " bounding " along. This action alone, colour apart, would have drawn attention to it but in other respects, it sunned itself lazily, fed actively and flew just as normal birds. Its flight call was, however, a very feeble " peet peet," the characteristic of a hen. Because of this and the fact that it was never seen without a cock in attendance I would have inclined to believe it was a hen, but its facial markings and speckled back suggested a young bird. There were usually also two full-grown young with it and sometimes a hen, but whether this indicated a family party or just curiosity is not certain. The possibility cannot be ruled out that it was bred in one of the territories in which the nest was never discovered.

Curiosity there certainly was. On one occasion it was found bathing vigorously in a small rain soak. It dipped its head and splashed and then bounced its rear parts up and down in the water in an extraordinary manner, all its underparts being soaked. When Banded Dotterels bathe, others often join in but this bird was watched (one is tempted to say with amazement at the remarkable performance) by a hen two feet away, a cock and two full-grown young also nearby. It kept this up for ten minutes and after it had finished it stayed behind after I had flushed the others and again allowed me to examine it at leisure.

Colour photographs of it beside a cock Banded Dotterel taken with a 400mm " monocular " lens are unsuitable for reproduction but clearly show its dark colour and slightly larger size.

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FIRST NEW ZEALAND RECORD OF THE GENTOO PENGUIN (PYGOSCELIS PAPUA)

By J. T. DARBY and A. W. WRIGHT

ABSTRACT

The first record of a Gentoo Penguin, a female found on St Kilda Beach, Otago, on 22 September 1970, is documented.

On the evening of 22 September 1970 a penguin of unusual appearance strode ashore on St Kilda Beach, Otago Peninsula. The presence of this unusual bird prompted some students (names unknown) to arrest this bird and hand it to the local police station who in turn handed over this bird to the Wildlife Ranger of the Department of Internal Affairs.

There was little hesitation by local ornithologists in identifying this healthy and vigorous immigrant as a Gentoo Penguin, *Pygoscelis papua.*

It is not altogether surprising to at last record this penguin from New Zealand waters particularly as Kinsky (1969) has already recorded three sightings of this species at Campbell Island.

Sightings of the Royal Penguin *(Eudyptes chrysolophus schlegeli)* which occupies a similar breeding zone to the Gentoo on Macquarie Island have been previously made in Otago waters and it has been recorded as far north as Hawkes Bay (OSNZ Annotated Checklist 1970). Warham & Keeley (1969) recorded the presence of a Macaroni Penguin *(E. chrysolophus chrysolophus)* at Snares Island and also a Royal Penguin (Warham 1971).

The white band of feathers across the head does not quite meet the eye, neither is the eyelid white, these characters together with the uniformly dusted grey throat merging to the white breast indicating that this specimen was a juvenile, probably a second year bird (Downes *et al.* 1959).

This specimen has been retained as a mount by the Otago Museum; catalogue number A72:1. and the carcase preserved in iso propyl alcohol.

The following measurements were taken five days after capture:– Weight on capture (22/9/70) approx 5.5 kg, at death 5.094 kg; sex female; total length 69 cm; tail 140 mm; tarsus 34 mm; mid toe 83 mm; flipper 257 mm; bill, length 56 mm, width 18 mm, depth 22 mm.

On dissection the bird proved to be in excellent condition and, as expected following five days in captivity, its stomach was empty.

We would like to acknowledge the help and consideration of Constable C. F. Barker, Dr R. K. Dell, Dr G. R. Williams, Mr F. C. Kinsky, Mrs Jill Hamel and Dr R. Smith.

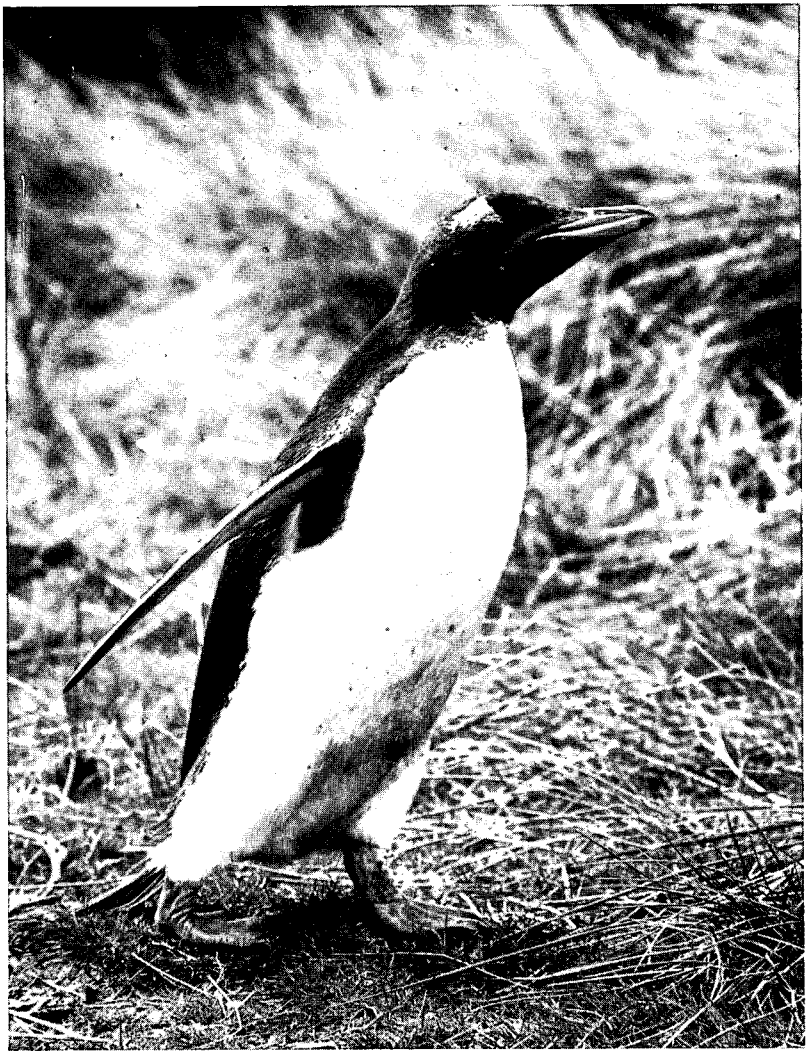

FIGURE 1 — Juvenile Gentoo Penguin *(Pygoscelis papua)*, St Kilda beach, Otago Peninsula, 22 September 1970.

Photo: J. T. Darby

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[*Editor's note:* Classified Summarised Notes 1971-72, *Notornis* 19 (4), includes a record of a Gentoo Penguin found ashore at Tiwai Point, Bluff, 1 November 1970, photographed and returned to sea.]

METHODS AND APPLICATIONS OF NATURAL SOUND RECORDING

By J. L. KENDRICK

ABSTRACT

The use of sound recording equipment, particularly tape recorders, microphones and parabolic reflectors is discussed with special reference to aspects of ornithological field work. Practical hints and advice are offered in this respect.

The use of portable tape recorders for ornithological field work:

Portable tape recorders were first used in the Wildlife Service in 1963 for conservation work with the North Island Saddleback on Hen Island off the North Island coast. Tape recordings of the birds' calls were used to attract them into catching nets for transfer to other islands in the group and for subsequent census work on these populations.

Since that time there has been a tremendous increase in the use of tape recorders for ornithological study and wildlife management, both by members of the public and by the Wildlife Service.

Those searching for rare-bird species have been greatly aided by using tape recorders, and the re-discovery of the Orange-fronted Parakeet in the D'Urville Valley, Nelson, was due to this means.

The time of year, type of call, prevailing weather, characteristics of the individual, and many other variable factors all influence the results obtained. So that the reaction of birds to the playback of their calls can be predicted with reasonable certainty, a great deal of research into biological acoustics needs to be carried out. So far, little has been done in this country, although some research has been carried out into methods of ridding airports of unwanted bird populations. A system used with some success overseas employs recorded distress calls which are played back and produce a reaction in the birds causing them to desert the locality. Much more investigation is needed before the effects of this technique can be predicted with certainty. Under what conditions and for how long the birds can be eliminated from an area can only be determined by thorough research over a long period.

Birds tend to develop differences in voice or dialect after a period of isolation from others of their kind, thus providing an important indication of the beginnings of speciation. There are many factors accelerating the formation of bird dialects and an obvious one occurs when a bird population of one species is permanently isolated from others of its kind. This situation can often be found on offshore islands, particularly remote ones, where there is less chance of a species mixing with mainland individuals. Although dialects among groups or individuals are often evident in different areas there is no doubt that the strong inborn ability of a bird to produce its own song keeps its basic song form in existence.

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This point is demonstrated in Figs 1 *a-b* by the spectrograms of chaffinch breeding song. In this case the New Zealand and British birds have been separated for something like 100 years.

These spectrograms are produced by means of the sound spectrograph, a machine which traces a graphical representation of any sound on paper or film, with a vertical scale in frequency (usually kilohertz), and a horizontal scale in time (usually seconds). Thus, from this spectrogram, it is possible to determine the frequency and duration of any sound. With practice, the " picture " of a recorded sound can be recognised and associated with the sound that produced it. This is made easier when a recording is slowed down in playback as sufficient time is then given to interpret the sounds in the " pictures " made from them.

Another potential use for portable recorders is to gather ornithological data. They have the great advantage of allowing an observer to record observations without transferring his attention from the subject — a problem when writing notes in the field. A further advantage is that a time-reference scale is available if the recorder is run continuously throughout the period of observation.

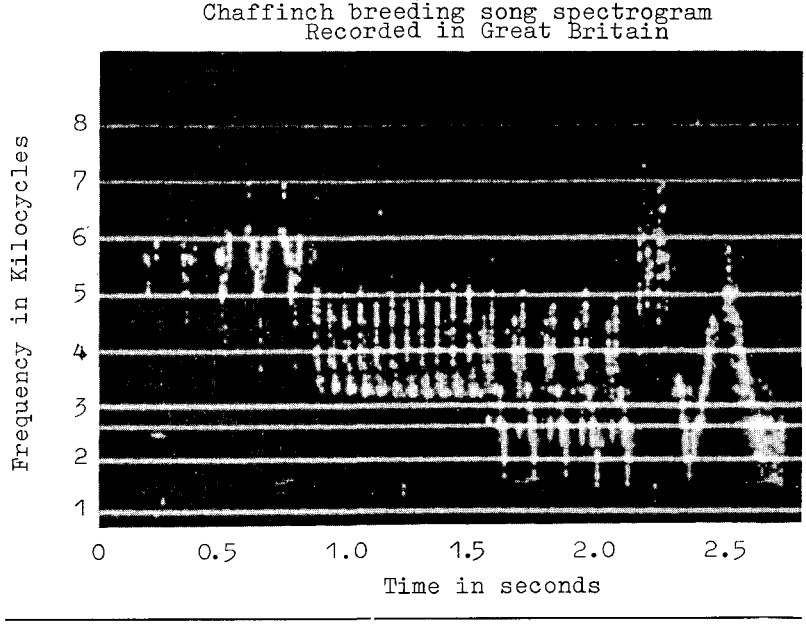

FIGURE 1 *a:* Spectrogram of Chaffinch breeding song recorded in Great Britain.

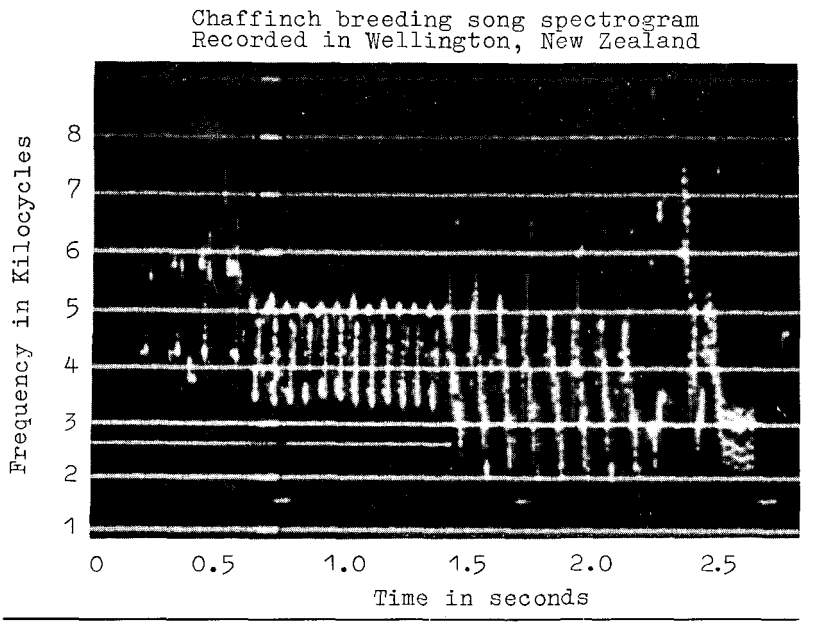

FIGURE 1 *b:* Spectrogram of Chaffinch breeding song recorded in Wellington, New Zealand.

Many other uses for small portable tape recorders will no doubt occur to their owners; but some of the more obvious ones are to attract birds closer for photography or more accurate observation, and to enable their capture in mist nets for examination or banding purposes.

Documentation:

Documentation at the time the recordings are made is essential if the fullest subsequent use is to be made of them. Information should include all relevant details about the subject, its behaviour, and the surrounding environment. These details should be filled in at the time the recording is made. A typical data card is illustrated in Figure 2.

Sound recording equipment:

While it is a fact that, generally speaking, the better the equipment the better the results, it is still possible to achieve very pleasing results with quite simple and inexpensive tape recording equipment. Thanks to great improvements in tape recorder design during recent years, it is now possible to use tape speeds as low as $3\frac{3}{4}$ or $1\frac{7}{8}$ in. per second and still obtain good results. Many cassette recorders now available have the advantage of a self contained tape system that

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Scientific Name Callaeas cinerea wilsoni — **Common Name** North Island Kokako

No. Sex. Age Male adult.

Date Aug. 1971 **Time** 10 am **Weather** Overcast with occasional showers

Locality Pureora State Forest

Topography and Vegetation Man-made clearing in podocarp forest, mainly tall rimu, totara and tawa

Apparent purpose of call

Behaviour of subject Bird was attracted to playback of calls

Reel No. 58 D	**Track No.** 9	**Track Length** 0000 - end of reel			
Recorder Nagra 3	**Mic.** AKG 202 ES		**Tape Speed** 15 IPS		
Parabola 20 in.	**Subject Distance** 100 ft.		**Vol. Level** High		
Quality B. Some noise from vegetation			**Operator** J.L. Kendrick		

FIGURE 2: Sound recording data card as used by the Wildlife Service.

can be instantly changed. Some bird songs are very difficult to record well, even using the best professional equipment with tape speeds of 15 inches per second, but these are a minority.

Microphones and parabolic reflectors:

It must be remembered that a microphone will accept whatever sounds are presented to it, as it does not have the discriminating and interpreting ability of the human ear. This is not usually desirable as the required sounds may be combined with others from the surrounding environment. A solution can be achieved in a number of ways with natural sound recording but the simplest and best method is to place the microphone close to the sound source. This is easy enough when recordings are being made with subjects in captivity or under controlled conditions, but most wild creatures are wary and will not allow a close approach; so other means of obtaining a sufficiently high recording level must be found.

When recording birds, advantage can often be taken of the fact that many use a number of regular song perches or favourite areas where a microphone can be installed beforehand, and the operator can set up his apparatus well away or out of sight. This arrangement requires a long lead between the microphone and recorder and a low impedance output on the recorder. Since many domestic tape recorders have a high impedance output, the solution to this problem is to remove the small transformer from inside the microphone case and

place it near the input socket on the recorder. This then permits a long lead from the microphone. Professional machines have this facility provided.

Some microphones possess directional qualities which favour the sound from one direction at the expense of others. Two excellent but very expensive directional microphones which give useful amplification from a narrow acceptance angle are the " Electrovoice" dynamic type and the " Sennheiser " condenser type. As both are very sensitive to wind they must be provided with a windshield for use in the field. The most widely used type of microphone for outdoor recording is the dynamic (moving coil) microphone which, in general, has the advantage of (1) being very rugged in construction, (2) being of low impedance for long lines to the recorder, (3) giving a satisfactory signal output, (4) producing a reasonable response over the audible frequency range. However, condenser microphones which can produce very high quality results are being increasingly used.

Another way of obtaining directional qualities when recording is by using a parabolic reflector. A microphone is mounted in the centre, or focus point, where all the sound waves meet. Because of the shape of the reflector, all sound waves intercepted will be directed to this one spot thus producing a considerable increase in sound from the direction in which the parabolic reflector is pointed. Other sounds at the side or back of the reflector are not intercepted and are therefore received only weakly. However, if unwanted noises are in line with required sounds these will be picked up and amplified also. This could prevent the effective use of the parabolic reflector in some circumstances.

The larger the diameter of the reflector, the greater the amplification that can be produced, but the heavier and more cumbersome the unit becomes. If the diameter is small, serious attenuation of the lower frequencies will occur and although many bird calls may be above these frequencies some species with low frequency calls may be affected. In the case of a parabolic reflector with a diameter of $1\frac{1}{2}$ ft, the low frequency cut-off will be 488 Hz whereas if the diameter is increased to 3 ft the cut-off point will be proportionately lower, in this case 244 Hz. It is recommended that a metal parabolic reflector be accoustically " dampened," that is, coated on its non-reflective (convex) surface with a sound-deadening substance such as fibreglass, or bitumenous compound. Without this precaution a metal reflector will tend to vibrate at its natural resonant frequency if it is touched, or if it is used in wind, and a drumming sound will be superimposed. Wind can also give rise to unwanted noise as it plays across the lip of the reflector.

Wind is an ever-present problem when recording in the field and special wind shields are available for most microphones. However, it is best not to make recordings in windy conditions. When using a parabolic reflector, the only effective measure is to cover the face of the reflector and microphone with a closely-woven material held

in place by an elastic hem. Some wind shields are effective in cutting back wind noise but reduce high frequencies at the same time. Not only is there a danger of wind blowing over the face of the microphone itself but a higher environmental noise level from wind in the vegetation and other surrounding objects could also be present. When it is vital to obtain a recording in windy conditions it may be possible to shelter the microphone by placing it in a burrow or excavation. Sometimes rocks or trees can be used to give protection.

