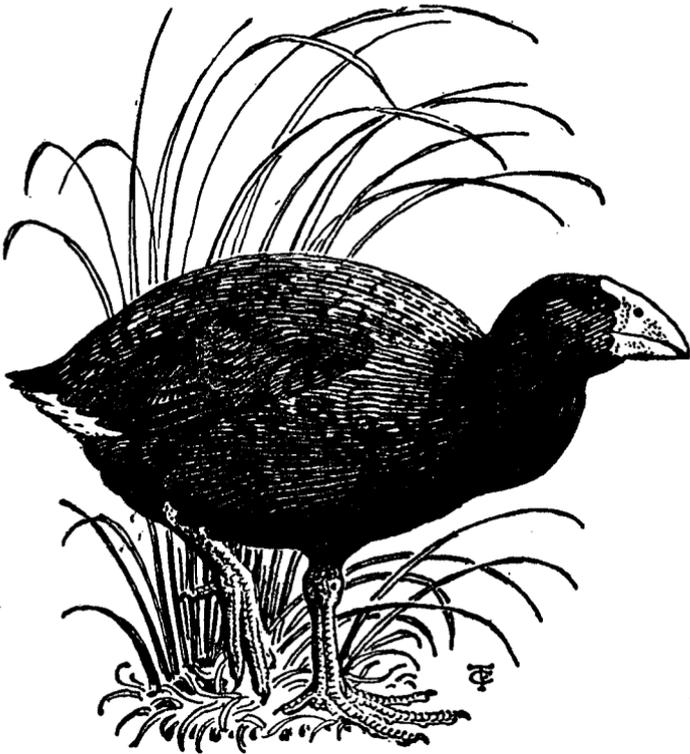


NOTORNIS

Journal of the Ornithological Society
of New Zealand



Volume 20 Part 2 June 1973

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NOTORNIS

is the journal of the Ornithological Society of New Zealand (Inc.)

Editor: E. W. Dawson,
P.O. Box 8009,
WELLINGTON.

VOLUME 20

PART 2

JUNE, 1973

FIELD NOTES ON BIRDS OBSERVED ON THE 'MOTUS' OF TWO ATOLLS (PENRHYN AND SUWARROW) IN THE NORTHERN COOK ISLANDS, 1968

By JEAN and ALLAN BATHAM

ABSTRACT

A listing, with accompanying natural history notes, is given of the birds observed during a visit in 1968 to the atolls of Penrhyn and Suvarrow in the Cook Islands.

TONGAREVA or PENRHYN, 9°S, 158°W.

12 August to 20 September 1968

The lagoon is roughly circular, about 40 miles in circumference and surrounded by a coral reef. The reef is as much as half a mile wide in places, either awash or just dry except for the number of 'motus' or islets of varying sizes which are strung along the reef like beads on a necklace. These vary between half an acre in extent to about two miles long by a half mile wide.

Only two motus are inhabited, by about 600 Cook Islanders, and on these we saw no birds except a few waders and Frigate Birds (*Fregata minor* and *F. ariel*) overhead. The remaining motus are visited only for the cultivation of coconuts and these are covered thickly with these palms, pandanus and 'toe,' a scrubby, low growing bush (*Cordia subcordata*). There are a very few small islets which have no coconut trees, which are seldom visited and which are known locally as 'bird' islands. It was on these that we found the greatest concentration of birds, though we saw members of every species mentioned near, or on, all the other uninhabited motus we visited.

The most numerous birds were the White Capped Noddies (*Anous minutus*) which were more plentiful than the Common Noddy (*A. stolidus*). White Terns (*Gygis alba*) always accompanied the former though in much smaller numbers. Lesser Frigate Birds (*Fregata ariel*) were everywhere, often diving on the noddies to make them

disgorge. We saw five or six waders on every motu we visited, and half a dozen Sooty Terns (*Sterna fuscata*) flying overhead was a fairly common sight. These were the birds most frequently sighted at sea on the entire voyage from the Galapagos to Samoa, even in mid Pacific 1500 miles from land.

We considered the reports of the local people to be fairly reliable since they are interested in birds which form a welcome variety in their monotonous diet. They slaughter great numbers of Frigate Birds at night, take Red Tailed Tropic Birds (*Phaethon rubricauda*) when they can get them and eat the eggs of both these species as well as those of the Noddies, Sooty Terns and Brown Boobies.

Common Noddy *Anous stolidus*:

Large numbers were seen on a coconut motu with White-capped Noddies and White Terns. We did not observe any nests but the birds were agitated and we saw many immature looking birds. There seemed to be quite a variation in colouring among the adult birds, some of them having a lighter buff bar across the belly and others with light buff or white patches under the wing.

We visited a quarter acre coral islet with a few sparse 'toe' bushes and as we approached a few Common Noddies rose off a bank of loose coral just above high water mark. Seven rudimentary nests made of a few leaves, twigs and bits of shell were observed on the coral with six fledglings and one egg.

More Common Noddies were seen nesting on an outcrop of dead coral on which grew a few small bushes. Nests were in shallow natural depressions in the coral and were quite neatly lined with dead leaves but with no shell.

White-capped Noddies *Anous minutus*:

These were seen nesting on two motus, one a seldom visited small motu, well covered with 'toe,' pandanus and some coconut. Large numbers were in the air and one was noted sitting on a nest in a pandanus, about twelve feet off the ground. The other was the 'bird' island. Many nests were found with either one egg or a nestling. These nests were in the crotches of the 'toe' bushes and a few in the lower branches of a 'puka' (*Pisonia grandis*) tree; all between six and ten feet from the ground. They were made of a pile of dead leaves with a slight depression in the centre and appeared to be cemented together with droppings. Some looked as though they had been used repeatedly and had attained quite a size.

We noted that the only two places in which we saw Common Noddies nesting there were no land crabs or their holes, which were otherwise ubiquitous. We suggest that perhaps the White-capped Noddy is the more successful breeder here as it nests out of reach of these crabs, instead of on the ground, as does the Common Noddy.

White Tern Gygis alba:

These terns, friendly and ethereally beautiful, were seen on all the lonely motus which we visited. Their call is a gentle squeak like a mouse or a bat. Nesting on one of the 'bird' islands, they shared the 'toe' bushes and half a dozen fine, tall 'puka' trees with Frigate Birds and White-capped Noddies. Eggs and fledglings were perched on the branches, usually six to ten feet from the ground, though one infant perched on a bare branch at least thirty feet from the ground and another was using the old nest of a Noddy. It seemed to us that these terns were considerably smaller than the *Gygis alba* we had seen in Tahiti.