Use of existing recordings as a field aid:

As many birds respond vocally to play back of their calls and are often attracted to the recorder, existing tapes can be of great value in obtaining new and improved recordings.

In this country the most comprehensive library of natural sounds is held by the Wildlife Service in Wellington. This natural sound collection contains over 150 species, mainly birds, and is widely used by Wildlife staff, other Government departments, clubs and organisations, and members of the public. Copying equipment enables tapes to be made at speeds to suit the users' requirements. A documentation card accompanies each track or recording to provide as much information as possible.

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Editor's note: This paper is a shortened and revised version of one presented at the OSNZ Annual General Meeting, May 1970.

THE SNARES WESTERN CHAIN

By C. A. FLEMING and A. N. BAKER

ABSTRACT

A description of the geography and superficial geology of the five islands forming the western chain of the Snares group is given with observations and illustrations of the birds and seals, based on landing on 2 December 1972. Other visits in 1947 and 1964 are noted.

For many New Zealand naturalists, the bridge and saloon windows of Mr A. J. Black's new research vessel *Acheron* have already become " charm'd magic casements opening on the foam of magic seas in faery lands folorn." In November 1972 we sailed in *Acheron* into the subantarctic ocean with the main object of visiting the Auckland Islands. An unexpected bonus on this voyage was a call at the Snares Islands on the way home.

On 2 December 1972 we approached the Snares Islands from the south in a gentle swell under an almost cloudless sky. In brilliant morning sunshine we rounded Broughton Island into calm waters off the boat harbour where a raft of Snares Crested Penguins greeted the ship with a mass porpoising display. An hour ashore enabled us to deliver mail to Dr and Mrs D. S. Horning, who had spent the winter at the Canterbury University Field Station, and to see most of the bird species for which the sanctuary is renowned (Black Tit, Fernbird, Snipe, Antarctic Terns, Penguin colonies). There had been considerable changes in vegetation at the station site since 1947 when CAF was last at the Snares, due perhaps to growth of seedling trees formerly inhabited or eradicated (near the buildings) by constant traffic of seals and penguins that have presumably had to seek (or make) fresh fields. Conditions were perfect, with bright sun and high temperatures, reaching 16°C in the meteorological screen, according to Mrs Horning.

When we returned on board, the *Acheron* took us south again and across the 3.6km of strait, interrupted by jagged Vancouver Rock, to the Western Chain, or Western Reef as it has often (misleadingly) been called.

The Western Chain consists of five islets (Figs 1-3) strung out in a NE to SW line, rising steeply out of deep water to rather uniform heights of about 80m. Most of the gaps between the islets are narrow gulches but a wider gap separates the first two (from the north) from the other three (Fig. 4). These islets have never been individually named, but now that three have been visited and found to differ among themselves in their geology and birdlife, separate names are needed. The five islets are here referred to (from N to S) by the

Maori words for the numerals one to five: Tahi, Rua, Toru, Wha, and Rima. There are, in addition, a number of sizeable stacks not yet worth naming.

On 4 December 1947, Mr A. J. Black and Dr R. A. (now Sir Robert) Falla landed from M.V. *Alert* on the SE side of Rua at the bottom of a broad depression leading up to a saddle on the summit ridge of the islet. This was the first recorded landing on the chain since the somewhat legendary visits of sealers, and certainly the first landing by a scientist. A quarter-century later, almost to the day, A. J. Black's son Sandy landed us on the SE side of Toru (Fig 5). The *Acheron* then moved round the group for Sandy Black and Ieon Macdonald to land on the NE end of Tahi.

On 13 January 1964 Elliot Dawson and Dick Singleton of the NZ Oceanographic Institute landed from the cutter of HMNZS *Endeavour* on what is now called Tahi on the point close to Rua.

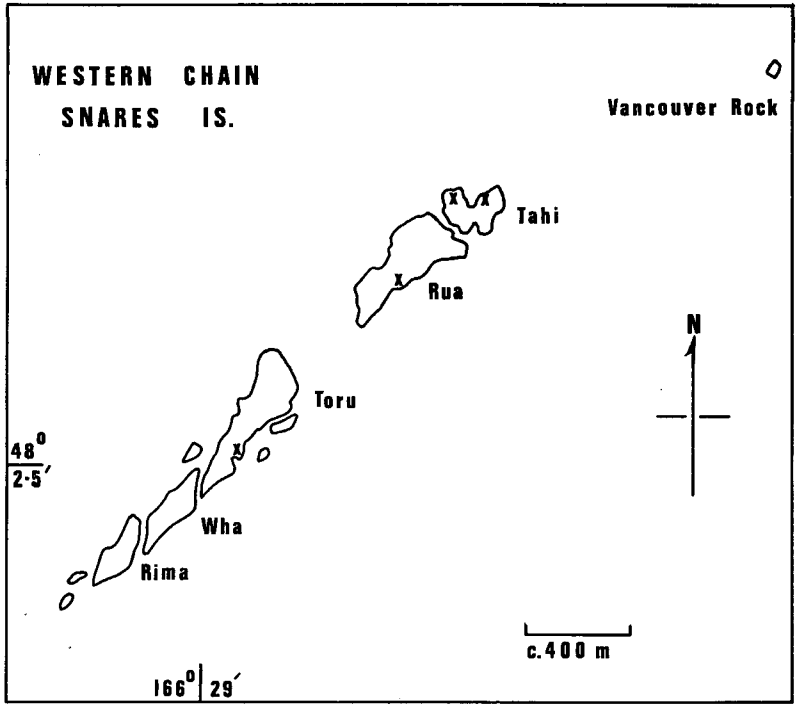

FIGURE 1 — The Western Chain, Snares Islands, New Zealand. Crosses indicate landing sites (modified from a map drawn from air-photographs by R. H. Taylor, Ecology Division, DSIR).

Cape Pigeons were found and collections of marine invertebrates were made (Dawson 1964).

Tahi and Rua have more rounded contours than the jagged Toru and Wha, and are dark rusty brown in colour compared with the pale cream and pinkish grey of Toru. Rock fragments collected on Rua in 1947 include mica schist (Fleming 1953: 20) and a rock specimen from the top of Tahi collected by Sandy Black is severely sheared gneissic granite. Toru, in contrast, is composed of rather weathered strongly jointed, less gneissic granite, confirming suspicions previously expressed that the chain was not entirely made up of

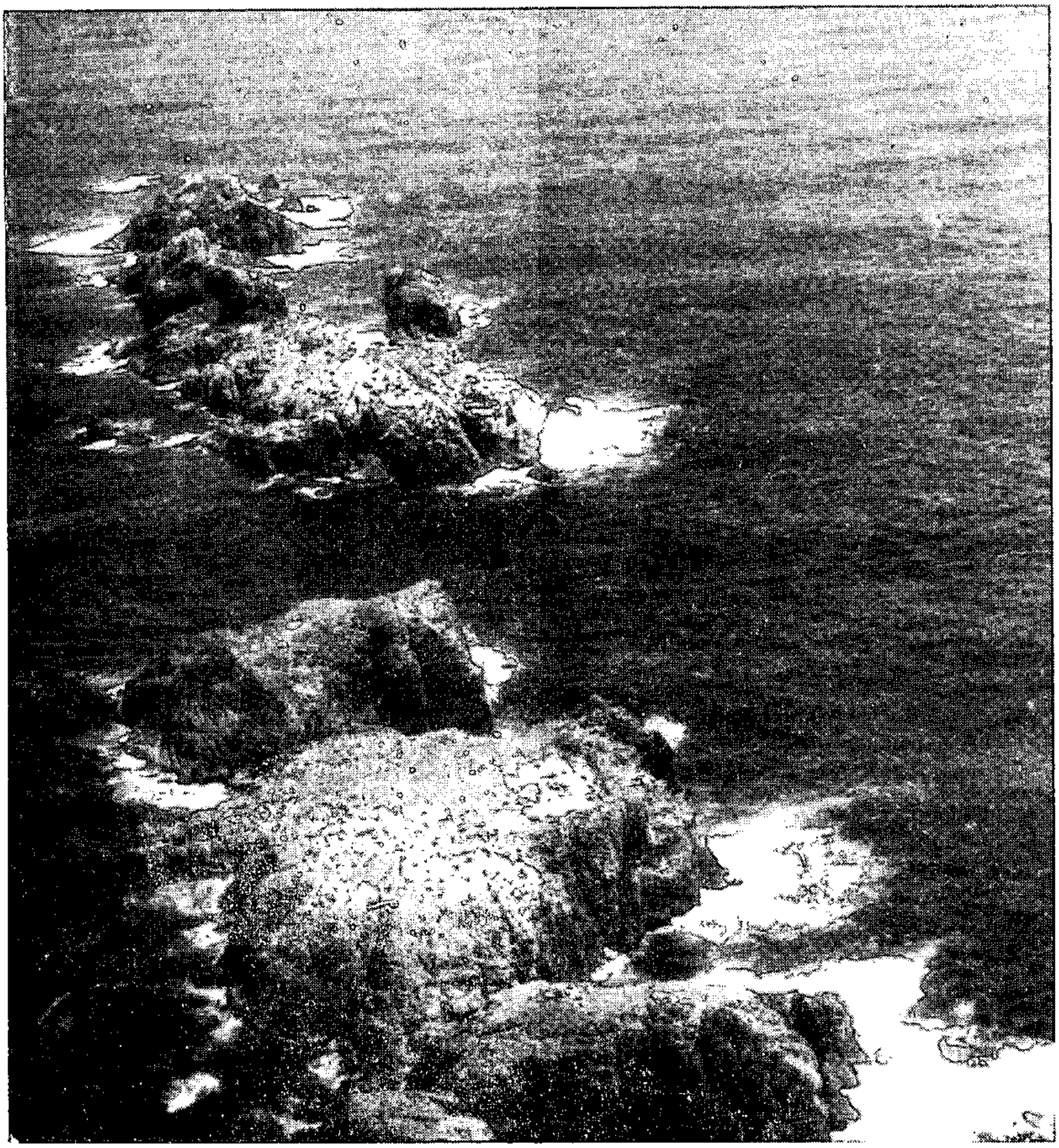

FIGURE 2 — The Snares Western Chain: part of Tahi (front) and Rua in foreground with Tora, Wha and Rima belond, from NE; RNZAF Sortie 190, 16 Jan. 1967. Photo: RNZAF.

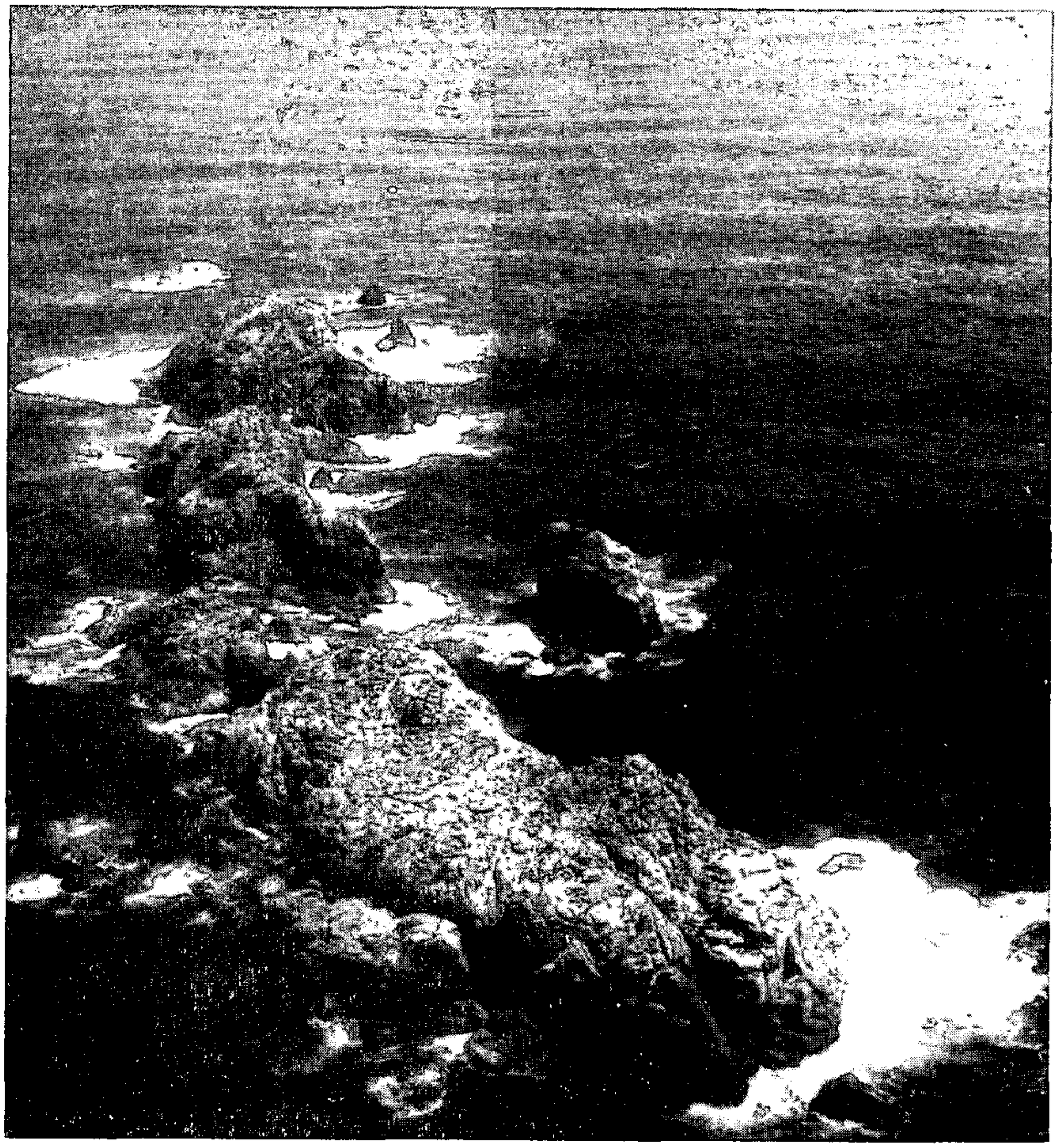

FIGURE 3 — The Snares Western Chain: Toru (foreground), Wha and Rima from NE; RNZAF Sortie 190, 16 Jan. 1967. Photo: RNZAF.

unresistant schist. Geological differences may account for the differences in morphology, colour and bird life between Tahi and Rua and the rest of the chain. At least three systems of joints on Toru have weathered out to form grooves, ledges, pinnacles and gulches. One system defines the sides of the chain, another controls the passages between them and a third forms horizontal ledges and crevices. Tahi has an archway penetrating from side to side. Fritter from the rocks, mixed with guano and other debris, forms a kind of soil in grooves, but in most places no plant cover can grow owing to exposure to the weather and the constant passage of birds and seals. Granite breaks down to a grit, not forming chips like the schist of Rua, beloved of Cape Pigeons for their nests.

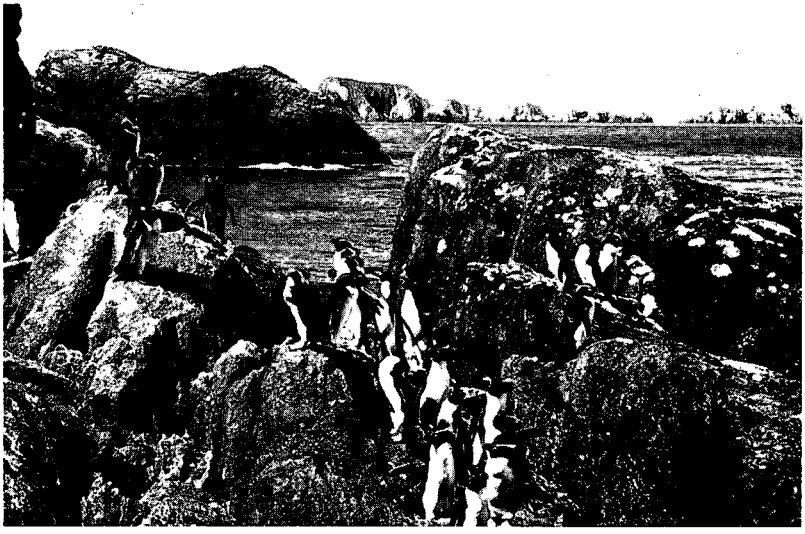

FIGURE 4 — Idle Snares Crested Penguins on Toru. In the gap between Toru and Rua (left) a raft of Cape Pigeons has settled. In the background is the main Snares Island and Broughton Island (right). Photo: C. A. Fleming.

FIGURE 5 — Toru (with Wha and Rima, left) seen from SE. Photo: C. A. Fleming.

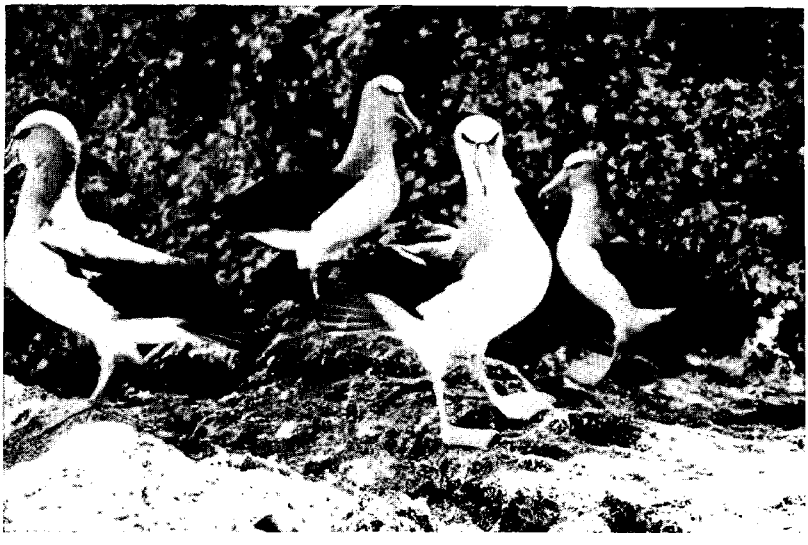

FIGURE 6 — A group of Salvin's Mollymawks *(Diomedea cauta salvini)* on Toru. Photo: C. A. Fleming.

FIGURE 7 — Salvin's Mollymawk on Toru. Photo: C. A. Fleming.

Two species of higher plant were found during the 1972 visit. One, a creeping succulent herb *(Tillaea moschata)*, has already been recorded from specimens collected on Rua by R. A. Falla (Fineran 1969). It is known from all three islets so far visited, living in joint fissures too narrow or on too steep a surface to be trampled by birds and seals. It has a circumpolar subantarctic distribution. The other species, a grass *(Poa astoni)* was apparently not collected on Rua. It forms a gently undulating sloping area about 8m square near the top of Tahi but on Toru is reduced to individual tussocks at the summit. There is also a notable sward of low vegetation on the steep-sided stack on the east side of Toru.

Several kinds of shellfish were collected above the bull kelp *(Durvillea)* on Toru and littoral algae and bags of organic debris from joint fissures near Mollymawk nests were collected for the Dominion (National) Museum.

Idle groups of Snares Crested Penguins stood on ledges on the lower slopes of Toru (Fig 4) but nests were mainly sheltered in caverns and corridors between rock masses. At this date nests on the main Snares Island all had downy chicks, many half-grown, but no chicks at all were seen on Toru, where adults sat tight on nests (on eggs in two cases checked). It seems that the breeding season is significantly delayed in this bleak locality. In a brief mention of the 1947 landing on Rua (" C.A.F." 1948) the phrase " spectacular

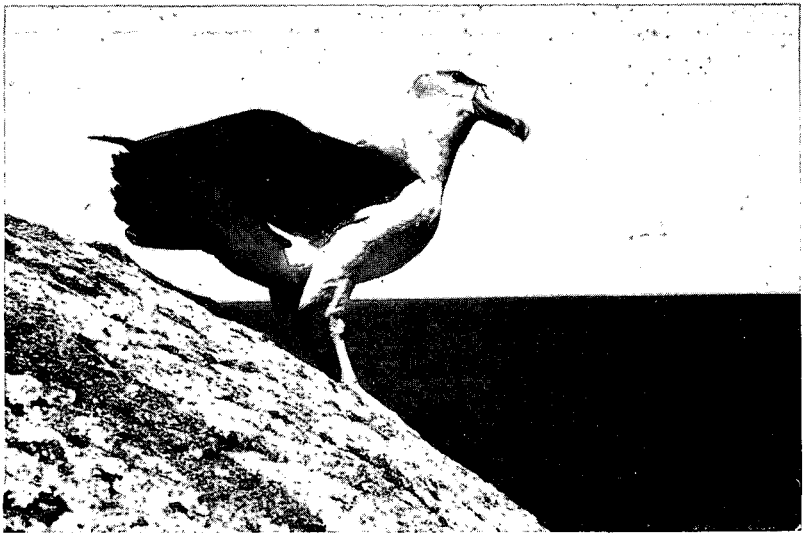

FIGURE 8 — Salvin's Mollymawk, Toru. Photo: C. A. Fleming.

penguin colonies" is misleading as there are no penguins on Tahi and Rua and those seen lining the terrace of Toru are now known to be idle birds, the nests being largely out of sight in the shelter of crevices. A few solitary penguins were present on the very summit of Toru (88m).

A large colony (over 1000 pairs) of Salvin's Mollymawks *(Diomedea cauta salvini)* nests on the Western Chain. They are absent from Tahi and Rua, preferring the crags and ledges of Toru, Wha and Rima which provide a modicum of shelter. They had downy chicks some 15 to 30cm in height. There were some hundreds on the SE side of Toru (Figs 6-8); 200 are visible on an air photo of Rima, and the total population must exceed a thousand nests. This subspecies was first recorded breeding on the Western Chain in 1947 when they were seen by Falla and a specimen from Toru was collected from the *Alert*.

Sealers' reports of breeding Cape Pigeons *(Daption capensis australis)* were confirmed on Rua by Black and Falla in 1947, on Tahi by Dawson and Singleton in 1964, and on Tahi and Toru during the 1972 visit. On Toru, they seem to be largely confined to deep crevices near the summit by competition for space and are fewer than on Tahi and Rua. A new record from the Snares is the Fulmar Prion *(Pachyptila crassirostris)* which we found perching on ledges and nesting in crevices as at Bounty Islands and the Pyramid (Chatham Is). They were flying ashore by day, settling on the water and feeding

FIGURE 9 — Fulmar Prion *(Pachyptila crassirostris)* flying close off its breeding crevices, Toru, Western Chain. Photo: C. A. Fleming.

close in-shore (Fig 9). Regurgitated bones collected from Tahi suggest that Diving Petrels may nest in the burrows below the tussock patch; they were close to a nest territory of the only skuas seen. We also saw a pair of Antarctic Terns *(Sterna vittata)* with young flying over Toru.

Seventeen fur seal *(Arctocephalus forseteri)* and one large sea lion *(Phocarctos hookeri)* were observed near the landing site on Toru. The seals were mostly young-of-the-year and sub-adults.

The afternoon sun was still shining from a clear sky as the *Acheron* sailed from the Snares, " while birds of storm sat brooding on the calmed wave " (with apologies to Milton) — a raft of Cape Pigeons and prions had settled on the water near Tahi.

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THE FIRST RECORD OF A WHITE-WINGED TRILLER IN NEW ZEALAND

By BRIAN McPHERSON

ABSTRACT

The occurrence of a White-winged Triller *(Lalage sueurii)* at Macandrew Bay, Otago Peninsula, in February 1969, is documented, being the first record of this species for New Zealand.

The first sighting of a bird, subsequently identified as a White-winged Triller (*Lalage sueurii* (Vieillot, 1818)), was in a suburban garden at 27 Howard Street, Macandrew Bay, Otago Peninsula. The local gardens contain pockets of native bush with many planted shrubs and trees on a north-facing slope 50 feet above the Otago Harbour. On 26 February 1969 at 5.45 p.m. I heard an unknown song in my garden. It was a distinct rather liquid song, descending and with a similar pattern to the first part of a Chaffinch's song. The bird was traced to a willow tree 30 yards from the house where it was moving about on the outer foliage, and was visible for about ten minutes.

My description recorded at the time reads:

Black cap above bill straight back under eye. Black nape, wings and tail. Wings had distinct thick white bar. Bill thin and horny black. Legs black. Grey rump. Slim agile bird. Generally quiet — sang only twice. Large wings and quick wing beats. Smaller than a Bellbird, approx. 8 inches (200mm).

The bird moved quickly and fluidly with movements similar to a Bellbird hopping among foliage.

Next morning the same song was heard and later I saw an unfamiliar bird briefly silhouetted in flight. The bird sang again next morning in the same willow tree. Neighbours saw it at 10.30 a.m. that day and it was singing again at 5.20 p.m. The neighbour, Mrs F. A. de Hamel, agreed with my description which was checked against that in Cayley's *What bird is that?* (pp. 72-73, pl. XI, fig. 2A, as *L. tricolor*).

On 1 March Dr R. F. Smith (Otago Regional Representative, OSNZ) saw it at 6.30 a.m. in the willow tree and obtained a good view of the bird. The bird's song was also tape recorded.

By this time it was obvious that the bird, which we were now quite sure was a White-winged Triller, has a strict timetable. Almost without exception it sang at about 6.30 a.m. in our willow tree, and at about 10.30 it fed in the Hoheria trees on the de Hamel's section where it also frequently visited between 5 p.m. and 5.30 p.m.

On 5 March I had my best view of the bird. I watched it for ten minutes at ten feet away in a Pittosporum feeding quietly.

FIGURE 1 — White-winged Triller, profile, Macandrew Bay, Otago Peninsula, March 1969. Photo: R. F. Gledhill.

FIGURE 2 — White-winged Triller, back view, Macandrew Bay, Otago Peninsula, March 1969. Photo: R. F. Gledhill.

Its plumage was in perfect order, the black showing iridescent highlights at certain angles. The Triller showed deft manoeuvering in the outer branches. The bird adhered to its habits until early April when it decreased the frequency of its visits eventually to nil.

The next (and last) recorded observation of this bird was made on 21 June by Mrs de Hamel who watched it for a short period in a Kowhai tree. This return visit was surprising as the sighting was made less than a week after Dunedin's heaviest snowfall for 30 years followed by unusually hard frosts, hardly conditions suited to a migratory Australian bird.

A good account of the White-winged Triller has been given by Serventy & Whittell (1951: 280-281) and some fine illustrations and a distribution map can be found in *Birds of the World,* vol. 6, part 7; see also Mayr (1940) and Mayr & Ripley (1941).

Postcript by Jill Hamel:

Several other Australian stragglers were present in Otago at about this time. At Lake Hayes a Dusky Moorhen *(Gallinula tenebrosa)* and an unidentified gallinule appeared in late 1968 and remained all summer. On another pond near Lake Hayes an Australian Dabchick *(Podiceps novaehollandiae)* had taken up residence much earlier in the year (March 1968) and remained for about 18 months. At Taieri Lake (near Waipiata) ten Glossy Ibis *(Plegadis falcinellus)* and a snipe (probably *Gallinago hardwicki*) were seen in early February 1969.

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[*Editor's note:* This paper substantiates the inclusion of the White-winged Triller (as *Lalage sueurii tricolor* (Swainson, 1825)) in the 1970 OSNZ Annotated Checklist, p. 65.]

SUCCESSFUL HAND-REARING OF AN ABANDONED ROYAL ALBATROSS CHICK

By C. J. R. ROBERTSON and A. WRIGHT

ABSTRACT

The hand-rearing of a Royal Albatross chick is documented. The fledging period of chicks and their survival is discussed in relation to the tendency for individual breeding pairs of the Royal Albatross to fledge their chicks at similar intervals each season.

INTRODUCTION

The Northern Royal Albatross *(Diomedea epomophora sanfordi)* at the small breeding colony at Taiaroa Head, Otago Peninsula, New Zealand, has been the subject of an intensive conservation programme since 1937. Though not a rare bird, the population of this only mainland colony has been increased by protection from one pair in 1937 to a present known population of some 45 birds with 5-10 pairs laying eggs each year. Up to 1972 some 85 chicks have been reared. An average of over 60 percent survive from departure, until their first return to the colony, at least 4 years later. The colony is regularly visited throughout the year at a present average rate of 5 days per week for observations and control of potential predators. Research has been confined almost entirely to observation by the local Wildlife Service field officer, with handling being restricted mainly to banding of chicks and measuring of adults for sex determination. Until the opening in 1972 of an enclosed public observatory, public viewing has been severely restricted to about 30 people per year.

RESULTS

In 1969 a pair, consisting of a 22-year-old male (65/66) and an 11-year-old female (C6), both of whom had not previously bred, laid their first egg as a pair. The laying was observed at 6.27 a.m. on 10 November (Fig. 1) and the chick emerged at 11 a.m. on 30 January 1970, an elapsed time of 80 days 4½ hours. The mean incubation time for a sample of 101 eggs at Taiaroa Heads is 78.85 days ± 0.14 with a S.D. of 1.46. Development of this chick (R-19853/53) continued normally until mid-May 1970; but by mid-June the chick (Fig. 2) was visibly smaller and unkempt in relation to a nearby chick of similar age. Debris in the nest indicated a feed on 23/24 June. On 5 July a neighbouring parent was attracted to the chick who performed the begging display but was not fed. The chick continued to deteriorate and on 9 July was recorded as being small in body with protruding sternum. Parent 65/66 fed the chick 5 times on 10 July and then departed, in spite of continuing demands. The chick again begged from a neighbouring parent on 12 July. Following signs of a pulmonary infection, and a dark flush on the back and flanks the chick was given an intra muscular injection (1 mil PEMSTREP L.A. and 2 mil Vitamin B complex) on 15 July.

FIGURE 1 — Parent C6 in process of laying egg.

Photo: A. Wright

FIGURE 2 — Chick R-19853/53 on 16 June 1970 aged 137 days.
Photo: P. A. Wright

Following further deterioration, feeding by hand was started on 18 July. An immediate improvement was seen, and on 20 July the chick began wing exercising and nest maintenance.

Hand-feeding was continued until the chick flew, with 1 Halibut Oil tablet being included in each feed up to 8 September. Details of feeds are shown in Fig. 5. All food was obtained frozen, thawed before being warmed to blood heat immediately prior to feeding, and carried to the nest site in the warm boiled water. No attempt was made to pulp the food to provide similarity with normal regurgitations. Each meal of squid *(Notodarus sloani)* consisted of 3-6 whole squid, fed mantle first (Fig. 3). The squid used was commercial stock normally used as fishing bait. Throughout this period the chick remained in the open on its normal nest site. Apart from one visit from parent 65/66 on 2 October, when only a small amount of liquid was passed to the chick, there was no evidence of a parental visit after 10 July.

On 10 October at 3.53 p.m. in a 15-30 knot wind, the chick was wing exercising when it lifted off the ground and headed into the wind before slowly heading out to sea where it landed at 3.55 p.m. It was then lost sight of, but was not subsequently recovered on surrounding beaches as has happened with premature departures in the past.

Subsequently, parent 65/66 was absent for a full season as is normal when a chick has been successfully reared. It returned again in the 1971/72 season, when it remained as an unattached bird for the whole season. Parent C6 has not been seen since May 1970.

Because of the very small number of chicks being reared each year and to avoid too much disturbance detailed weights and measurements are not taken. However, up to the stage in June when deterioration was noticed, plumage development was similar to the neighbouring chick which departed normally in 228 days. The mean fledging date for 64 birds including this chick at Taiaroa Head is 240 $\pm$ 1.1 days with a range of 216 to 257 days and a S.D. of 8.9. The mean fledging date for 32 chicks which have subsequently survived and returned to the colony is 240 $\pm$ 1.4 days with a range of 216-254 days and a S.D. of 8.1. The comparative sizes and development of chick R-19853/53 and the neighbouring chick at 202 and 210 days respectively is shown in Fig. 4.

DISCUSSION

Wingate (1971) has decribed the successful hand-rearing of a chick of the Bermuda Petrel *(Pterodroma cahow)*, and attributed this success to starting hand-rearing before the bird was starved beyond hope of recovery and to the avoidance of bacterial contamination of the food supply. Major problems experienced were matching the normal partially-digested consistency of the food and getting the chick to swallow it without excessive spillage onto the downy plumage.

FIGURE 3 — Hand-feeding the chick on 23 August 1970 aged 205 days.
Photo: A. Wright

FIGURE 4 — Chick R-19853/53 (left) at 202 days and neighbour at 210 days.

Photo: A. Wright

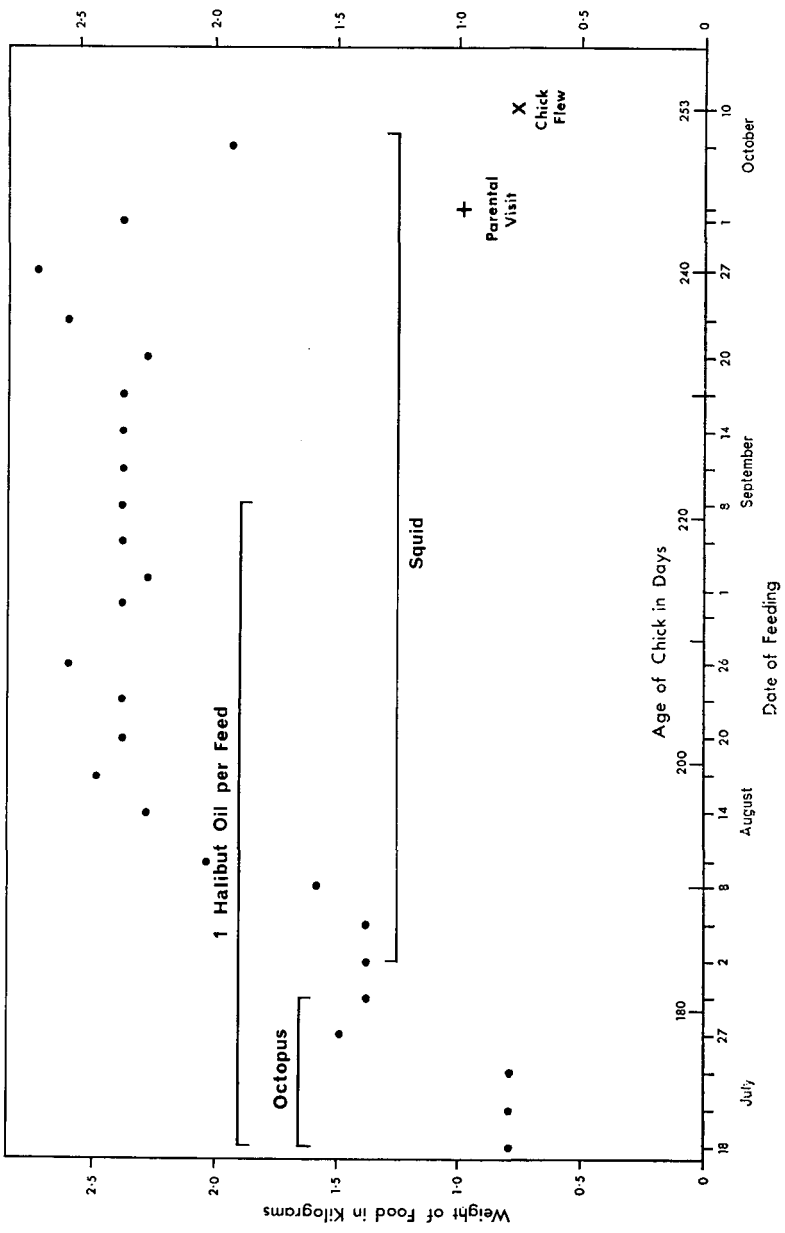

FIGURE 5 — Feeding intervals, amount and type of food during hand-feeding of Royal Albatross chick.