Brown Booby Sula leucogaster:

A bird was found sitting on a nest on an outcrop of dead coral on the outer reef which was above sea level and covered with a few tufts of coarse grass. Two eggs, about the size of a pullet's, dull white with very slight brownish flecks and blue veining or blotches showing through, were examined in the round nest in a depression in the grass, made of leaves and a root or two.

A pair of adults were seen in flight and on various occasions what we took to be immature boobies were seen among the flocks of frigate birds, but the sighting was never good enough to determine if they were young *S. leucogaster* or the young of one of the other *Sula* species.

Red Tailed Tropic Bird Phaethon rubricauda:

We saw perhaps half a dozen, singly, and once a pair. On one sighting the bird was crouching under a low bush and only rose when we were almost touching it; it then shuffled off through the branches, looking like a wounded bird, and then took flight, quite unharmed. These birds are prized, both for the pot and for their red streamer tail feathers. We were told there was a conservation programme on Palmerston Island.

Sooty Terns Sterna fuscata:

These were not very plentiful, though quite frequently seen in flight. We were given six eggs as a gift. The yolks were bright orange. The local name is 'Tara' and they were said to nest on a 'bird' motu which we did not visit.

Lesser Frigate Birds Fregata ariel:

The greatest concentration was on and over the 'bird' island where the White Terns and Noddies were nesting, but the moment we set foot on the island they all took off, regarding man as a danger. We saw no signs of nests on the island, but as the birds flew off we had a good view of a dozen or so young. As far as we could judge they were fully grown but in immature plumage. During our stay we did not see many males, females and immature birds being considerably more numerous. We were informed that the Frigates do in fact nest on Tongareva, the eggs being taken for food. According

to local report the only species of banded birds ever taken here have always been *Fregata*, the bands originating from Australia and the U.S.A.

Asiatic Whimbrel *Numenius variegatus*:

Small parties of two to nine of these were seen on the open areas of old, bare coral with a little bush for cover. They fed at the sea streams which ran across the coral. The local name is 'Keewee' which approximates the sound of the cry.

Waders (locally known as 'Torea') —

Pacific Golden Plover *Pluvialis dominica*:

Turnstone *Arenaria interpres*:

These birds were usually seen together and were on every motu we visited. The greatest concentration was on a big coconut motu in the middle of which was a large, brackish pond, otherwise they were either feeding on sandspits running into the lagoon on the hottest, leeward side of the atoll, or just sunning on the black coral outcrops which gave them perfect camouflage. We found them very nervous and 'scarey.' They gave a musical, piping call with some variation, often 'tiddit-tiddit-tee,' and when alarmed, a single, sharp 'tweet.' According to local information they nest on Tongareva in June and July and leave about October, but we saw no nests.

SUVAROV (or SUWARROW), 13°S, 162°W. 3 to 13 October 1968

This atoll is about the same size as the former, but with a very much smaller land area, the motus being both fewer and smaller and the areas of sand and scrub covered coral, much greater. There is only one human inhabitant, Mr Tom Neale, an elderly New Zealander, who has lived there, off and on, since 1952, and was able to give us much information. Mr Neale is well known to many readers as the author of *An Island to Oneself. The Story of Six Years on a Desert Island* (Collins, 1966) in which he has described his time and way of life on this lonely atoll, 513 miles north of Rarotonga and 200 miles from the nearest neighbour, the atoll of Manihiki in the Northern Cooks.

The majority of the birds were concentrated at two points, one at each side of the lagoon. Sooty Terns (*Sterna fuscata*) were most in evidence and were seen everywhere in flight.

Greater Frigate Birds *Fregata minor*:

We found about twenty nestlings of various ages, each sitting on a loose nest of twigs about six feet from the ground and being fed, mainly with squid, by hard working parents of both sexes.

Red Tailed Tropic Birds *Phaethon rubricauda*:

About twelve nestlings at various stages were seen on the sand, under bushes; adults were also present but no nests were evident.

Red Footed Boobies *Sula sula*:

There were large numbers of nestlings on neat nests of loose twigs, six to twelve feet from the ground. Immature birds in both the intermediate and dark phase were seen, but no white adults.

Brown Boobies *Sula leucogaster*:

A few adults were seen and one nestling in a large nest of leaves and sticks at the top of the beach. There were also some immature birds.

Common and White-capped Noddies *Anous stolidus* and *A. minutus*:

White Terns *Gygis alba*:

These three species had been seen there and are said to nest locally.

Asiatic Whimbrels *Numenius variegatus*:

Bar Tailed Godwits *Limosa lapponica*:

Both these species were seen in a group of about twenty, apparently looking for food on a stretch of very hot, bare, dark coral. On approaching Suvarov we saw a flight of birds which resembled these flying overhead and going west.

Pacific Golden Plover *Pluvialis dominica*:

Turnstone *Arenaria interpres*:

A few of these birds were seen.

Long Tailed Cuckoo *Eudynamis taitensis*:

We only heard this bird in a densely wooded part of the motu, but Mr Neale has seen it and is sure that he has identified it correctly. A "Koekoea" was described to us on Tongareva, and would seem to be the same bird, but we did not see it.

Lesser Frigate Birds *Fregata ariel*:

On the leeward side of the lagoon on a very open bit of reef covered with scrubby growth and incredibly hot and dry, we saw hundreds of nestlings of all sizes, also young and adults. The nests were almost all on the ground or on low shrubs a few inches up. They were tiny nests of sticks, cemented together, and each accommodating a chick, sitting upright and tall and just out of pecking distance of its neighbour, clacking their beaks at us like castanets. In a few instances adults of both sexes were still sitting on newly hatched young but we did not see any eggs. The chicks were being fed squid by the parents.

Sooty Terns *Sterna fuscata*:

A colony of chicks, either just flying or just about to do so, was found. Many old unhatched eggs were lying around.

Red Footed Boobies *Sula sula*:

Present in great numbers, some birds sitting and at every age from nestlings to newly flying. White phase adults were noted.

Blue Reef Heron *Egretta sacra*:

An adult bird was seen and Mr Neale told us he had once seen what he took to be the nest and eggs of this Heron.

We would like to add that we are very indebted to Mrs Sylvia Reed for help and advice on the presentation of these notes.