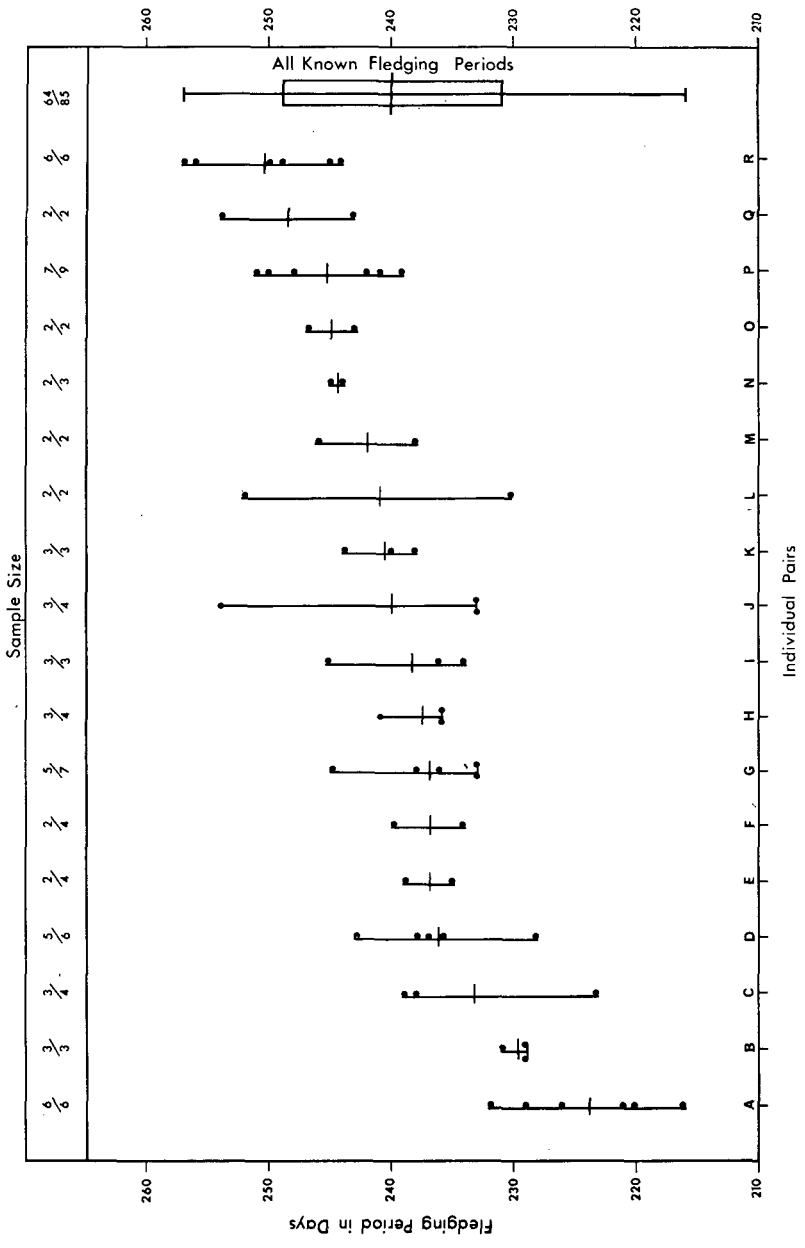

FIGURE 6 — Fledging periods of a sample of chicks produced by individual breeding pairs of the Northern Royal Albatross at Taiaroa Head 1937-1972.

It is possible that in our case the female parent C6 ceased to return to the colony during late May or early June and the decline of the chick points to the inability of one parent to maintain an adequate growth rate.

Richdale (1952) and Tickell (1968), as well as our data, show that the Royal and Wandering Albatrosses have a wide range of fledging times. Tickell found that some parents feed their chicks substantially more than others and suggested that the differing fledging periods may depend not on how long the parents " keep " it ashore, but on how long it is fed, as better-fed chicks developed more rapidly. Richdale (1952) stated that there was a tendency for mated pairs to keep their chicks ashore for about the same length of time each season. The departure periods for chicks of 18 pairs having 2 or more chicks with known departure dates are shown in Fig. 6. The sample sizes indicate how many chicks have known fledging periods from the total number of chicks produced. This information from Taiaroa Head 1937-1972 confirms Richdale's assertion. Although poor feeding conditions must be a partial cause of extremes in fledging times at the upper end of the range (Pairs 'J' and 'L' are good examples), there is sufficient evidence presented above to indicate that once a chick has fledged there is an even chance of survival. Further, there is no evidence yet, to suggest that " super " parents such as 'A' produce chicks more likely to survive than those of ' R.'

However, Richdale and especially Tickell reported very severe weight loss if the regular feeding pattern is interrupted. Tickell (1968: Figs. 36 & 37) illustrated a mean weight loss of 2.5 to 3.0 kg in a period of 20 days in 2 chicks deserted by their parents, and 4.5 to 5.0 kg in 40 days. In normally-fed birds there is a wide fluctuation in both the regularity of feeding and the amount of food given. Tickell's example of a growth/weight curve used to illustrate the marked daily fluctuations in a normal chick, shows a loss of 2 kg over a period of 20 days which included two feeds that did little to halt the weight loss in the chick. Tickell also indicated with his deserted chicks, that without feeds, a weight loss of 5.5 to 6.0 kg over a period of 58 to 80 days was fatal.

Hence, if we assume that, between 1 June and 18 July (a period of 47 days — the period may, in fact, have been longer), chick R-19853/53 was fed only sporadically by one parent, it should have been approaching the critical weight loss illustrated by Tickell.

Though no effort was made to reconstruct the normal consistency of natural food, the use of whole squid did have the advantage of preventing the soiling of plumage and permitting easy feeding of the chick with a minimum of disturbance. In fact, the chick readily adopted its foster parents, with an increase in begging activity as each feeding day approached. The return of this bird to the breeding area is awaited with interest as it will supply a further example of the successful management and conservation of this species.

ACKNOWLEDGEMENTS

The authors wish to thank the National Mortgage Association of New Zealand, Fisheries Division, who provided the squid free of charge, Mr Stan Sharpe and Mrs C. Wright who assisted with feeding the chick. Drs L. E. Richdale, G. R. Williams and Mrs G. B. H. Robertson critically read the manuscript. Mrs R. Mita drew the figures.

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PRELIMINARY REPORT ON BIRD BANDING IN NEW ZEALAND 1971-1972

By C. J. R. ROBERTSON
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During the year ended 31 March 1972 a total of 35,125 birds were banded while 11,994 recoveries and 9,704 repeats received during the year were added to the records of the Nw Zealand Bird Banding Scheme. A number of these recoveries and repeats were made in earlier years but had been held over while the computer system was completed. However, these additions represent a 16% increase in the records held which is a most satisfactory increase for one year. Indications are that up to 20,000 recoveries and repeats will be added in 1972-73 which should eliminate the majority of records which have till now been withheld.

TABLE ONE — PROVISIONAL SUMMARY

Species Banded 1971-1972	96
Total Species Banded	179
Species Recovered 1971-1972	81
Total Species Recovered	123
Species with more than 10,000 Banded	19
Species with more than 1,000 Recovered	16
Percentage Recovered:—	
Game Species	23.51%
Non-Game Species	10.87%
All Species	15.17%

Details of the numbers per species banded and recovered are shown in Table 2 while a selection of interesting age and distance recoveries is shown in Table 3.

The continuation of checks on data held in the computer files since conversion has resulted in the removal of a number of duplicate records. The result has been a change in some totals previously reported for the period 1964-1971. It is not expected that final definitive totals for a number of species mentioned in the 1964-1971 report and especially game species will be available for 2 years as past records of banding and recoveries are cross checked with existing records.

NOTORNIS 20: 59-70 (1973)

The further growth in emphasis on specific studies has resulted in a general decrease in the number of birds banded with a proportionate increase in the number of birds recovered. The increasing number of important studies throughout New Zealand are showing the continuing relevance of banding as a research tool. The development of new banding techniques coupled with improved observation has resulted in long term data on species which has few equals overseas.

I continue to be indebted to the co-operation received from banding operators: my assistants G. Hatzakortzian, and Mrs S. J. McKenzie for their painstaking work; the Government Engineering Computer Centre (Ministry of Works) for their facilities and maintenance of " BIRDBAND " and assistance in development of retrieval programmes; the Government Computer Centre for card punching and verification, and my other colleagues in the Wildlife Service for their assistance.

TABLE TWO

BANDING AND RECOVERY TOTALS

PAGE 1

Number banded = New birds only.
Recoveries = Birds Recovered at least once.
Repeat = Extra recoveries for birds recovered once.

( ) Provisional Total Only.

\+ = New Species 1971-72
* = Total unknown

SPECIES NAME	NUMBER BANDED			RECOVERIES			REPEAT RECOVERIES		
	PREVIOUS	1971-72	TOTAL	PREVIOUS	1971-72	TOTAL	PREVIOUS	1971-72	TOTAL
North Island Kiwi +	0	25	25	-	-	-	-	-	-
Northern Blue Penguin	1,176	0	1,176	507	4	511	2,301	2	2,303
Southern Blue Penquin	65	158	223	1	16	17	-	2	2
White-flippered Penguin	832	299	1,131	69	47	116	6	8	14
Rockhopper Penguin +	0	1	1	-	-	-	-	-	-
Fiordland Crested Penguin	230	3	233	2	9	11	-	-	-
Snares Crested Penguin	642	0	642	12	121	133	-	23	23
Erect-crested Penguin	23	5	28	-	-	-	-	-	-
Wandering Albatross	1,141	9	1,150	50	20	70	9	77	86
Southern Royal Albatross	18,289	773	19,062	2,306	18	2,324	1,386	55	1,441
Black-browed Mollymawk	10,042	0	10,042	588	2	590	58	1	59
Grey-headed Mollymawk	3,089	0	3,089	480	29	509	136	1	137
Buller's Mollymawk	623	0	623	103	166	269	1	99	100
White-capped Mollymawk	532	0	532	21	1	22	2	-	2
Salvin's Mollymawk	234	1	235	1	-	1	-	-	-
Light-mantled Sooty Albatross	338	11	349	23	1	24	1	-	1
Giant Petrel	872	19	891	190	24	214	58	1	59
Antarctic Fulmar	1	0	1	-	-	-	-	-	-

SPECIES NAME PAGE 2	NUMBER BANDED			RECOVERIES			REPEAT RECOVERIES		
	PREVIOUS	1971-72	TOTAL	PREVIOUS	1971-72	TOTAL	PREVIOUS	1971-72	TOTAL
Cape Pigeon	6,784	0	6,784	517	5	522	33	-	33
Grey-faced Petrel	8,388	4,845	13,233	238	39	277	41	10	51
White-headed Petrel	28	0	28	-	-	-	-	-	-
Black-capped Petrel	228	0	228	-	-	-	-	-	-
Mottled Petrel	244	24	268	1	64	65	-	-	-
Kermadec Petrel	944	0	944	-	-	-	-	-	-
Pycroft's Petrel	209	0	209	20	-	20	42	-	42
Gould's Petrel	1	0	1	-	-	-	-	-	-
Cook's Petrel	8	46	54	-	-	-	-	-	-
Black-winged Petrel	1,996	6	2,002	-	-	-	-	-	-
Chatham Is. Petrel	1	0	1	-	-	-	-	-	-
Broad-billed Prion	540	11	551	-	-	-	-	-	-
Antarctic Prion	20	0	20	-	-	-	-	-	-
Prion Sp.	4	0	4	-	-	-	-	-	-
Fairy Prion	31,290	1,541	32,831	961	250	1,211	79	20	99
Fulmar Prion	61	0	61	-	-	-	-	-	-
Grey Petrel	6	0	6	-	1	1	-	-	-
Black Petrel	14	24	38	-	2	2	-	-	-
Westland Black Petrel	358	0	358	3	-	3	-	-	-
White-Chinned Petrel	10	0	10	-	-	-	-	-	-
Flesh-footed Shearwater	1,480	61	1,541	59	-	59	2	-	2
Wedge-tailed Shearwater	308	0	308	-	-	-	-	-	-
Buller's Shearwater	364	0	364	-	-	-	-	-	-

SPECIES NAME PAGE 3	NUMBER BANDED			RECOVERIES			REPEAT RECOVERIES		
	PREVIOUS	1971-72	TOTAL	PREVIOUS	1971-72	TOTAL	PREVIOUS	1971-72	TOTAL
Sooty Shearwater	3,053	55	3,108	94	36	130	17	3	20
Fluttering Shearwater	980	0	980	62	-	62	14	-	14
Hutton's Shearwater	291	0	291	-	3	3	-	-	-
Kermadec Little Shearwater	4	0	4	-	-	-	-	-	-
N. Is. Little Shearwater	281	0	281	1	-	1	-	-	-
Grey-backed Storm Petrel	90	3	93	-	-	-	-	-	-
White-faced Storm Petrel	3,929	262	4,191	226	146	372	48	41	89
Black-bellied Storm Petrel	1	0	1	-	-	-	-	-	-
Diving Petrel	6,264	66	6,330	665	26	691	351	24	375
Petrel Sp.	1	0	1	-	-	-	-	-	-
Red-tailed Tropic Bird	116	0	116	2	-	2	1	-	1
White-tailed Tropic Bird	9	0	9	-	-	-	-	-	-
Australian Gannet	12,108	239	12,347	2,422	47	2,469	2,965	-	2,965
Brown Booby	1	0	1	-	-	-	-	-	-
Masked Booby	147	0	147	-	-	-	-	-	-
Black Shag	15	0	15	2	-	2	-	-	-
Pied Shag	129	0	129	30	4	34	4	2	6
Little Black Shag	5	0	5	2	-	2	-	-	-
Little Shag	17	2	19	2	-	2	-	-	-
Stewart Is. Shag	2	0	2	2	-	2	-	-	-
Campbell Island Shag	57	0	57	1	-	1	-	-	-
Spotted Shag	113	0	113	6	-	6	-	-	-
White-faced Heron	12	0	12	1	-	1	1	-	1

SPECIES NAME	NUMBER BANDED			RECOVERIES			REPEAT RECOVERIES		
PAGE 4	PREVIOUS	1971-72	TOTAL	PREVIOUS	1971-72	TOTAL	PREVIOUS	1971-72	TOTAL
White Heron	1	0	1	1	-	1	1	-	1
Reef Heron	15	0	15	3	-	3	-	-	-
Australian Bittern	4	1	5	-	-	-	-	-	-
Black Swan	(24,458)	1,836	(26,294)	(5,664)	132	(5,796)	(1)	1	(2)
Canada Goose	(20,587)	1,356	(21,943)	(11,497)	805	(12,302)	(7,913)	308	(8,221)
Paradise Duck	(11,739)	3,478	(15,217)	(2,034)	626	(2,660)	(123)	35	(158)
Mallard	(49,466)	3,392	(52,858)	(7,860)	2,473	(10,333)	(205)	817	(1,022)
Hybrid Mallard (Cross)	(1,379)	96	1,475	(327)	20	(347)	(1)	2	(3)
Duck (Grey or Mallard)	(13)	0	(13)	-	-	-	-	-	-
Grey Duck	(29,774)	753	30,527	(8,705)	552	(9,257)	(36)	91	(127)
Grey Teal	(351)	490	(841)	(47)	64	(111)	(6)	25	(31)
Brown Teal	67	4	71	3	2	5	-	-	-
N.Z. Shoveler	(6)	161	(167)	(12)	6	(18)	(3)	-	(3)
Blue Duck	(16)	0	(16)	(2)	1	(3)	-	-	-
Australasian Harrier	1,076	156	1,232	290	38	328	116	26	142
Chukor	184	178	362	-	1	1	-	-	-
Partridge	(10,903)	815	(11,718)	(884)	21	(905)	(6)	-	(6)
Californian Quail	(272)	23	(295)	(109)	3	(112)	(1)	-	(1)
Pheasant	(44,504)	888	(45,392)	(3,628)	201	(3,829)	(8)	-	(8)
Banded Rail	4	0	4	-	-	-	-	-	-
Weka Sp.	1	0	1	-	-	-	-	-	-
North Island Weka	2,388	122	2,510	83	29	112	45	7	52
Western Weka	144	0	144	9	-	9	-	-	-

SPECIES NAME	NUMBER BANDED			RECOVERIES			REPEAT RECOVERIES		
PAGE 5	PREVIOUS	1971-72	TOTAL	PREVIOUS	1971-72	TOTAL	PREVIOUS	1971-72	TOTAL
Eastern Weka	19	0	19	4	1	5	-	-	-
Marsh Crake	0	3	3	-	2	2	-	2	2
Spotless Crake	2	13	15	-	3	3	-	2	2
Pukeko	(400)	108	(508)	(65)	17	(82)	(1)	1	(2)
Notornis	(36)	0	(36)	(21)	-	(21)	(11)	-	(11)
S. Is. Pied Oystercatcher	671	64	735	81	85	166	26	67	93
Variable Oystercatcher	106	19	125	33	20	53	47	22	69
Chatham Is. Oystercatcher	12	0	12	-	-	-	-	-	-
Black Oystercatcher	79	22	101	5	1	6	3	7	10
Spur-winged Plover	514	5	519	18	3	21	-	-	-
N.Z. Dotterel	44	3	47	11	2	13	33	-	33
Banded Dotterel	381	28	409	5	-	5	3	5	8
N.Z. Shore Plover	17	29	46	-	-	-	-	-	-
Wrybill	142	0	142	1	-	1	-	-	-
Bar-tailed Godwit	3	0	3	-	-	-	-	-	-
Turnstone	2	0	2	-	-	-	-	-	-
Chatham Island Snipe	22	0	22	-	-	-	-	-	-
Snares Island Snipe	45	0	45	6	-	6	-	-	-
Pied Stilt	278	1	279	8	-	8	-	-	-
Black Stilt	11	0	11	-	-	-	-	-	-
Southern Skua	412	3	415	72	1	73	14	1	15
Antarctic Skua	1,951	61	2,012	770	28	798	571	45	616
Arctic Skua	1	0	1	-	-	-	-	-	-

SPECIES NAME	NUMBER BANDED			RECOVERIES			REPEAT RECOVERIES		
PAGE 6	PREVIOUS	1971-72	TOTAL	PREVIOUS	1971-72	TOTAL	PREVIOUS	1971-72	TOTAL
Black-backed Gull	50,150	3,066	53,216	3,375	266	3,641	127	-	127
Red-billed Gull	37,355	2,882	40,237	8,477	3,267	11,744	5,139	5,153	10,292
Black-billed Gull	25,280	850	26,130	1,773	119	1,892	1,301	48	1,349
Black-fronted Tern	669	18	687	47	1	48	30	-	30
Caspian Tern	1,980	147	2,127	57	40	97	-	-	-
Antarctic Tern	8	0	8	-	-	-	-	-	-
Fairy Tern	3	0	3	-	-	-	-	-	-
White-fronted Tern	15,130	690	15,820	444	58	502	9	-	9
Sooty Tern	14,584	0	14,584	143	-	143	-	-	-
Common Noddy	1	0	1	-	-	-	-	-	-
White-capped Noddy	7	0	7	-	-	-	-	-	-
White Tern	2	0	2	-	-	-	-	-	-
Grey Ternlet	49	0	49	-	-	-	-	-	-
New Zealand Pigeon	22	2	24	3	-	3	-	-	-
Malay Spotted Dove	2	0	2	1	-	1	-	-	-
Kea	1,032	0	1,032	551	87	638	3,054	83	3,137
Antipodes Island Parakeet	39	0	39	5	-	5	-	-	-
Kermadec Parakeet	6	0	6	-	-	-	-	-	-
Red-crowned Parakeet	15	0	15	-	-	-	-	-	-
Reischeks Parakeet	33	0	33	-	-	-	-	-	-
Yellow-crowned Parakeet	34	0	34	4	-	4	-	-	-
Shining Cuckoo	20	2	22	2	-	2	-	-	-
Long-tailed Cuckoo	2	1	3	1	-	1	-	-	-

SPECIES NAME PAGE 7	NUMBER BANDED			RECOVERIES			REPEAT RECOVERIES		
	PREVIOUS	1971-72	TOTAL	PREVIOUS	1971-72	TOTAL	PREVIOUS	1971-72	TOTAL
Morepork	21	5	26	7	-	7	19	-	19
Little Owl	12	2	14	-	1	1	-	-	-
N.Z. Kingfisher	95	15	110	12	2	14	3	1	4
N. Is. Rifleman	20	11	31	11	-	11	36	-	36
S. Is. Rifleman	162	39	201	-	33	33	-	4	4
Rock Wren +	0	4	4	-	-	-	-	-	-
Skylark	30	0	30	1	-	1	-	-	-
Welcome Swallow	65	24	89	-	-	-	-	-	-
N.Z. Pipit	39	0	39	5	-	5	-	-	-
Hedgesparrow	1,301	66	1,367	205	123	328	302	276	578
South Island Fernbird	33	0	33	-	-	-	-	-	-
Stewart Island Fernbird	1	2	3	-	-	-	-	-	-
Snares Island Fernbird	50	0	50	-	-	-	-	-	-
Brown Creeper	16	7	23	2	-	2	-	-	-
Whitehead	32	7	39	10	-	10	4	-	4
Grey Warbler	208	33	241	22	-	22	34	-	34
N. Is. Fantail	103	38	141	25	-	25	62	-	62
S. Is. Fantail	137	12	149	1	-	1	-	-	-
Pied Tit	82	10	92	26	-	26	49	-	49
Yellow-breasted Tit	133	0	133	10	-	10	1	-	1
Black Tit	4	0	4	-	-	-	-	-	-
South Island Robin	34	166	200	3	1	4	-	-	-
Stewart Is. Robin	1	0	1	-	-	-	-	-	-

SPECIES NAME	NUMBER BANDED			RECOVERIES			REPEAT RECOVERIES		
PAGE 8	PREVIOUS	1971-72	TOTAL	PREVIOUS	1971-72	TOTAL	PREVIOUS	1971-72	TOTAL
Black Robin	0	9	9	-	-	-	-	-	-
Song Thrush	2,075	62	2,137	232	29	261	109	18	127
Blackbird	4,130	106	4,236	976	109	1,085	1,124	234	1,358
Silvereye	25,553	2,128	27,681	2,833	387	3,220	4,551	415	4,966
Bellbird	850	117	967	76	3	79	73	1	74
Tui	302	13	315	24	6	30	10	-	10
Yellowhammer	460	15	475	38	64	102	20	46	66
Cirl Bunting	2	0	2	-	-	-	-	-	-
Chaffinch	1,193	37	1,230	156	68	224	255	142	397
Greenfinch	3,017	53	3,070	301	203	504	538	376	914
Goldfinch	1,644	7	1,651	59	3	62	15	62	77
Redpoll	4,370	509	4,879	514	588	1,102	2,053	949	3,002
House Sparrow	17,729	786	18,515	1,630	216	1,846	656	54	710
Starling	2,655	425	3,080	240	47	287	29	1	30
Myna	1,164	60	1,224	285	9	294	120	5	125
N. Is. Saddleback	197	49	246	14	1	15	10	1	11
S. Is. Saddleback	111	47	158	10	3	13	-	-	-
N. Is. Kokako	6	0	6	-	-	-	-	-	-
Black-backed Magpie	34	0	34	13	-	13	1	-	1
White-backed Magpie	42	6	48	12	1	13	21	2	23
Magpie Sp.	4	0	4	3	-	3	7	-	7
Rook	957	0	957	218	41	259	102	-	102
PROVISIONAL TOTALS	537,037	35,125	572,162	74,785	11,994	86,779	36,594	9,704	46,298

TABLE THREE

PAGE 1 A SELECTION OF INTERESTING RECOVERIES RECEIVED 1971-1972

SPECIES	BAND	BANDED LOCALITY AND DATE		RECOVERED LOCALITY AND DATE		AGE, DISTANCE	
						y.m.d.	
White-flippered Penguin	P-1554	Motunau Is.	7.12.61	Motunau Is.	31.10.71	9-10-22	
Wandering Albatross	R-18931	Antipodes Is.	23. 2.69	Malabar,(AUSTRALIA.)	25. 9.71	2-7-0	1776WNW
Black-browed Mollymawk	M-20658	Campbell Is.	5. 4.69	Kingscliff,(AUSTRALIA.)	24.11.69	0-7-19	1859NNW
"	M-25102	Campbell Is.	27. 3.70	At Sea, (PACIFIC.)	18. 7.70	0-3-21	1892NNE
"	0-7820	Campbell Is.	17. 1.68	Arutua Is. (TUAMOTU.)	14. 8.68	0-6-27	3530ENE
Bullers Mollymawk	M-14817	Snares Is.	-. 1.48	Snares Is.	(30. 2.71)	23-1-?	
"	0-2008	Snares Is.	11. 2.61	At Sea, Timaru.	30. 4.71	10-2-16	338NE
Fairy Prion	D-15660	Motunau Is.	2.10.62	Motunau Is.	31.10.71	9-0-10	
Sooty Shearwater	Z-451	Motunau Is.	9.12.63	Motunau Is.	9. 2.72	8-2-1	
Huttons Shearwater	E-76201	Christchurch.	31. 3.69	Hopetown,(AUSTRALIA.)	(1.12.70)	1-8-0	2876W
Grey-faced Petrel	E-21194	Mercury Is.	4. 9.62	Taree, (AUSTRALIA.)	(-. -.71)	9-?-?	1380W
White-faced Storm Petrel	23616	Motunau Is.	22.10.60	Motunau Is.	22.11.70	10-1-0	
"	C-9894	Motunau Is.	23.10.63	Motunau Is.	21.11.71	8-0-29	
"	C-16483	S.E.Is. (CHATHAM IS.)	2.11.70	Motunau Is.	22.11.71	1-0-19	183WNW
Diving Petrel	D-14484	Trios Is.	26. 7.62	Paekakariki.	1. 8.71	9-0-5	52E
Australian Gannet	15751	Horuhoru	14. 2.53	Whangarei Heads.	2. 3.72	19-0-16	78NNW
Canada Goose	99536	Ellesmere L.	10. 1.57	Ellesmere L.	7. 5.71	14-3-25	
"	18-26340	Ellesmere L.	10. 1.57	Ellesmere L.	9. 1.72	14-11-28	
Black Swan	80061	Ellesmere L.	26. 1.56	Waipori L.	29. 5.71	15-4-1	193SW
"	19-14997	Ellesmere L.	14. 1.67	Huntly Loc.	(-. 5.71)	4-3-?	448NNE
Paradise Duck	13-743	Repongaere L.	7. 1.63	Tolaga Bay.	22. 5.71	8-4-13	24NNE
"	13-10828	Ngakaroa.	16.11.70	Kereru.	(7. 5.71)	0-5-19	113SW.
"	18-12217	Repongaere L.	15. 1.61	Whangara.	1. 5.71	10-3-14	29NE
Grey Teal	Z-4308	Wahi L.	23. 1.71	Middlemarch.	2. 5.71	0-3-7	609SSW
Grey Duck	17-2014	Whangape L.	15. 2.59	Taupiri Loc.	1. 5.71	12-2-14	14SE

SPECIES PAGE 2	BAND	BANDED LOCALITY AND DATE		RECOVERED LOCALITY AND DATE		AGE, DISTANCE	
						y.m.d.	
Mallard	17-55566	Ohuia L.	1. 3.69	Chatham Is.	1. 5.71	2-1-30	325S
"	17-73507	Tuakitoto L.	29. 1.70	Horotiu.	17. 5.72	2-2-5	658NNE
N.Z. Shoveler	Z-167	Pukepuke Lagoon.	10. 1.71	Waikouaiti.	5. 6.71	0-4-24	423SSW
Australasian Harrier	14638	Maraekakaho.	22. 2.53	Mareakakaho.	25. 4.71	18-2-0	11N
Californian Quail	14-5385	Taupo Loc.	2. 4.64	Wairakei.	22. 5.71	7-1-12	14NE
Pukeko	M-3908	Lorneville.	4.10.63	Pine Bush.	14. 5.71	7-7-8	11S
S. Is. Pied Oystercatcher	K-3242	Okarito.	16. 8.69	Tokomairiro R. Mouth.	1. 7.71	1-10-13	207S
"	K-3499	Ashley R.	20.10.70	Mangere.	18. 3.72	1-4-25	465NNE
"	K-4845	Parapara, Nelson.	12. 4.71	Millers Flat, Otago.	24. 8.71	0-4-12	370SSW
N.Z. Dotterel	D-5290	Karaka.	7.12.61	Firth of Thames.	7. 3.70	8-2-29	18E
Antarctic Skua	L-7430	Hallett C. (ANTARCT.)	-. 1.59	Hallett C. (ANTARCT.)	20.12.71	12-11-?	
Black-backed Gull	29759	Rangitoto Is.	18.12.55	Rangitoto Is.	2.12.67	12-0-2	
"	S-3088	Mataura R. Mouth.	18.12.60	Masterton.	19. 5.71	10-1-1	519NE
Red-billed Gull	E-68181	Kaikoura.	11. 1.59	Heathcote R. Mouth.	3. 2.72	13-0-22	95SSW
Black-billed Gull	E-7182	Ashley R.	10.12.60	Ashburton.	8. 1.72	11-0-28	56SW
Caspian Tern	30181	S. Kaipara Head.	2.12.56	Auckland Airport.	9.12.71	15-0-6	44SE
"	H-18724	Invercargill Loc.	30.11.70	Huntly Loc.	8. 5.71	0-5-6	699NNE
White-fronted Tern	25027	Crusoe Is.	23.11.58	Karaka.	30. 1.72	13-2-6	24SSW
Kea	26959	Temple Basin.	15. 9.56	Temple Basin.	2. 8.71	14-10-15	
"	L-1603	Arthurs Pass.	10. 6.61	Darfield.	22.12.71	10-6-11	24SSW
Greenfinch	B-4955	Invercargill Loc.	27.12.64	Invercargill Loc.	7. 1.72	7-0-10	
Chaffinch	A-3457	Invercargill Loc.	30. 7.61	Invercargill Loc.	13.10.68	7-2-14	
House Sparrow	B-3326	Invercargill Loc.	3.12.64	Invercargill Loc.	21. 6.71	6-6-16	
"	B-8211	Christchurch.	1. 3.65	Christchurch.	13.11.71	6-8-12	
"	B-10788	Upper Hutt.	21. 2.65	Upper Hutt.	9.10.71	6-7-16	
Rook	H-14550	Poukawa.	18.11.65	Poukawa.	3. 2.72	6-2-15	
S. Is. Saddleback	D-22105	Big Stage Is.	2. 9.64	Big Stage Is.	27. 2.72	7-5-24	

SHORT NOTES

A SOFT-PLUMAGED PETREL FROM THE BAY OF PLENTY

On 18 November 1971, following three days of strong northerly wind NRH patrolled 3 miles of beach west from Rangitaiki rivermouth in the Bay of Plenty. In addition to 36 shearwaters and a White-headed Petrel *(Pterodroma lessoni)*, he found a smaller petrel of whose identity he was uncertain. He sent this to MJI who thought it was a Soft-plumaged Petrel *(Pterodroma mollis)*. The specimen then went to the Dominion Museum where FCK confirmed the identification as the typical subspecies, *P. m. mollis*. Unfortunately the condition of the specimen had deteriorated when it was collected so it was unsuitable for skinning but the skeleton and one complete wing were preserved. Upon dissection FCK found it to be an adult female with an ovum (yolk) in its oviduct. This yolk was 24 mm in diameter.

This is only the second Soft-plumaged Petrel recorded from the mainland of New Zealand, and it is the first found on a beach. The first specimen was a juvenile male found in the Hutt Valley, near Wellington, on 16 May 1971 (Kinsky 1971). There is little doubt that both these birds belong to the same breeding population, that this population is within the New Zealand zoogeographical region, and that it breeds in summer. The reproductive condition of the female indicates that she would have laid her egg in late November or early December which is the typical laying period for many summer-breeding petrels in the New Zealand region. The incubation period would be about 53 days, and the fledgling period probably similar to that of *Pterodroma inexpectata* which Richdale (1964) gives as "somewhat shorter than — 97 days." Thus, from an egg laid on 1 December the chick would probably have left the colony by 1 May. Such a departure date agrees well with the finding of the Hutt Valley juvenile on 16 May.

The first recorded occurrence of the Soft-plumaged Petrel in the New Zealand region was on Anipodes Island in February 1969 (Warham 1969). It is well established from beach patrols that several procellariiform birds breeding on the subantarctic islands of New Zealand, especially Bounty and Antipodes Islands, occur regularly in or near the Bay of Plenty: for example, Salvin's Mollymawk *(Diomedea cauta salvini)*, White-headed Petrel and Grey Petrel *(Procellaria cinerea)*. Hence, the occurrence of *P. mollis* there suggests that it is as likely to have come from Antipodes Island as anywhere else.

Furthermore, this specimen seems to demonstrate again the amazing distance to which breeding petrels forage from the nesting colony. The offshore waters of the Bay of Plenty are about 2,000 kilometers (1,300 miles) from Antipodes Island.

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UNUSUAL SEA-BIRD SIGHTINGS IN OTAGO

On Sunday, 15 March 1970, at approximately 5 p.m., as I was leaving the Royal Albatross colony at Taiaroa Head, Otago Peninsula, I observed a large sea-bird fly over the lighthouse, and then circle over the colony. The bird was " glassed " with 10 x 50 binoculars, and recognised as a Light-mantled Sooty Albatross *(Phoebetria palpebrata)*. The bird made a pass over one of the Royal Albatross chicks, lowering its feet, as if to land, then carried on towards Harington Point rising higher and higher until it was lost from sight over Reids Beach.

On Sunday, 5 September 1971, a message was received from Mr G. R. MacKenzie of Waiwera South (14 miles south of Balclutha) to say he had a live albatross on his property, in a healthy condition except for a few ticks around the eyes. When collected it was found to be a juvenile Bounty Island Mollymawk *(Diomedea salvini)*, 2 years old, and possibly older (F. C. Kinsky pers. comm.). The bird was held overnight, measurements taken, banded (M-24021), and then released at Taiaroa Head at 10 a.m. 6 September 1971. Gale force winds had been experienced on the previous days with southerly winds up to 50 knots. At the time of recovery this bird was 30 miles from the sea.

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WANDERING ALBATROSS ASHORE ON OTAGO PENINSULA

On 31 March 1970 I received information from local farmers in the Cape Saunders area of the Otago Peninsula that an albatross had been seen landing and taking off. I found that this bird had been observed by the McKay family on 26, 28, 30 and 31 March in the same area, and had remained on the ground on the SSE side of Papanui Cone among the sheep for between 30 and 90 minutes at a time. From Mr McKay's description the bird was a Wandering Albatross.

On 19 April the bird was sighted again by Mr McKay. The following day at noon he reported it back again and this time the bird was caught and banded (R-15135). It was taken and released in the Royal Albatross Colony at Taiaroa Head. The bird was again observed in the Cape Saunders area on 24 April 1970.

No further reports of this bird were received until 8 April 1972, when Mr Bob Dickson of Papanui Inlet, reported seeing a banded albatross in his hay paddock, at Papanui Cone. He had seen this bird a number of times since January but had not taken much notice of it until he had seen the metal band on the leg. I visited the area the same day and although the bird was not seen, droppings were found where it had been resting. Further visits were made to the area, and an albatross was observed heading out to sea in this area on 16 April.