Mr & Mrs A. Batham,

R.D. 1,
Howick

THE DISTRIBUTION AND TAXONOMY OF OYSTERCATCHERS

By P. B. HEPPLESTON

ABSTRACT

Basic information on the distribution of members of the genus *Haematopus* is reviewed and the taxonomy of the group is discussed. The distinctions between species and subspecies are stressed and applied to the classification of Oystercatchers; alternative taxonomic rank is suggested for some forms, but the ideas require testing in the field.

INTRODUCTION

Oystercatchers are a cosmopolitan group of wading birds, found on the temperate or tropical shores of every continent except Antarctica. They are conspicuous by their large size, shrill cries and, not least, by their striking plumage. Most forms are pied but a few are completely black. Throughout most of their range they are coastal, with inland range extensions in certain regions.

The classification of Oystercatchers within the family Haematopodidae has been the subject of controversy, the main point of confusion being the differentiation between species and subspecies. It may therefore be of use at this time to survey the general taxonomy of the family, taking as a starting point Peters' classification (1934) in which Oystercatchers are arranged in four species, each with a number of subspecies, thus:

Family Haematopodidae:

- | | |
|--|---------------------------|
| 1. <i>Haematopus ostralegus bachmani</i> * | <i>H. o. occidentalis</i> |
| <i>frazari</i> | <i>malacophaga</i> |
| <i>palliatius</i> | <i>longipes</i> |
| <i>prattii</i> | <i>osculans</i> |
| <i>galapagensis</i> | <i>meade-waldoi</i> |
| <i>pitanay</i> | <i>moquini</i> * |
| <i>durnfordi</i> | <i>longirostris</i> |
| <i>ostralegus</i> | <i>unicolor</i> * |
| | <i>chathamensis</i> |
| 2. <i>Haematopus fuliginosus fuliginosus</i> * | |
| <i>ophthalmicus</i> * | |
| 3. <i>Haematopus leucopodus</i> | |
| 4. <i>Haematopus ater</i> * | |
- (Black forms marked with an asterisk)

This scheme is basically acceptable, although the subspecies of *ostralegus* have been arranged in a number of ways. The position is complicated by the existence of black and melanistic populations, regarded by some as mutants — and hence as subspecies (e.g. Stresemann 1927), and by others as distinct species (e.g. Bent 1929; Gill 1936).

An acceptable definition of a species has been given by Mayr (1940, 1963). If a group of populations is capable of interbreeding with a second group, then they both belong to the same species; they may in fact be prevented from interbreeding by geographic isolation, but as Mayr states (1940) it is "necessary to leave to the judgement and systematic tact of the individual taxonomist whether or not he considers two particular forms as 'potentially capable' of interbreeding; . . . whether he considers them as species or subspecies." Mayr expanded this idea further (1963) and stressed that subspecies are to be distinguished only if they differ by diagnostic morphological characters; they must also inhabit definite geographical sub-divisions of the species' range. Thus at the present time, species are separated on the basis of interbreeding potentialities and subspecies are distinguished by morphological features and geographical distribution.

In the absence of contrary evidence, the ideas in this paper are based on the following points:

- (a) forms with sympatric (overlapping) ranges are distinct at the species level and are able to co-exist by the subdivision of the habitat in time and/or space;
- (b) forms with allopatric (exclusive) ranges (see Cain 1954) can be either distinct at the subspecific or specific level. It is more likely that two forms with adjacent ranges will be separate subspecies, being prevented from occupying the same range by the threat of competition; in the case of two forms whose ranges are not contiguous, rank has to be decided arbitrarily as a taxonomic expedient.

DISTRIBUTION (see Figure 1)

South America:

The distribution of Oystercatchers in this region is summarised by Goodall *et al.* (1951). Three forms are known: *H. ostralegus pitanay*, *H. ater* (black) and *H. leucopodus*. Along the western seaboard of S. America *pitanay* overlaps with *ater*, but although *ater* continues around the southern tip of the continent and up the eastern side, *pitanay* is here replaced by *leucopodus*. Thus *pitanay* and *leucopodus* may be considered allopatric.

Australia:

There are two species (Condon & McGill 1960; Rutgers 1967): *H. o. longirostris* (pied) occurs right around the continent; *H. fuliginosus fuliginosus* also is found on all Australian shores except those in the Gulf of Carpentaria where it is replaced by *H. fuliginosus ophthalmicus*.

New Zealand:

The Oystercatchers of New Zealand have recently been described by Falla *et al.* (1970) who noted three separate species: *H. reischeki*, *H. finschi* and *H. unicolor*. Peters (1934) incorporated all these into one single species *H. ostralegus unicolor*. *H. finschi* is very similar in

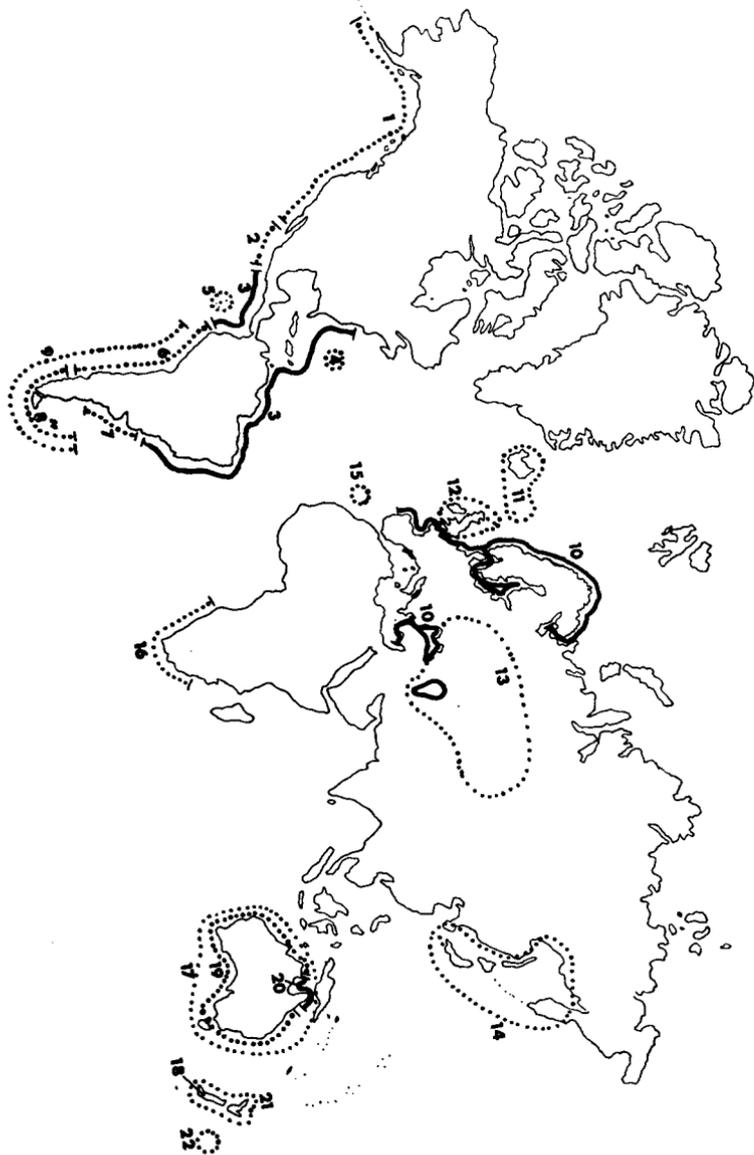


FIGURE 1 — World distribution of Oystercatchers (after Larson 1957)