At 2.30 p.m. on 20 April 1972, Mr Rod McKay rang to say that an albatross was on the road near his home and was walking up the road towards his place. Mr C. J. R. Robertson and I left for the area immediately and found the McKay family watching an albatross which was standing in the grass near the fence. It was recognised as a Wandering Albatross, and was wearing band R-15135. This bird had returned to the same area where it was found 2 years ago to the day. The bird was taken to Taiaroa Head and released after a red plastic band had been added above the metal band.

A brief description of the bird is as follows (after Gibson 1967): Back 4, Head 4, Inner wing 2 and tail 2. Plumage type E.

REFERENCE

GIBSON, J. D. 1967. The Wandering Albatross *(Diomedea exulans)*: results of banding and observations in New South Wales coastal waters and the Tasman Sea. Notornis 14 (2): 47-57, figs 1-3, pl. I.

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HARRIER WITHOUT FEET

In the 1950s some acclimatisation societies still entertained a few quaint ideas about the value of control of alleged predators. This was something of a legacy from more primitive days. At this time Harrier Hawks *(Circus approximans)* were still regarded as something of a menace, and it was with some misgivings that I found myself involved in a control programme. A bounty of one shilling was paid for every pair of feet brought in, and in addition I was expected to shoot a monthly quota.

On a calm winter's evening in 1958 I went to a known roosting area in the Waimatuku district of Southland to carry out this instruction. The first incoming bird appeared as expected at about 5 p.m. and was called up and shot. On retrieving the dead bird I immediately noticed that it had no feet. A closer examination showed that the feet plus about one third of the tarsus were missing and the stumps were completely healed over. The bird, while not a large specimen, was in at least average condition. Further examination revealed that its crop was well filled with carrion which appeared to be mutton.

I suspect that the explanation for this footless Harrier is roughly as follows: a bounty hunter had trapped the bird and attempted to kill it, probably by striking it with a stick, but in fact had only stunned it. The feet had then been cut off. Some time later the bird must have regained consciousness and flown off. In the period of unknown duration between the amputation of its feet and finally being shot this luckless Harrier had made a good recovery and adapted itself to life without the use of feet.

The futility of bounty schemes is adequately documented and no further comment on this matter is required here.

The fact that the bird survived without feet is evidence which casts further doubt on allegations that Harriers are essentially predators. In areas which carry a heavy animal population, particularly sheep, such as Southland, modern Harriers appear to be much less dependent on their ability to catch their own food than formerly.

R. R. SUTTON

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★

INCREASE IN WELCOME SWALLOWS NEAR WHANGAREI, 1968-71

In 1968 a search for swallow nests along all main roads and most by-roads in Whangarei County located 150 breeding pairs (Munro 1969). At that time swallows were well established north of Whangarei-Dargaville highway and north-east of Whangarei, but still scarce elsewhere in the county. In the last three years there has been a remarkable increase of swallows in the city and in areas to east and south of it. In 1971 most farmers reported, for example, " the first birds appeared about two years ago, a pair nested last summer and now they are everywhere."

The map shows the results of a survey of nest sites carried out during the last week of November 1971 in the area surrounding Whangarei Harbour, from roughly a line through Pataua to a line through Ruakaka. As in 1968, all main roads and most by-roads were traversed: total distance covered within this area in both 1968 and 1971 surveys was approximately 120 miles. The area surveyed falls into three sections — East Coast (Pataua-Bream Head), Southern area (Oakleigh-Ruakaka), and City.

	Nest sites located	
	1968	November 1971
East Coast	3	34
Southern Area	3	34
City	1	12
Total	7	80

Swallow population is certainly well in excess of 80 pairs. At the time of the 1971 survey no bridge had more than one nest containing eggs but about 50% of bridges inspected carried between two and six nests, some of which may have been those of a previous season; many pairs undoubtedly nest away from roads, and in the urban area especially many nest sites may have been missed. Maximum clutch observed was four eggs (six nests). All 1968 nest sites were still occupied in 1971.

The breakdown of recorded nest sites is as follows:—

Bridges	55	(including 15 farm bridges)
Culverts	5	
Buildings	15	
Wharves	2	
Sundry	3	
	80	

" Sundry " includes a nest on a fishing boat and another on a working dredge at Parua Bay, and a nest on a working dragline excavator near Ocean Beach; the parents followed their nest up and down the swamp as the dragline moved. One of the culvert nests was on the upper half of an 18" culvert which at least half filled with water at high tides. In the east section all eight county road bridges were occupied and nine nests were attached to buildings. In the South section only twenty of the 35 county road bridges were occupied and plenty of bridge sites are still available.

Of a total of 85 new and old nests found under bridges, 40 were attached to concrete girders; four of these were attached to bolts, 36 were of the unsupported type. 30 nests on steel girders, of which 10 unsupported, 15 flat nests usually on cross girders, 5 partially supported by the lower lips of the steel girders, one of these being a small flat nest built on a two-foot long foundation of mud pellets.

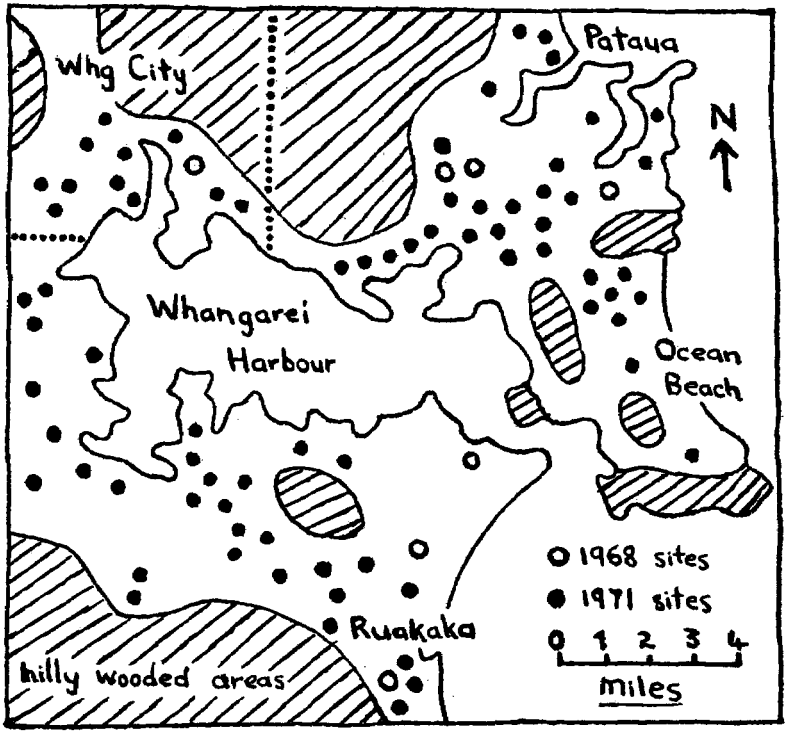

FIGURE 1: Nest sites of Welcome Swallow in area around Whangarei Harbour in 1968 and 1971.

15 nests on wooden girders, all unsupported except two flat nests on logs.

An unusual nest hung suspended from a hook of wire protruding from the concrete decking of a small farm bridge. This large nest was supported by grass stalks looped through the wire hook and cemented into the mud. The nesting cavity was built in one end of the tubular nest, the rim edges being at an angle of 45 degrees to the horizontal. A brood of chicks was successfully reared in this nest, which is now in the Auckland Museum.

My thanks are due to Mr A. T. Edgar and Mr E. G. Turbott for helpful discussion and advice.

REFERENCE

MUNRO, M. 1969. Welcome Swallows in Whangarei County, 1962/68. Notornis 16 (3); 198-201, 1 map.

MURRAY MUNRO

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WHITE-FRONTED TERNS *(Sterna striata)* IN THE TASMAN SEA

On two recent crossings of the Tasman, White-fronted Terns were found onboard alive; both birds subsequently died and were kept frozen down. The bird from position "A" is now in the skin collection of D. J. Gibson of Thirroul, N.S.W., and the bird from position "B" is at New Plymouth Museum.

" A," 39°14'S, 156°40'E, 30/6/72, at 2000 hours; Weather: Wind WNW 40 knots, sea rough, overcast with frequent heavy rain squalls, air temp. 12.0°, sea temp. 15.6°.

This bird, an adult, was found on deck and placed in a box overnight; it was found dead in the morning.
" B," 35°50'S, 160°10'E, 14/7/72, at 1600 hours; Weather: wind W 24 knots, sea moderate to rough, 6/8 cloudy, air temp. 17.0°, sea temp. 16.4°.

This bird was a juvenile, still retaining areas of dark grey on the upper wing especially about the elbows. It seemed in good condition so it was banded and released, only to be found dead the following morning.

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WRYBILLS IN CENTRAL OTAGO: FURTHER RECORDS

Continuing my notes of southern records of Wrybills (Child 1971), I can now add the following:

On 9 September 1971, while making a census count along the Hunter riverbed above Lake Hawea, we found 4 Wrybills in similar circumstances to those seen near the mouth of the Matukituki River in 1969 (Child 1971: 252), all separated and busily feeding at the water's edge. Occasionally a Wrybill would chase off a Banded Dotterel, the latter being relatively common in this area. No evidence of nesting or territorial behaviour was noted among the Wrybills. The Hunter is the closest riverbed in direct line from the Ahuriri where we observed a few in 1965. It would be interesting to know whether, in fact, Wrybills used this riverbed before about 8 miles of the broadest shingle stretches were flooded by the raising of the lake level in 1959 by some 60 feet for hydro-electric storage.

On 30 October 1971, while making a similar census of the shingly stretches of the Matukituki, we counted a total of 7 Wrybills well scattered over a stretch of some nine miles. Probably there were 8 birds since 6 of the 7 we saw were paired, these pairs being one to two miles apart. Two nests, each with two eggs, were found, making this a new record as a breeding species in Central Otago and extending the southern limit of the breeding range.

Another new record is that of D. R. Sutherland and H. Tanfield of 4 Wrybills seen on the mudflats at the head of Lake Wanaka (Sutherland 1972).

On 21 October 1972, during a census along the Makarora riverbed at the head of this lake, I first encountered a lone male Wrybill which flew upriver several hundred yards and was evidently not involved in breeding; then, about another half-mile downriver, in a broad shingle stretch about a mile from the mouth, I found a female incubating two eggs, this being the first nest recorded from this riverbed. Her mate was nowhere in the vicinity. No Wrybills were found on this riverbed during a similar census in 1966.

REFERENCES

CHILD, P. 1971. A Wrybill in Central Otago. Notornis 18 (4): 252.
SUTHERLAND, D. R. 1972. A southern record of Wrybills. Notornis 19 (2): 189.

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PROBABLE COMMON SANDPIPER AT WAIKANAE

From the main highway bridge to tidal limits the Waikanae River meanders on a wide gravel bed between low banks mostly protected by planted willows. On 24 November 1972, about a quarter mile downstream in a straight line from the bridge, my wife and I briefly observed what was almost certainly a Common Sandpiper.

A small wader flew downstream, about the size of a Banded Dotterel but more delicately built, smaller than a Pectoral and judged to be larger than a Curlew Sandpiper. It had a pale alar bar and its rump was not white. It landed on some half-submerged culverts just for a few minutes, and then flew on and was not seen again. It was extremely active, moving about the water margin, bobbing up and down continually (head and tail), in fast-moving water up to about an inch deep. Its bill was about twice as long as a dotterel's, noted as straight or slightly downcurved. It differed from Pectoral, Sharp-tailed or Curlew Sandpiper in that its back and pectoral flank patches were not spotted but appeared quite uniform in tint, the back darker brown than any of these. The pectoral flank patches were uniform medium brown; the white stripe between them and the wings (mentioned in some field guides) was not noticed. Leg colour not observed but feet seemed large. Head pattern not clearly seen.

The river was searched in vain next day and independently by P. C. Bull, F. C. Kinsky and Ian G. Andrew during the following week. Although I had seen Common Sandpiper in Kent in 1948, a September skin from Western Australia that had been in my possession for many years was even more important in influencing the preliminary identification while still at Waikanae, which was if anything confirmed

by the books consulted in Wellington two days later, and by H. R. McKenzie, to whom I am indebted for reminding me that a non-breeding Spotted Sandpiper cannot be distinguished from a Common Sandpiper in the field but who points out that the latter is much more likely for New Zealand than the former from what is known of the distribution of these two species. The habitat would be unusual for most migrant waders, but is apparently not so for a " Common " which according to Witherby *et al.* (1943: 297) is characterised as " frequently occurring on streams where other waders are rarely seen." Serventy & Whittell (1951: 163) note that it often perches on a rock, an un-wader-like habit.

LITERATURE CITED

SERVENTY, D. L.; WHITTELL, H. M. 1951. A handbook of the birds of Western Australia (with the exception of the Kimberley Division). 2nd ed. Pp. 1-384, text-figs 1-46, pls 1-6, 1 map. Perth: Paterson Brokensha Pty Ltd.

WITHERBY, H. F. *et al.* 1943. The handbook of British birds. Reprinted and revised, 2nd impress. Vol. IV. Cormorants to Crows. Pp. xiv + 1-461, 85 text-figs, 8 maps, pls 93-125. London: H. F. & G. Witherby Ltd.

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BOOK REVIEWS

Birds in Bass Strait, by Ken Simpson. Published for B.H.P. by A. H. & A. W. Reed Pty Ltd, Sydney, *&c.,* 112 pp., illus., 1972, $4.95.

Described as the first of several titles on selected Australian subjects initiated and sponsored by the Oil and Gas Division of the Broken Hill Proprietary Co. Ltd., this book will be of particular interest to New Zealand readers. Bass Strait is not in any sense a narrowly restricted region, for its sea and shorebirds are representative of the same latitudinal zone as much of the New Zealand coast. The author, who is currently a Senior Technical Officer at Monash University, Melbourne, with a comprehensive background of varied field experience in both Australia and Antarctica, has a distinctive style and approach, refreshingly free of cliche and re-hashed data. When there is good published material available he gives the relevant reference, but devotes his text mainly to original observations and to comments which are practical and stimulating. It leaves the impression that Mr Simpson has digested the available literature, but also has kept his eyes open. The quality of the text is enhanced by good concluding chapters on landbird migration, research by banding, beachcombing, specimen preservation and recording, seabird photography, bird societies and clubs, and the marine mammals. Typical of the author's style are the instructions for such emergencies as dropping your camera in the sea — " Keep it totally submerged in salt water until you get it home . . . place it in the toilet . . . and then flush ten times . . . Have a stiff whisky if you feel depressed."

The printing, lay-out, and the standard and choice of illustrations, mainly in colour, are very good indeed. It is interesting to note that, with two exceptions, all the photographers are amateurs. There are some arresting and unusual studies, such as Graeme Chapman's Greenshank (Pl. 28) and a fine series of oceanic birds on the wing by Bill Burlace. One could be tempted to ask him why the Wedge-tailed Shearwaters (Fig. 15) are not Flesh-footed Shearwaters, why the immature Black-browed Albatross (Fig. 16) is not an immature Grey-headed; or ask Michael Carter why the Eastern Common Terns in Plate 20 are not White-fronted, but they could be right, and the questions only point up the pitfalls.

This attractive book can be recommended for both reading and reference.

R. A. F.

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Birds of the Antarctic and Subantarctic. By G. E. Watson, J. P. Angle, P. C. Harper, M. A. Bridge, R. P. Schlatter, W. L. N. Tickell, J. C. Boyd, and M. M. Boyd. Antarctic Map Folio Series, Folio 14. Pp. 1-18, figs 1-2, 2 maps, pls 1-15. American Geographical Society, New York, 1971, US $10.

Dr George E. Watson, of the United States National Museum, is the senior author of this impressive publication, and his formidable list of collaborators includes one active member of the Ornithological Society of New Zealand. Published under contract with the National Science Foundation, the important distribution charts embody, along

with much earlier data, the results up to 1968 of all the ornithological work sponsored and assisted by the NSF and carried out from the USNS *Eltanin,* other vessels, and shore stations.

The overall size of 44 x 28 cm ensures that the 14 distribution charts are large enough to define the known breeding localities and recorded total distribution of some fifty taxa of birds. The difficult decision of where to draw the line in coverage has been made by plotting only those species breeding south of the Antarctic Convergence or on the islands just north of it yet clearly within its influence, such as Marion, Prince Edward, Crozet, Kerguelen and Macquarie.

An introductory section of ten pages of text includes chapters on the physical environment, distribution with accompanying tables and diagrams, followed by species accounts presented under family groupings. The discussions under this last section indicate considerable research and are generally constructive. Even a wordy recent correspondence in this Society's journal has been cited to justify not recognising records of Macaroni Penguins from Cape Hallet, Balleny Islands, and the New Zealand Subantarctic. Perhaps the excessive length of the correspondence confused the authors, for all that was at issue in it was the identification of a single specimen from the Snares: other records have not been challenged. The section is followed by a reference list of 125 titles, and the 713 data sources used in compiling the distribution charts. As the charts are large enough to carry the reference numbers legibly all the sources of records can be easily found, which is no small advantage. A few of the data derived from nineteenth century records are of doubtful accuracy, such as the acceptance of Buller's statement that *Pterodroma mollis* breeds at the Kermadec Islands, but generally the evaluation is more careful.

For good measure Plate 15 carries photographs of 31 species. The reproduction is not crisp enough to show plumage characters clearly in all of them, and at least one error of identification has slipped through, with a Giant Fulmar masquerading as a White-chinned Petrel.

The publication provides a valuable base-line for all subsequent distribution studies, while the method of analysis and of presentation sets a new and high standard.

R. A. F.

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Grzimek's Animal Life Encyclopedia. Editor-in-chief, Bernhard Grzimek. New York, *&c.:* Van Nostrand Reinhold Company, 1972. Vol. 7, Birds I. Tinamous to Quail. Pp. 1-580, illus.; Vol. 8, Birds II. Grouse and Pheasants to Mousebirds. Pp. 1-630, illus. Each vol. UK £10.75; US $29.95; NZ & AUS approx. $30 (the set c. $390).

These are sumptuous volumes, representing two of the three proposed volumes on birds within a 13-volume set of Grzimek's *Animal Life Encyclopedia,* originally published in German in Zurich during 1968 and now appearing in English along an international production line, the type being set in Canada, printing and binding in Italy and publication in New York and London. These two volumes weight 4½ lbs each and measure some 10″ x 7″ x 3″, the

whole 13-volume set eventually occupying, therefore, over three feet (or closer to a metre) of the bookshelves of anyone financial enough to be able to afford them at around $30 each.

Bernhard Grzimek, the overall editor of the series, is a distinguished wildlife conservationist and is well known as Director of the famous zoo at Frankfurt-am-Main. He has spent many years in Africa and his films *Serengeti Shall Not Die* and *No Room for Wild Animals* will be vividly recalled by those who have seen them. His other books, not yet made into films so far as I know, include *Rhinos Belong to Everybody, He and I and the Elephant* and, especially interesting for " down under " readers, *Four-legged Australians;* they are eminently readable accounts of wildlife interests and problems beyond our own horizons. Now we have this magnificently-presented set of encyclopedic volumes to associate with the name " Grzimek " (pronounced ZHEE-mack).

This work, the result of editorial collaboration with over 200 specialists on animals, lends itself to comparison with other encyclopedias and treatises on animal life on a broad scale such as the Larousse, Urbana and, perhaps, the Grasse volumes. The great merit of " Grzimek " is, however, that it is in English, the original German edition which appeared in 1968 having been translated, in a generally competent but occasionally curious manner, by a special staff of 11 to form an attractive English edition. Of the 13 planned volumes, Mammals I (Vol. 10) and IV (Vol. 13) [reviewed in *Science,* N.Y. 177: 1184, Sept. 1972] and Birds I & II (Vols 7 & 8) are already published. Volume 1 will comprise the " Lower Animals "; Vol. 2, the insects; Vol. 3, the molluscs. The other 10 will cover the vertebrate animals: Vols 4, Fishes I; 5, Fishes II, Amphibians; 6, Reptiles; 7-9, Birds I-III; 10-13, Mammals I-V. Truly an impressive set of volumes, each likely to be as handsomely printed, bound, and lavishly illustrated as the four so far available.

" Birds I " (ranging from Tinamous to Quail) is of particular interest since several New Zealand-domiciled authors have contributed to it. It is edited separately by a panel of five including the German ornithologists Gunther Niethammer and Joachim Steinbacher. A general introduction to modern and primitive birds running to 65 pages opens the volume and is followed by systematically-arranged descriptions of the orders and major families and notable species of the world's birds. The " Distinguishing Characteristics " of each group is given but there is no further consistency of treatment throughout the book. Some orders have their behaviour or breeding biology discussed in detail or perhaps a single species is described at length to illustrate an example for a particular family. The reader will, therefore, not necessarily find this work a *handbook* of birds of the world giving a Witherby *et al.* compendium of what is known of each. The three volumes will, then, deserve a direct comparison with the 10-volume set of *Birds of the World* edited by John Gooders and recently published in full by IPC Magazines, London.

The first New Zealand-based contribution is that by R. A. Falla on the moas and kiwis. It is evident from what we know of this author's literary and scientific style that his account has been submitted in English, translated into German for the 1968 edition, and now translated back to English for the new 1972 version. Something has

certainly been lost in this and the other contributions from English-writing authors. The account of the moas opens — " . . . gigantic flightless ratites also once lived on the large islands of New Zealand; they reached their peak in the Glacial Period and were able to survive almost to the present. These very plump moas (family Dinornithidae) were very similar to the much smaller kiwis. We therefore combine both into a single order (Apteryges), but some zoologists divide them into two orders." There is some curious reading — " Moas, like kiwis, have four toes, their sense of smell is good, and their eyes are small. The clutch is only one or two eggs." We meet the " Giant Moa " *(Dinornis maximus)* and the " Dwarf Moa " *(Megalapteryx hectori)* and are told that the "Elephant Foot *(Pachyornis elephantopus)* and the Plumpfoot Moa *(Euryapteryx gravis)* had especially heavy feet." In striving presumably for the common touch with newly-coined vernacular names, there results the " Common Kiwi " *(Apteryx australis)* divided into three subspecies, " Southern, Northern and Stewart's Common Kiwi." On the coloured plate opposite page 89 (the plates are not numbered but are included within the text pagination, i.e. this plate is p. 88), we are introduced to " Little Owen's Kiwi " *(A. owenii owenii)* and " Greater Owen's Kiwi " *(A. owenii haasti)*. I am sure Sir Richard Owen would not feel flattered. A tiny distribution map set in a wide internal or " back " margin tries hard to show the " Original areas of distribution of kiwis . . . today they are extinct in parts of their former range." Such minute marginal maps are set out against most species or groups discussed, with side headings also set here in place of the more conventional centre heads. Cupid's bow-like symbols mark " endangered species or subspecies " and other small marks point up the location of colour illustrations. On each of some 400 pages a margin of 2″ x 8″ is left; truly a great amount of " white " for which the reader must pay in the interests of art, certainly not of convenience or practical use. In almost every case the maps need the application of a magnifying glass (unlike the new Oxford Dictionary one is not included by the publishers). Perhaps the showy colour plates compensate and it is true that the marginal figures of birds displaying and so on are somewhat better.

Chapter 5 is entitled " The Penguins " and is by Bernard Stonehouse who has also written the introduction to Chapter 6, " The Tube-nosed swimmers," as well as the " procellariids " and " diving petrels." John Warham has contributed " Albatrosses " to this chapter; and, in Chapter 7, " Pelecaniformes," Stonehouse wrote on " Tropicbirds and frigate-birds " while Warham contributed the section on " Gannets." Each of these articles, of particular interest to Southern Hemisphere bird folk, is again illustrated with tiny maps and figures. Various inconsistencies and oddly-thought-up vernacular names appear — see, for example, the " Dwarf Penguins " of the genus *Eudyptula,* the distribution of which is microscopically illustrated in Fig. 5-8 as the " Little Penguin."

The general treatment is shallower than one might expect from the bulk of the three volumes, but to compress 8,500 species of birds into some 2,000 pages would not be easy. An example can be made of the contribution on albatrosses by John Warham occupying five pages of text, one colour plate (showing Wandering Albatross, Waved,

a Royal chick, Black-footed, and Light-mantled Sooty), five marginal figures (showing display of Wanderers and of Waved, Buller's in "flight intention posture" and copulation, and a Royal feeding its chick). A number of misprints such as "Snare Island" and "Tairoa" Heads are evident and a new species of Shy Albatross "*Diomedea caudata*" appears on pp. 142 and 499. A list is given of the species within each of the major size and geographic groupings of albatrosses, followed by a general consideration of feeding and of reproduction (based on Richdale) and, in particular, on the courtship of the Waved Albatross (based on Eibl-Eibesfeldt) with some comments on dispersal movements. Literature references (pp. 562-3) for "Birds covered in this volume" include neither Murphy nor Jameson nor Alexander let alone any of the papers of Richdale, Tickell, H. I. Fisher or any of the others who have written on albatrosses. There is nothing, therefore, for the reader who wants to know more about these impressive birds so well eulogised by Sir William Jameson. By contrast, in *Birds of the World* (Part 2, Volume 1) the section on albatrosses written by Sir Hugh Elliott (Wandering), Dr W. R. P. Bourne (Laysan and Black-browed) and Anonymous (Yellow-nosed, Grey-headed, Sooty) yield, perhaps, more detailed information on each species with colour photographs of courtship in the Wanderer, an illustrated discussion of how they fly (based on Sir William Jameson's book) and a guide to albatross identification. Readers will be able to decide which approach satisfies them according to their needs, and the same technique could be applied to the Petrels also.

An appendix to each volume of "Grzimek" gives the systematic classification and an animal dictionary cross-referenced from English to German to French to Russian with the four combinations of this multilingual sequence. There is some fascination in seeing how familiar names have become transformed. Who would guess that the "Million-ensturmbacher" was the Short-tailed Shearwater? The Fiordland Penguin has no French name but is known to the Germans as "Dickschnobelpinguin" and to the Russians as "Tolstoklovny Peengvin." The Black-browed Mollymawk is just as impressive a bird when called "Schwarzbrauenalbatross" or "Albatross a sourcil noir" but "Schwarz-buch-Sturmschwalbe" seems a mouthful for a very small bird, the Black-bellied Storm Petrel. The "Common Kiwi" (known to us as the North Island Kiwi, South Island Brown, or Stewart Island Kiwi, depending on where they occur) is called by the Germans "Streifen-kiwi," by the French "Kiwi austral" and by the Russians "Obik-novenniy keevee." Owen's Kiwi becomes "Fleckenkiwi" to the Germans and "Kiwi d'owen" to the French; how much better to have translated them into the text from streifen (= striped or striated) and flecken (= spotted or speckled). A conversion table of metric to U.S. and British systems, also in the Appendix, is useful beyond the confines of the book and many readers will want a copy for their walls. Supplementary reading references including general books on birds and books (rather than articles in journals) specifically on the birds covered in each volume, together with a comprehensive index, completes each volume.

Doubtless this work will be a source of reference and introduction to birds on a broad scale to those, wherever they live in the world, who want a handy, though bulky, volume on the shelf. The

" in-depth " treatment of some species and groups matched against the impossibility of writing much about everything, coupled with the frustratingly-useless maps, will limit the value of this otherwise fine treatise. For myself, I am more pleased to have subscribed to a set of *Birds of the World* (despite its limitations of authoritative authorship) but everyone to his taste. For those who like the " consumer " approach, value for money or best buy, 3 volumes of " Grzimek " at, say, NZ $30 = $90 while 108 weekly parts of *Birds of the World* at 55c each = $59.40. Nevertheless I wouldn't mind a set of " Grzimek " on my shelf and I would certainly recommend it as a necessity for the National Library and the major public and university libraries throughout the country (even if only to acquaint the curious with the wonderful diversity of animal life). A coloured brochure on the series is available from Technical Books Ltd, P.O. Box 5174, Wellington, who will supply single volumes or sets to order.

E. W. D.

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MCPHERSON, L. B. *Sounds of New Zealand Birds,* Vols 2 and 3. Two 45 r.p.m. extended play records, PR 629 and PR 641. Christchurch: McPherson Natural History Unit, 1972. $1.50 plus postage.

Les McPherson, who operates the McPherson Natural History Unit at P.O. Box 21-083, Edgeware, Christchurch, has produced two more discs in his series of sounds of New Zealand birds; and, according to information on the disc envelopes, he intends to go on with the programme.

This should please bird students who, for a reasonable price, might wish to acquire actual recordings of bird songs in preference to trying to figure them out from descriptions in field manuals.

Mr. McPherson's new discs contain the following:

Volume Two

Goldfinch	Paradise Duck
Tui	Canada Goose
South Island Fantail	Peafowl
[Rock] Pigeon	California Quail
Erect-crested Penguin	Spotted Shag

Volume Three

Budgerigar	Chukor
Blackbird	Yellowhammer
Crimson Rosella	Mallard
Black Swan	Black-billed Gull
Grey Partridge	Grey Warbler

Of these twenty, eleven were not made in the wild, but this should not be criticised as they are properly identified as to location. His Paradise Duck is one of these, and I heard sounds from the captive I'd never heard before though I've spent much time with the species. This is not unusual. The California Quail's crowing seems a bit different than in the wild. There are interesting sounds from the Chukor, but its characteristic loud crowing is not on the disc.

The Erect-crested Penguin, made in the wild, was exceptionally good, especially as it was taped from an open boat where one might expect its voice to be smothered by waves, wind and boat noises. The Grey Warbler's song is very loud and clear from a bird obviously close to the microphone, although the tape has a bit of low-frequency extraneous noise. Some over-recording can be noticed on louder portions of the Goldfinch and Yellowhammer, but others are good and quite interesting. Some purchasers may find these discs slightly different from what is in their neighbourhoods if they are not aware of the many regional dialects among New Zealand birds.

All of us who tape New Zealand birds have a long way to go before we catch up with Johannes C. Anderson who described some 70 different Tui vocalizations. Anderson may have been one of the world's first bio-acousticians as he searched about with pitchpipe and musical scorepad before the days of tape recorders. His initial studies were published in 1910 and 1912 in the *Transactions and Proceedings of the N.Z. Institute.* His 1926 book, " Bird-Song and New Zealand Song Birds " has long been out of print; but the knowledge of this early pioneering should stimulate New Zealanders to carry on his tradition.

Beginning ornithologists are mostly interested in birds' songs, their " identification of territory." Some students later become quite interested by birds' calls as they attempt to study what the birds are doing and how they communicate with one another. In such work it is, of course, necessary also to record the bird's conduct so that the call can be related to behaviour.

But with such a small market for bird discs, it would be impractical for Mr McPherson to publish all of a bird's songs, its regional dialects, and its calls together with descriptions of concurrent behaviour. However, if we could develop a central library of New Zealand bird tapes, with the songs and calls of each species on a separate reel, and data sheets for each tape, what a wonderful help it would be for advanced students, behaviourists, and those whose task it is to revise the " Field Guide " !

Mr McPherson is to be congratulated for continuing his contributions towards making New Zealand bird songs more readily available.

Wm. V. W.

[A review of the first record, *Sounds of New Zealand Birds,* Volume One, appeared in *Notornis* 18 (1): 67 - 68; 1971.]

NOTES AND NEWS

ORNITHOPHILATELY OR PHILATEORNITHOLOGY ?

Quite a number of ornithologists combine an interest in birds with stamp collecting or, to use its more dignified name, philately. A welcome number of stamp collectors (philatelists, if you wish) specialising in topical collecting are becoming interested in the birds portrayed on stamps. They will no doubt find help in the systematic arrangement of their collections from *Animals on Stamps* by Strom & Lewy (watch for typographical errors) but New Zealand collectors will find a useful introduction to birds (and other animals) on New Zealand stamps, without having to go on their own to " Oliver " or " Soper," in Mr Arthur Parrott's currently-appearing articles in *The Press,* the Christchurch morning paper. Of special interest have been the contributions in " Penguins and White Herons " (article VIII of the series, *The Press,* 23 Dec. 1972, p. 11) and " Australian Gannets and Pied Stilts " (article X, 3 Feb. 1973, p. 12). Perhaps the OSNZ will gain some new members from the ranks of the philatelists !

A further link between ornithology and philately commemorates an achievement of great interest to us. The work of the Royal Forest and Bird Protection Society has been recognised on the occasion of its 50th anniversary by the New Zealand Post Office by the introduction on 6 February of a new 6c stamp, designed by Brian Langford, an honours student at the Canterbury University School of Fine Arts. As Gillian Shadbolt, author of an article on this stamp (Forest and Bird stamp honours struggle to save unique environment, *NZ Philatelic Bulletin* No. 9: [6-7], Feb 1973) states: " The Post Office's stamp, giving official recognition to the society's work in its early years, will add to present day efforts to provide an even stronger base for the work of the Royal Forest and Bird Protection Society in the years ahead."

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AUSTRALIAN WILDLIFE TOUR

Colin Searle is arranging another Australian Wildlife Tour, departing about September 1973. This is a coach camping tour of approximately 28 days, visiting the rain forests of Queensland, the Great Barrier Reef, the flood plains of Arnhem Land, the Barkley Table Lands and the Gulf of Carpentaria. There is a possible alternative substitution for the six day Arnhem Land section for those wishing to visit Alice Springs, Ayres Rock and Central Australia. A cook and courier driver go with the tour to assist with the camping. The cost is approximately $400 and includes food and transport within the terms of the itinerary; the tour will be varied to suit road conditions and the comfort of the party. There is no age limit but participants must be reasonably fit and in good health. For details write to:

COLIN SEARLE, P.O. BOX 2577, AUCKLAND, C.1.

FROM THE EDITOR'S DESK

SIR ROBERT FALLA, K.B.E.

The news that Dr R. A. Falla has been created a Knight of the British Empire is gratifying indeed. It is an honour, however, not simply for the man or even for Ornithology but rather for the whole field of Natural History in New Zealand. To those interested in nature and conservation matters, in effect a very great many New Zealanders, the name of Dr Falla has become a household word throughout the country. One can recall, from a long time ago, looking forward to each Thursday's edition of *The Press Junior,* the children's supplement to *The Press,* the Christchurch morning paper, for the "Museum Notes by R. A. Falla," started shortly after his arrival in Christchurch in 1937. The author has never lost his common touch of popular writing, and bibliographers may care to note that the first contribution to appear under Sir Robert's new title is apparently that on birds in North Auckland in the February/March 1973 issue of *The New Zealand Motor World.* His early radio talks from Christchurch delighted thousands and may well have had a significant part to play in conditioning the public to the importance of our environment even some 30-odd years ago when they were first broadcast; now his present work, which still keeps him a public figure, as Chairman of the Nature Conservation Council is literally shaping the future of New Zealand.

Let abler pens than mine write the detail of Sir Robert's achievements. But let me say, nonetheless, that those of us who have known him since our formative school days, as I have done, realise with increasing awareness and appreciation, as our own careers develop, how much we owe to Dr Falla (it is not easy to forget his familiar title) for his early encouragement and continued, though often indirect, guidance. I am often perplexed to know whether scientists, in this day of computers and mechanisation which threaten to remove us so rapidly from the old-time natural history, still have their own philosophy of life and work. To ask this about Sir Robert Falla would be rhetorical indeed. How close he is to nature and how much his life and work are intermingled can be amply seen in his delightful little book *The Holiday Naturalist,* described by its publishers as "a gentle introduction to natural history by a man whose whole life has been devoted to its study; a man who can make any walk, almost anywhere, into a source of pleasure and new knowledge." This, even more than any of his more profound scientific writings, typifies the way that he has, unlike many scientists, successfully closed the gap between the professional and the amateur. His Presidential Address to the New Zealand Ecological Society, delivered in August 1955 (see *Proc. N.Z. Ecol. Soc.* 3: 1-6; 1956), entitled "Some Reflections on the Training of an Ecologist" takes on a new significance today and deserves the closest attention from those anxious to see professionally-trained and field-experienced ecologists in positions of responsibility and judgement.