Key

1 *Haematopus ostralegus bachmani*

2 *H. o. frazari*

3 *H. o. palliatus*

4 *H. o. pratti*

5 *H. o. galapagensis*

6 *H. o. pitangy*

7 *H. o. durfordi**

8 *H. leucopodus**

9 *H. ater*

10 *H. o. ostralegus*

11 *H. o. malacophaga**

* see text

12 *H. o. occidentalis*

13 *H. o. longipes*

14 *H. o. osculans*

15 *H. o. meadewaldor**

16 *H. o. moquini**

17 *H. o. longirostris*

18 *H. o. finschi*

19 *H. fuliginosus fuliginosus*

20 *H. fuliginosus ophthalmiticus*

21 *H. unicolor*

22 *H. unicolor chathamensis**

appearance to *H. ostralegus* of Europe and indeed some authors (e.g. Sibson 1966) refer to it as *H. o. finschi*. *H. reischeki* is a melanistic type with individuals ranging in plumage colour from pied (similar to *finschi*) to entirely black forms not unlike the third N.Z. type, *unicolor*, a black Oystercatcher with which it is sometimes confused. Thus *reischeki* forms an almost complete connecting link between the pied and black populations of the islands.

The Chatham Islands (400 miles from the mainland) have a form of their own, *chathamensis*, which shows small but consistent morphological differences from *finschi* (Fleming 1939; Falla *et al.* 1970). Its breeding has not yet been documented.

Europe:

There are three subspecies according to Peters (1934). The British form *H. o. occidentalis* is very similar in appearance to the continental form *H. o. ostralegus* which breeds from Archangel (USSR) to Spain. *H. o. malacophaga* is found in Iceland and the Faeroe Is, in which latter place the Oystercatcher has become a national emblem (Williamson 1948).

North and Central America:

Five subspecies of *H. ostralegus* exist, one of which, *bachmani*, is black. All have allopatric ranges and there are no grounds to question the systematic status given to them by Peters (1934); consequently they will not be considered in the discussion following.

A number of other, isolated, forms of Oystercatcher are known to exist: *H. o. longipes* breeds near inland waters of south-east Russia and Siberia (Grote 1931), a distribution thought to be a relict from the Pliocene era when this region formed part of a vast inland sea (Voous 1960); *H. o. osculans* is found in the Far East, where it breeds along the shores of Korea, China and Japan. Fisher (1967) considers that this form, too, is a relict distribution from past ages; *H. o. galapagensis* — the Galapagos Is; *H. o. prattii* — the Bahamas; *H. o. meadewaldoi* is a subspecies of dubious existence, having been sighted in the Canary Is. only four times, between 1889 and 1913. It is probable that these records represent vagrants of the South African Oystercatcher (Etchecopar & Hue 1967), but Bannerman (1963) argues that on account of the smaller size of *meadewaldoi* it should be classed as a subspecies of the South African Oystercatcher, considered by Gill (1936) and Hall (1959) to be a separate species, *H. moquini*, though Peters treats it as a subspecies of *H. ostralegus*.

DISCUSSION

A striking impression of the general allopatric nature of Oystercatcher distribution is given in Fig. 1. In no area are three forms found together and there are only four instances of overlap:

- (a) *H. fuliginosus* and *H. o. longirostris* — there are no details of comparative breeding but the fact that one is black (*fuliginosus*) and the other pied suggests that interbreeding would be rare and that they are probably separate species.

- (b) *H. o. pitanay* and *H. ater*.
- (c) *H. leucopodus* and *H. ater* — of these last three forms only *ater* is black and the argument put forward under (a) applies.
- (d) *H. o. finschi* and *H. o. unicolor* — these species breed in entirely different habitats.

In all these cases one member of the pair of sympatric species is black or nearly so. This may be a gamosematic character sufficiently distinct to effect reproductive isolation in the areas of range overlap (Lack 1940). The sexually-oriented displays of one species would fail to elicit the appropriate response from the second species on account of plumage colour. Besides this plumage factor, two species may be reproductively isolated as a result of certain evolutionary factors, in particular the timing of the 'arrival' of the pairs of species in any given area, a matter which Larson (1957) has discussed in some detail.

He suggested that the ancestral Oystercatchers originated in Eurasia with a black plumage and from this stock emigrants moved south during the Pliocene era (12 million years ago) becoming established as isolated new species. Many of the original, northern, stock then mutated to light (pied) forms, which possibly have selective advantages over the dark forms (Larson 1957) and the new species *H. ostralegus* was formed. During the Pleistocene era some of these new forms moved south and settled, as secondary immigrants, either where no earlier (black) immigrant had become established, or in areas where the earlier form had evolved to such an extent that the two forms were able to co-exist. If Larson's ideas hold good, then all species other than *ostralegus* should have black plumage, having originated from the black ancestor of the Pliocene. This is indeed so — with one exception, *H. leucopodus* of S. America and the Falkland Islands.

South Atlantic Oystercatchers:

That *H. leucopodus* is a different species from its compatriot *H. ater*, can be accepted on the grounds that interbreeding is unknown and that they co-exist peacefully (Mr I. Strange, pers. comm.). However, the evidence upon which it is given completely separate specific status is lacking. Follow Larson's interpretation of Oystercatcher evolution; if *leucopodus* were an early immigrant it would have a black plumage, but if it was one of the later, secondary, immigrants, it would probably have stemmed from the pied stock of *H. ostralegus*. There is thus some justification for reconsidering the taxonomic position of *leucopodus*, which should be classed as a separate subspecies of *H. ostralegus*; *leucopodus* is a pied Oystercatcher closely resembling *H. ostralegus* in appearance and its two adjacent neighbours are both subspecies of *ostralegus* viz *pitanay* and *durnfordi*. Their contiguous ranges suggest that they are all closely related and that competition would occur if they met.

Isolated Oystercatcher groups:

With limited opportunities for gene-exchange with neighbouring populations, such groups are probably correctly given subspecific status viz *H. ostralegus galapagensis*, *H. o. longipes*, *H. o. osculans*, *H. o. prattii*, *H. o. meadewaldoi* (see above) and *H. o. chathamensis* (see below). The South African Oystercatcher, in view of Larson's work (1957), should be classed as a separate species, *H. moquini*. The status of *H. o. malacophaga* is open to question. This form vacates its breeding grounds in Iceland and Faeroe to winter with British birds in the Irish Sea (Dare 1970) but as yet there is no evidence of any consistent morphological differences between the two groups; the existence of a separate subspecies here must be considered as doubtful.

New Zealand Oystercatchers:

The status of Oystercatchers on the mainland of New Zealand is complicated by the existence of three types, pied (*finschi*), black (*unicolor*) and one of intermediate plumage (*reischeki*). The breeding grounds of *reischeki* and *unicolor* overlap, both are coastal breeders and mixed breeding pairs are not uncommon. *H. finschi*, however, tends to breed in an entirely different habitat along the river valleys of the South Island, a habit very similar to that of *H. ostralegus occidentalis* in inland areas of Scotland (Heppleston 1972). The taxonomic problem is whether they all be designated as separate species (e.g. Falla *et al.* 1970) or as subspecies under other species. Oliver (1930) in one of the first reviews of New Zealand Oystercatchers, recognized two species, *ostralegus* (pied) and *unicolor* (black), stating that *reischeki* and *finschi* represented hybrids of these two species. Later (Oliver 1955) he added another species, *longirostris* (pied) and upgraded *finschi* to a subspecies of *ostralegus*, leaving as before *reischeki* as a hybrid. In a classic work Falla (1939) considered them all as separate species, *H. finschi*, *H. reischeki* and *H. unicolor*, a classification followed by Falla *et al.* (1970). Since taxonomic positions depend on morphological characteristics and whether or not interbreeding occurs or is likely to occur, it is necessary to consider the problem from these standpoints.

Interbreeding has been known to occur between black (*unicolor*) and mottled (*reischeki*) Oystercatchers (Brathwaite 1950; Falla 1939) which suggests that the parents were both of the same species. Interbreeding has *not* been reported as occurring between other NZ Oystercatchers e.g. pied (*finschi*) and black (*unicolor*). Furthermore, these latter two forms breed in different habitats and have greatly differing plumage; *finschi* is morphologically and behaviourally very similar to the European *H. ostralegus*.

I take the view that, in the absence of sound breeding data, it is undesirable to assign birds to new species when there may be good grounds for placing them in new subspecies under existing species.

In other words, taxonomists should consider them for specific status (with confirmed breeding data) only when the possibilities for sub-specific status have been exhausted. Following this approach the New Zealand Oystercatchers are grouped thus:

Haematopus ostralegus finschi — South Island Oystercatcher

Haematopus unicolor with two subspecies:

H. u. unicolor — Black Oystercatcher

H. u. reischeki — Variable Oystercatcher.

This arrangement is an extension of that put forward by Larson (1957) and is followed in the latest ornithological checklist of New Zealand birds (OSNZ 1970). Further research on the taxonomic status of *reischeki* is, however, desirable and it is possible that *reischeki/unicolor* plumage patterns are under a complex genetic control system similar to that described for Arctic Skuas (*Stercorarius parasiticus*) on Fair Isle, Scotland, where there are dark, pale and intermediate morphs of one species (Williamson 1965).

The Chatham Is Oystercatcher has been variously described as a separate species (Falla 1939; Fleming 1939) and as an outlying group of the North Island Pied Oystercatcher (Oliver 1955). However, owing to its morphological similarities to *H. ostralegus*, it is probably more correct to ascribe it to this species, as *H. ostralegus chathamensis* as do Peters (1934) and Hartert (1927 in Falla 1939); this satisfies the conditions stated by Mayr (1963) with regard to the description of subspecies (see Introduction).

Future Research:

Three situations, forming an evolutionary series, deserve particular attention:

1. Scotland — one species breeding in two different habitats, coastal and inland (Heppleston 1972).
2. New Zealand — two species breeding in separate habitats, coastal and inland.
3. Falkland Is — two species breeding in one habitat, coastal.

Scotland — the division of breeders into coastal and inland populations represents an ecological isolating mechanism which, if maintained, could lead to complete speciation. The initial divergence may have already brought about a certain degree of genetic isolation which could be tested by analysis of egg albumen proteins, as has been done with the Eider (*Somateria mollissima*) (Milne & Robertson 1965). *New Zealand* — it is suggested that the later arrival (pied) was sufficiently dissimilar to the earlier immigrant (black *unicolor*) that interbreeding was precluded, but at the same time was similar in enough respects that co-existence was prevented by competitive factors. Thus the pied forms (*finschi*) was forced inland where it now breeds. This represents an intermediate situation.

Table 1 - Suggested taxonomic revision of some members of the genus *Haematopus*.

	Peters (1934)	Larson (1957)	Recent works	Present work
moquini	<i>H. ostralegus moquini</i>	<i>H. ostralegus moquini</i>	Hall 1959, <i>H. moquini</i> (also Gill 1936)	<i>H. moquini</i> (based on Larson's hypo- thesis)
meadewaldoi	<i>H. o. meade-waldoi</i>	<i>H. o. meade-waldoi</i>	Bannerman 1963, <i>H. mo- quini meade-waldoi</i>	<i>H. moquini</i> (? <i>H. mo- quini meadewaldoi</i>) existence doubtful
malacophaga	<i>H. o. malacophaga</i>	<i>H. o. malacophaga</i>		
leucopodus	<i>H. leucopodus</i>	<i>H. leucopodus</i>		<i>H. o. leucopodus</i>
finschi	incorporated into	<i>H. o. finschi</i>	Sibson 1966; Soper 1963 <i>H. o. finschi</i>	<i>H. o. finschi</i>
unicolor	<i>H. o. unicolor</i>	<i>H. unicolor</i>	Falla et al. 1970 <i>H. unicolor</i> ; <i>H. reischeki</i> OSNZ 1970 <i>H. unicolor</i> <i>unicolor</i> , <i>H. unicolor</i> <i>reischeki</i>	<i>H. unicolor unicolor</i> and <i>H. unicolor reischeki</i>
chathamensis	<i>H. o. chathamensis</i>	<i>H. u. chathamensis</i>		<i>H. o. chathamensis</i>

Falkland Islands — the later arrival (pied *leucopodus*) was already so dissimilar from the original immigrant (*ater*) that interbreeding was ruled out, but co-existence was possible as a result of differences in habitat selection, food supply, etc. Thus the two do not compete with each other for essential commodities.