R. A. Falla with H. Guthrie-Smith and E. F. Stead
at " Ilam," Christchurch, 5 November 1937
Photo: Green & Hahn

Leo Fanning, the veteran journalist, once wrote a racy and enlightening account of Dr Falla (as he was then), tracing the development of his career and revealing, amongst other things, how he perhaps might have become a sailor instead of a distinguished naturalist. The reference to this profile is: " Many parts of New Zealand helped to shape Museum director " *The Evening Post* [Wellington], 13 December 1958, and it is well worth the trouble of asking for at the library.

Sir Robert's *curriculum vitae* reads:

> Born 21 July 1901, Palmerston North; educated Invercargill Primary, Auckland Grammar, Auckland University College (M.A. in Education, 1926, thesis on " The place of Nature study in education); Lecturer in Nature Study, Auckland Teacher's Training College, 1925-30; *Dana* oceanographic expedition, 1928-29; Assistant Zoologist, British Australian New Zealand Antarctic Research Expedition led by Sir Douglas Mawson, 1929-31; Ornithologist and Education Officer, Auckland Museum, 1931-35; Assistant Director, 1936-37; Director, Canterbury Museum, 1937-47; D.Sc. awarded, 1939, for work on BANZARE birds; Carnegie Scholar, 1939; leader of coast-watching party (Cape Expedition), Auckland and Campbell Islands, 1941-44; Director, Dominion Museum, 1947-66; Chairman, Nature Conservation Council, 1962 to date; C.M.G., 1959; K.B.E., 1973; President of many scientific societies including OSNZ, RAOU, NZ Ecological Society, the Wellington Zoological Society, 7th Pacific Science Congress, and the Royal Society of New Zealand, of which he was elected a Fellow in 1941.

How much more there has been to his career than this mere framework! For here is a man who has been committed to research, administration and education in almost every field of natural history, let alone his diverse interests in Antarctic history and exploration, whaling and sealing, and ships and the lore of the sea. In the wider sphere of public service he is prominent in church and Rotary affairs. Sir Robert is also an eloquent and entertaining speaker, matching his words and sentiments with special skill to the appropriate occasion and revealing each time his particular concern for both subject and audience. Indeed, I enjoy recalling the experience of hearing him talk of his 1963 Auckland Islands expedition to five separate groups of people ranging from the AGM of the OSNZ, and a meeting of the NZ Ship and Marine Society on another occasion, to an audience of New Plymouth high school children. Each address was slanted to the particular interests and level of appreciation of that group and there resulted five very different yet equally informative and enjoyable approaches to the same subject.

One must not forget Lady Falla. She could hardly be likened to Mistress Ford of *The Merry Wives of Windsor* (of whom it was said: " Well, she laments, Sir, . . . Her husband goes this morning a-birding . . .") for she has fully shared Sir Robert's interests and experiences, particularly in caring for the many and varied birds brought into their home. Her own talents as an artist and writer

are charmingly shown in *A Sketchbook of New Zealand Birds* (1966) and *A Pocketful of Penguins* (1970), both notable additions to the literature of natural history.

A particularly interesting feature of Sir Robert's early career was his friendship with members of the older generation of natural history such as A. T. Pycroft, Bernard Sladden, Guthrie-Smith, and Edgar Stead. He was privileged to know them and, doubtless, be influenced by their philosophy and ethic. It is appropriate, therefore, that this eulogy of Sir Robert Falla should be illustrated with a unique photograph of three of New Zealand's greatest bird men, each a true naturalist in the finest sense, taken on a memorable occasion in 1937 (see *The Press* [Christchurch], 6 Nov. 1937: 16).

To be Chairman of the Nature Conservation Council is demanding not only in the possession and use of the requisite background knowledge and experience but also of diplomacy, tact and understanding of the other possible points of view. New Zealand is fortunate in the present guiding hand of the NCC and it is fitting that Her Majesty the Queen should recognise Sir Robert Falla's role in watching over the national heritage of our country.

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NOTICES

SHORT NOTES AND BOOK REVIEWS

The Editor especially welcomes contributions for the "Short Notes" section of *Notornis*. Please type your offering double-spaced and set out according to the pattern set in current issues. Book reviews of New Zealand interest or significance are also welcome but potential reviewers may like to write to the Editor first to avoid possible duplication of effort. References to recent ornithological literature in obscure or ephemeral publications which might be of interest to other members may also be sent in.

INDEX TO NOTORNIS

The index to Volume 19 (1972) will be sent out with the June 1973 issue.

FIJI FIELD TRIP

Any male members interested in a field trip to Fiji from 19 August to 2 September should communicate with Mrs. G. Eller, 12 Rochdale Avenue, Glendowie, Auckland.

DR R. C. MURPHY

We have just learned of the death at the age of 85 of Dr Robert Cushman Murphy. An obituary notice will appear in the next issue of *Notornis*.

ABOUT OUR AUTHORS

CHARLES FLEMING is a very well-known member of the OSNZ and needs little introduction to readers. He was President from 1948-1950. We will always be especially indebted to him for his work as Convener of the Committee responsible for the 1953 Checklist. His more academic achievements are, perhaps, not so well-known to his many friends outside the strictly scientific fraternity and reference to sources of further information about his scientific career might be of some interest.

A profile of Dr Fleming, written by Margaret Kelly, in the *Auckland Weekly* of 16 October 1963 gives a readable account of the development of his interests and, particularly, the part he has played in reforming New Zealand science through his involvement in the Royal Society of New Zealand, of which he was President from 1962 to 1966. He is also one of the few New Zealanders to be elected a Fellow of the Royal Society of London, a particularly high honour in scientific circles. His other honours and achievements can be found in *Who's Who in New Zealand* and in the first volume of the *Encyclopaedia of New Zealand,* but another interesting outline of his career has been published recently in *Search* (Vol. 3, No. 9, pp. 316-7, Sept. 1972), the journal of the Australian and New Zealand Association for the Advancement of Science, on the occasion of his award of the ANZAAS Medal. Dr Fleming has been a prolific publisher of his work and interests. A bibliography of his writings from 1939 to 1971, compiled recently by Mr I. W. Keyes of the NZ Geological Survey, lists 266 items ranging from popular geological articles in the *Otaki-Waikanae Weekly News* to scholarly contributions to such journals as *Tectonophysics* and the *Bulletin of Zoological Nomenclature.*

Margaret Kelly wrote of him: " As a naturalist, whose insatiable curiosity has brought great personal satisfaction and has resulted in scientific research of considerable importance, Dr Fleming has had a richly rewarding career." Members of the OSNZ and readers of *N.Z. Bird Notes* and *Notornis* will share her sentiments. Dr Fleming is currently playing a significant role behind the scenes as a member of the Environmental Council.

ALAN BAKER is Curator of Echinoderms and Marine Mammals at the Dominion Museum, Wellington (shortly to be renamed the " National Museum "). He has recently published a useful guide to " New Zealand Whales and Dolphins," issued as Part I of Volume 20 of *Tuatara,* the journal of the Biological Society of Victoria University of Wellington. Dr Baker was born in 1940 and has always been interested in marine life since his childhood in the Bay of Islands. He graduated from Victoria University with a Ph.D. thesis on a life-history study of the New Zealand Pilchard, *Sardinops neopilchardus,* carried out from 1966 to 1968 during the tenure of a N.Z. Marine Department research fellowship and since published as *Fisheries Research Bulletin* No. 5 (1972). He has written papers on a variety of topics ranging from sea-urchins to fossil whales. Alan Baker is an accomplished skindiver and has done much work around the Poor

Knights Islands as well as joining in expeditions to Niue Island and the Antarctic. He has also had first-hand experience of the Crown-of-Thorns starfish plague on the Great Barrier Reef. Dr Baker recently visited some of New Zealand subantarctic islands from Mr Alex Black's *Acheron* during the 1972/3 Auckland Islands expedition. He is this year's President of the N.Z. Marine Sciences Society.

BRIAN MCPHERSON is at present engaged as a guide on the Routeburn Track. He is 19 years old and developed his ornithological interests at primary school, later becoming more orientated towards ecology in general. His major interests are in botany, photography, and, particularly, tramping, climbing and working in the Fiordland mountains. During 1973 he will be studying at Otago University, taking Botany II, Anthropology I and Geology I.

CARL ROBERTS has been at Colorado College since 1957 and received his Ph.D. degree in Experimental Psychology from the University of Missouri in 1959. Accompanied by his wife, Professor Roberts went to New Zealand for a year on a combined sabbatical leave and College Science Improvement Program grant from the National Science Foundation.

He writes: " This COSIP grant is designed to allow scientists in various colleges and universities time off in addition to sabbaticals to beef up their areas of competence and to expand their skills into new areas. I have long been interested in and have taught Comparative Psychology and Ethology in addition to my primary courses in Learning and Behaviour Theory and the experimental analysis of behaviour more generally. I went to New Zealand partly because of the accessibility of various exotic animals, partly to spend a year in a different culture from my own, partly because both my wife and I had always wanted to visit New Zealand because of its geography and history of progressive social legislation, and partly because of the trout fishing. My primary purpose was to expand my skills and knowledge in animal behaviour areas. I got started on the Yellow-eyed Penguin primarily because I wanted to take moving pictures of penguin behaviour. Since I was doing that it seemed reasonable to collect such data on egg and chick survival as I could, since I was already looking at a variety of penguin nests. Hence the article."

While in New Zealand Professor Roberts developed procedures for the experimental study of such birds as the Takahe, the Yellow-eyed Penguin and kiwis, involving battery-operated automatic apparatus, and would very much like to see such ideas developed at a zoological park such as Mount Bruce.

ANTHONY WHITTEN was born in London in 1953 and has lived there since. He was educated at Dulwich College which he left at the end of 1971. During the summer of 1970 he worked on a Royal Society grant at Peter Scott's Wildfowl Trust at Slimbridge which has resulted in his first paper, " A new behavioural method for the further determination of olfaction in the Mallard," in the *Journal of Biological Education,* December 1971. He applied for a Churchill Fellowship and, as he says, " was surprised, and honoured, to be elected the youngest ever Churchill Fellow in 1971."

He writes: " I chose to visit New Zealand for about nine weeks to study conservation methods and the Churchill Trust allowed me also to stay for appreciable periods in Singapore, Western Australia, Fiji, Hawaii, Vancouver and Banff on my way to and from New Zealand. I spent my time in New Zealand seeing as much as I could and speaking to innumerable people arranged partly by Lands & Survey and by the Wildlife Service. What I did in New Zealand could fill a book (in fact I wrote over 50,000 words of log) and there is only space to say that the things that stick out in my mind are the periods spent on Little Barrier and Kapiti, in the Southern Alps and at Mount Bruce. I am having a year off before I go to Southampton University and during this time I have been writing articles about my trip, helping Dr Janet Kear with her work on the Hawaiian Goose (which I saw wild in Hawaii), forming an Association of Animal Collectors, and working on the editorial staff of the International Zoo Yearbook." Mr Whitten says further that he intends to make his career in scientific conservation and his immediate ambition is to arrange an expedition. within the next four years, to study the breeding biology of the Bewick Swan on the Yamal Peninsula in Russia.

JIM FOWLER came to New Zealand from Britain in 1970, ostensibly to see a wild Kiwi, an ambition he soon satisfied whilst on holiday at Stewart Island. He quickly became an active member of OSNZ and was elected Regional Representative for the Wellington Branch in March 1972. Ornithologically, his main interest is bird movement and distribution, and he found the OSNZ Bird Distribution Mapping Scheme an excellent outlet for this interest. He has written a number of articles for popular and scientific journals.

Dr Fowler gained his Ph.D. in Biochemistry in the University of Wales, studying a mammalian enzyme system and its relationship to vitamin B_6. He is now an Inspector of Technical Institutes in the Department of Education and has been appointed, by secondment, as Leader, Vanda Station in Antarctica, for the summer season 1972-73.

J. M. CUNNINGHAM was introduced to bird watching by R. H. D. Stidolph, a lifelong ornithologist and former editor of *Notornis*, to whom he acknowledges all his early knowledge of and enthusiasm for ornithology. In the 1940s and 1950s he was a prolific contributor to various ornithological journals. He was Secretary-Treasurer of the OSNZ from 1946 to 1953 and played a part in establishing the direction of development of the Society particularly in the field of co-operative field investigations. Mr Cunningham designed and introduced the Nest Records Scheme (1950), the Ringing Scheme (1950), the Beach Patrol Scheme (1951) and drafted the Society's second constitution leading to Incorporation. It is his regret that he never completed the organisation of a mapping scheme such as is now in operation. He regards as his chief achievement, however, the fostering of close understanding and co-operation between professional and amateur ornithologists in what were largely the formative years of the Society. He says he has firm ideas of what constitutes a good research paper or book and, although he has written many favourable reviews, is very

critical of " addle-pated " thinking and writing and expects his own work to be similarly criticised. He is an equally firm believer that the Society should study birds and not dissipate its energies on other matters such as conservation. In his own deep interest in this subject he does not work through committees but prefers behind the scenes to approach Ministers and public bodies over such issues as Waimeha lagoon, Westshore lagoon, Carters Bush reserve and the creeping encroachment of roads on to Wellington beaches. Office Manager, Credit Manager, Book Warehouse Manager in turn, married with three children, he has a prize-winning garden, an important natural history library (regretting his friends do not make enough use of it) and is an inveterate collector of such varied items as original New Zealand paintings, cactuses, stamps, shells, and Matchbox toys.

ALAN WRIGHT was born in Yorkshire in 1928 and was in the Royal Navy from 1945 to 1948. He worked for a year with the Forestry Commission and then joined the Royal New Zealand Navy in which he served from 1949 to 1955. After a year in England, he returned to New Zealand and worked as a rigger in the Post & Telegraph Department until 1959 when he transferred to the Marine Department as a lighthouse keeper, relieving on most of the New Zealand lighthouses until 1965 when he joined the Wildlife Service as Field Officer at Haast. He became Field Officer in charge of the albatross colony at Taiaroa Head in 1968. While with the Marine Department, Alan Wright was on loan to the Civil Aviation Department as Officer-in-charge, Campbell Island, 1962/63, and was later a member of the OSNZ Kermadecs Expedition in 1965. He became a member of the OSNZ during his time with the Marine Department and, through spending 3½ years on the Brothers lighthouse in Cook Strait, developed an interest in sea birds, and especially in albatrosses following his experiences on Campbell Island. He is currently working with Chris Robertson on the Northern Royal Albatross.

He describes himself as: " A keen nature photographer, bander and data collector in the bird field, active committee member of the Dunedin Conservation and Ecology Action Group and the Otago Peninsula Trust development of the public access area to the Royal Albatross colony."

JOHN KENDRICK was born in Hamilton and was educated at Hamilton High School. He trained in electronics and worked for several radio and electronics firms before establishing his own business in Hamilton. He assisted the Hamilton Junior Naturalist Club during its formation, and as a staff member for four years. In 1965 he sold his radio and TV business and moved to Wellington to take up the position of Visual Aids Officer with the Wildlife Service of the Department of Internal Affairs. As photographer, film cameraman, and sound recordist, John Kendrick has had the good fortune to visit most of New Zealand and its offshore islands in the course of work to obtain wildlife material for the Department. His interests include skiing, tramping, yachting, and the study of natural history.

REGIONAL REPRESENTATIVES

FAR NORTH: A. T. Edgar, Inlet Road, Kerikeri
NORTHLAND: D. E. Crockett, 21 McMillan Ave., Kamo, Whangarei
AUCKLAND: Mrs. S. Reed, 4 Mamaku Street, Auckland 5
SOUTH AUCKLAND: H. R. McKenzie, P.O. Box 45, Clevedon
WAIKATO: D. Wilkins, 630 Grey Street, Hamilton
BAY OF PLENTY: R. M. Weston, 250 River Road, Kawerau
VOLCANIC PLATEAU: R. W. Jackson, 9 Kenrick Road, Rotorua
GISBORNE/WAIROA: A. Blackburn, 10 Score Road, Gisborne
TARANAKI: D. G. Medway, P.O. Box 476, New Plymouth
MANAWATU: Dr I. G. Andrew, 6 Eton Place, Palmerston North
HAWKES BAY: N. B. Mackenzie, Pakowhai, Napier, R.D. 3
WAIRARAPA: B. W. Boeson, P.O. Box 30, Carterton
WANGANUI: Michael O'Shea, 29 London Street, Wanganui
WELLINGTON: Dr. J. A. Fowler, "Manu Korero," 2/1030 Fergusson Drive, Upper Hutt
NELSON: F. H. Boyce, 19 Marybank Road, Nelson
MARLBOROUGH: J. A. Cowie, P.O. Box 59, Kaikoura
CANTERBURY: J. R. Jackson, 103 Linwood Avenue, Christchurch
WEST COAST: Vacant
OTAGO: Mrs. J. B. Hamel, 42 Ann Street, Roslyn, Dunedin
SOUTHLAND: R. R. Sutton, P.O., Lorneville, Invercargill

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LITERATURE AVAILABLE

From all bookshops:

Annotated checklist of the birds of New Zealand. (OSNZ) $4.95
A field guide to the birds of New Zealand, by R. A. Falla, R. B. Sibson and E. G. Turbott, 2nd rev. ed. $5.00

From B. D. Heather, 10 Jocelyn Crescent, Pinehaven, Upper Hutt:

A biology of birds, by B. D. Heather. $1.33

From B. A. Ellis, 44 Braithwaite Street, Wellington 5:

Field guide to the waders, by H. T. Condon & A. R. McGill. 75c

The following are available from Mrs. H. R. McKenzie, P.O. Box 45, Clevedon:

Back numbers of Notornis at 75c (Vols 2-13) and $1 per part (Vols 14-19). Complete sets available.

OSNZ Library catalogue, 70 pp. 50c

Banding reports, Nos 8-14, 50c each.
Nos 1-7 are incorporated in early issues of Notornis.

Kermadec Expedition, 1964, by A. T. Edgar. 45c