These hypotheses could be tested in the field by making observations on the differences and similarities of the pairs of species in each locality. Detailed information is required on the factors that prevent interbreeding, such as courtship behaviour, and those that have prevented co-existence, e.g. habitat selection and food habits.

CONCLUSIONS

The biological relationships between species and subspecies have been clarified by Mayr (1963) and others; it is now appropriate to re-examine the taxonomic status of members of the Oystercatcher family in the light of the accepted definitions. Such an examination reveals certain irregularities which result from the past use of taxonomic rules of varying validity. I have tried to draw attention to these points and have made suggestions in respect of the status of some forms of Oystercatcher (Table 1).

In reviewing the genus *Haematopus* I have based my arguments to a large extent on those of Gause (1934) who was the first worker to point out that no two species with the same ecological requirements could exist together at the same place and at the same time. It follows that within one genus, those forms with adjacent ranges, that replace each other geographically, are likely to be closely related; likewise those forms with overlapping (sympatric) ranges would exhibit isolating mechanisms enabling them to co-exist peacefully. These hypotheses require testing and in order that the above ideas can carry any weight, they must be substantiated by further evidence from detailed field observations. Until then, all suggestions must be considered only as hypothetical possibilities even though some of them may be highly probable. Knowledge on many aspects of Oystercatcher biology is sadly lacking; in particular much work remains to be done on the inter-relationships of closely allied forms and species; such work is most easily carried out where populations of two different forms are readily accessible e.g. South America and Australia and New Zealand. Oystercatchers are birds which lend themselves admirably to field investigation. Not only are they large and distinctive but they live in open habitats affording favourable conditions for observation. In addition, a large amount of information has been gathered in the past and is available as a sound foundation upon which further comparative studies can be based.

ACKNOWLEDGEMENTS

I would like to thank Mr R. B. Sibson for stimulating correspondence, and Drs J. W. Edington and M. F. Claridge for helpful criticism of an early draft of the paper.

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SEABIRD OBSERVATIONS AROUND THE KINGDOM OF TONGA

By J. A. F. JENKINS

ABSTRACT

Observations on seabirds in Tongan waters during 18 voyages over a two year period are detailed. Of particular interest are records of the Giant Petrel, Black-winged Petrel, Herald Petrel, and Audubon's Shearwater and illustrations are given of specimens of the two latter species.

The following observations were recorded during 18 voyages to the Tongan islands made over a two year period. No consistent observing was possible but as birds were seen and could be identified they were recorded.

Giant Petrel, *Macronectes giganteus*:

As previously reported by me (Jenkins 1967), one bird was seen in Ha'apai Harbour on 10 August 1967, wind E 30 kts, air temperature 74° F, sea temperature 70° F. It is to be noted that this was the first time I had seen this species in Tonga and that it was not seen again.

Wedge-tailed Shearwater, *Puffinus pacificus*:

Birds were seen throughout the Tongan islands in small numbers at all times of the year. However, in the summer months, large numbers have been seen about the islands of Toku and Fonualei to the north of the Vava'u group. On 29 October 1967 approximately 800 birds were seen in this area, the sea temperature being 83° F. All birds seen were of the dark phase, as always seems to be the case in the South West Pacific, no light phase birds ever having been seen by me. In light winds the horizontal flight of these birds is very like the flight of Buller's Shearwater (*Puffinus bulleri*) and the long tail is most noticeable although one has to be very fortunate to see the wedge shape in the field.

A bird that landed aboard on 28 December 1967 had a fine ribbing of very light colour over all the plumage of the upper wing and back and, from a distance, this gave the upper surface a much lighter colour than is usual for this species.

Black-winged Petrel, *Pterodroma hypoleuca nigripennis*:

On 28 November 1967 north of Ofolanga Island in the Ha'apai group at 19° 30' S, 174° 26' W, a Black-winged Petrel landed aboard and was caught and banded. The sea temperature was 77° F. The measurements were — wing 216 mm, tail 106 mm, bill 24 mm, tarsus 32 mm, toe 37 mm. This species seems to be attracted to the lights of a ship and it is not unusual to see them onboard about Fiji and

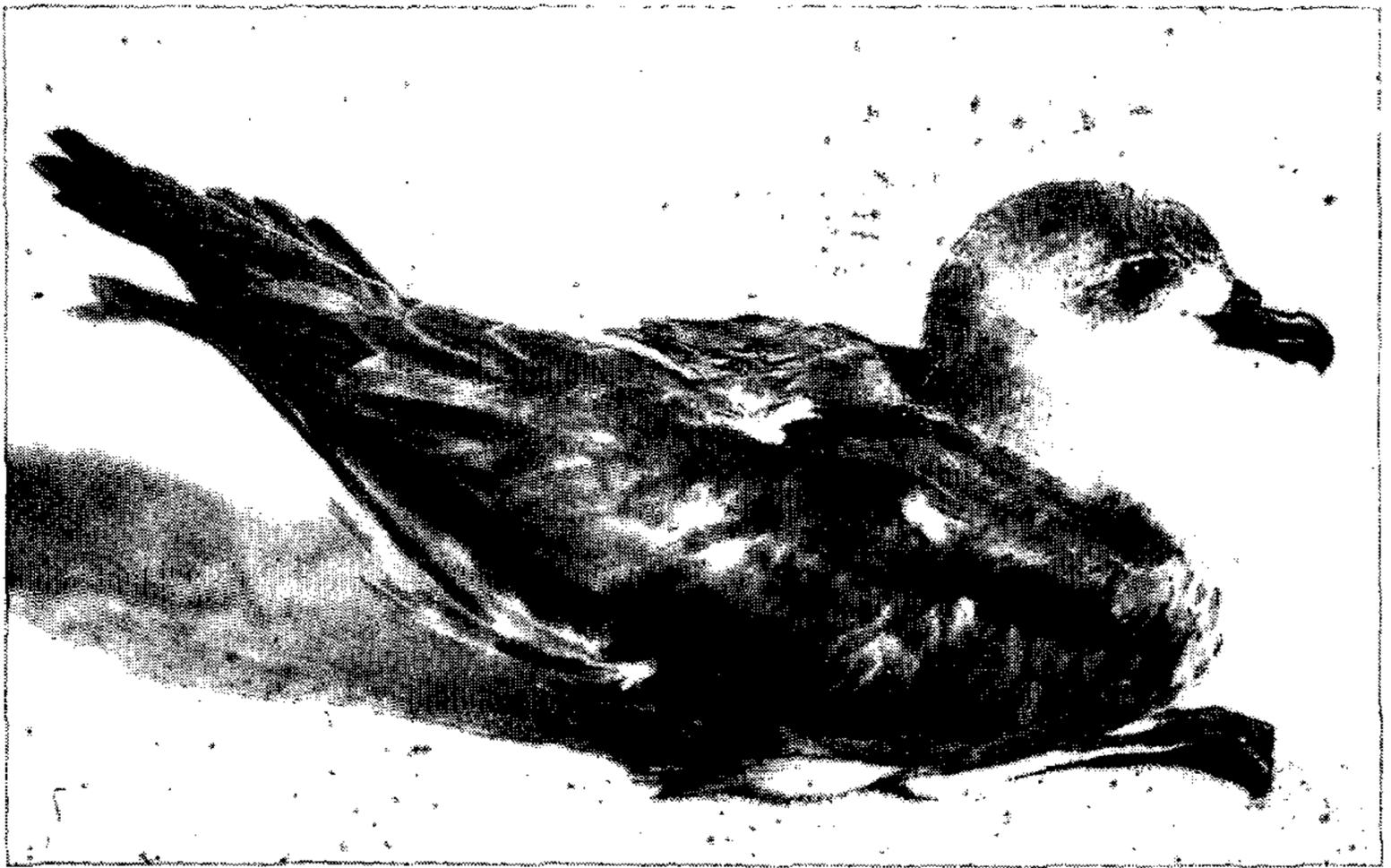


FIGURE 1 — Herald Petrel (*Pterodroma heraldica*) found in passenger's baggage at Nuku'alofa, Tonga, 16 July 1966.

Photo: J. Jenkins

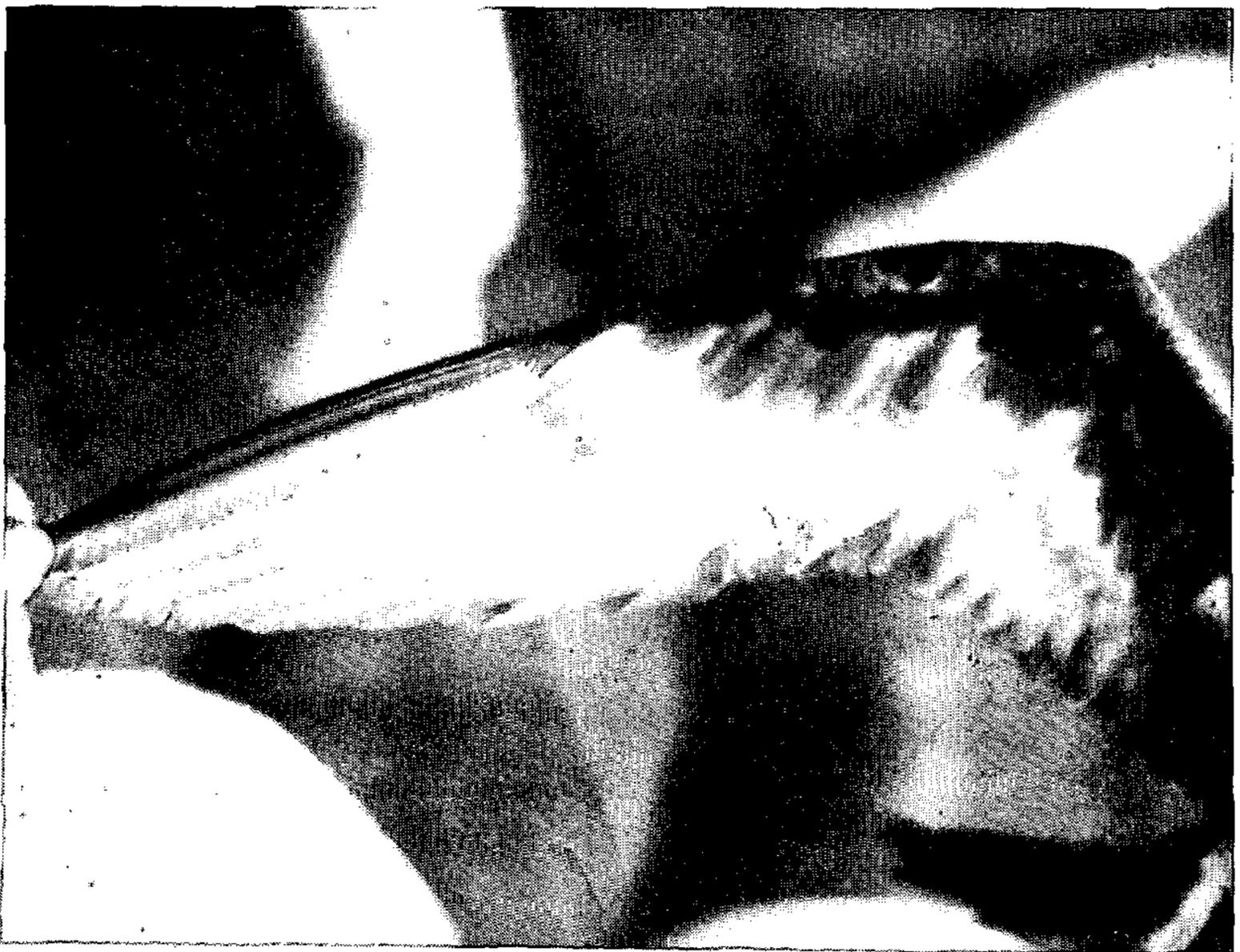


FIGURE 2 — Herald Petrel (*Pterodroma heraldica*), underwing.

Photo: J. Jenkins

northern New Zealand. However, this is, as far as I can ascertain, the first time it has been recorded for Tonga. I have never seen the Black-winged Petrel there before or since.

Herald Petrel, *Pterodroma heraldica*:

On 16 July 1966 a petrel was recovered from the baggage of a deck passenger on arrival at Nuku'alofa (Figs. 1-2). Such baggage proved a very fruitful source of supply of birds for banding since any bird that landed onboard was inevitably collected by the island people travelling on deck, a common method of travel on ships in the South West Pacific. When caught, the birds' wings and legs are tied together and they are destined to be kept as pets or eaten. However, in the majority of cases, once the captor was shown bird-bands and the system of banding explained, these birds were readily handed over for banding and release.

This particular petrel had landed on board during the night while the vessel was stopped about 15 miles off the port. It posed a problem of identification but, from photographs and measurements, it was identified by Dr W. R. P. Bourne as *Pterodroma heraldica* (see also Shorthouse 1967). The measurements were — wing 263 mm, tail 107 mm, bill 27 mm, tarsus 32 mm, toe 45 mm. Dr Bourne said that these measurements were slightly small in respect of the wing and tail and he thought that this could indicate that this was a young bird not yet fully grown. Two birds of this species were taken off the island of Hongatonga by the Whitney Expedition in July 1925.

Audubon's Shearwater, *Puffinus lherminieri*:

On 4 September 1967 while 7 miles north of Ofolanga Island at 19° 28' S, 174° 31' W, sea temperature 79° F, a bird of this species landed on deck and was caught, photographed (Fig. 3), banded and released. The measurements were — wing 197 mm, tail 92 mm, bill 23 mm, tarsus 37 mm, toe 42 mm. The mottling of the undertail coverts and the underwing pattern can be seen in the accompanying photographs (Figs 4-5). According to King (1967), this species has been reported from Tonga once before, an old sight record.

On 26 November 1967, north of the Vava'u group at 18° 10' S, 174° 00' W, sea temperature 82° F, wind E 18 kts, three birds were seen close alongside the ship. Their flight in this wind consisted of a lot of gliding between the wing beats and it appeared that the wing beats were not as rapid as those of the Fluttering Shearwater (*Puffinus gavia*).

Tropic Birds, *Phaeton lepturus* and *P. rubricauda*:

The White-tailed Tropic Bird is the common species, the Red-tailed having been seen on only a few occasions. The habit of the Tropic Birds of flying close to the masts and wireless aerials is very noticeable by day. That they do the same at night is undoubted as



FIGURE 3 — Audubon's Shearwater (*Puffinus lherminieri*), 19° 28' S, 174° 31' W, 7 miles north of Ofolanga Island, Ha'apai Group, Tonga, 4 September 1967.

Photo: J. Jenkins

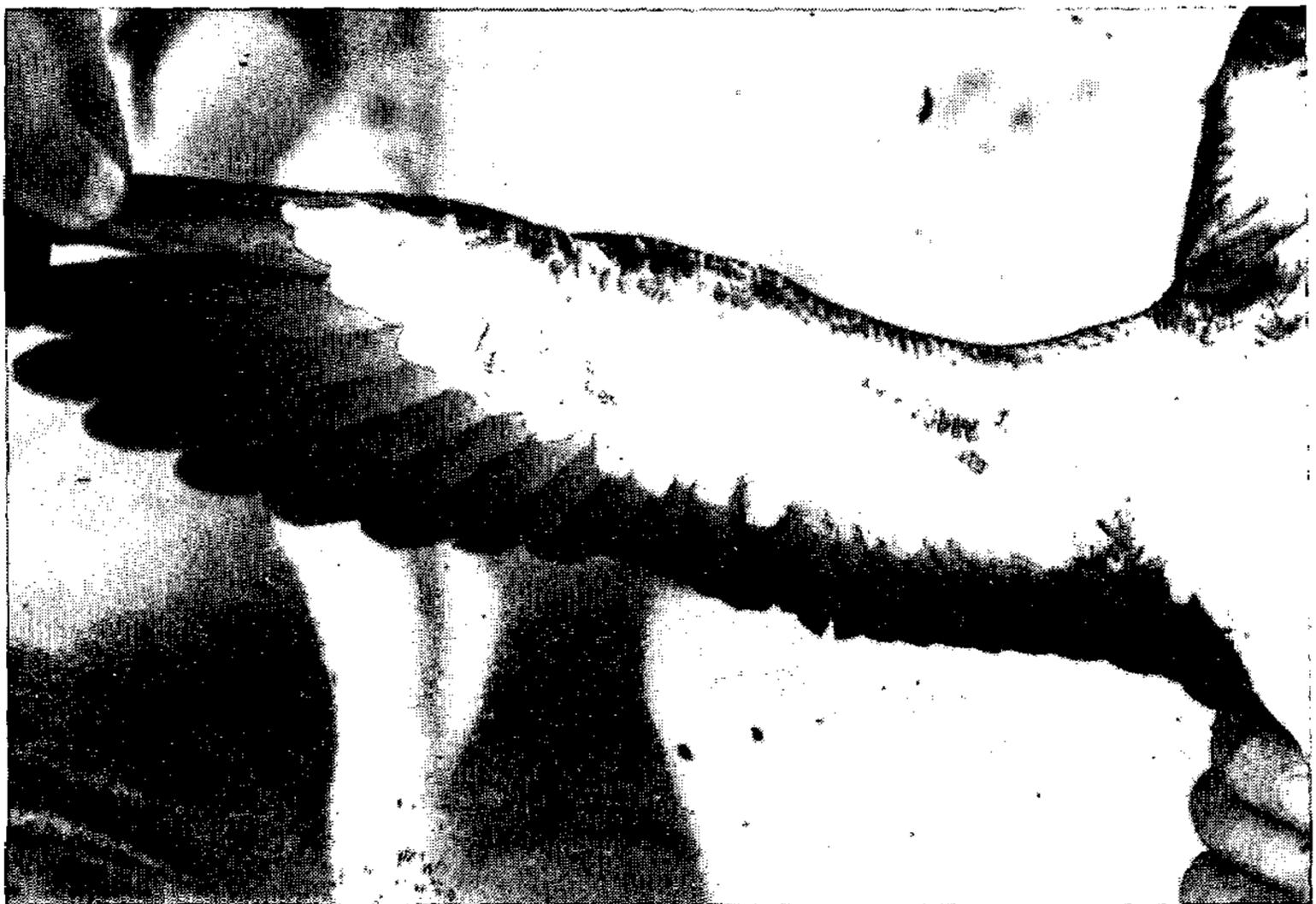


FIGURE 4 — Audubon's Shearwater (*Puffinus lherminieri*), underwing.

Photo: J. Jenkins

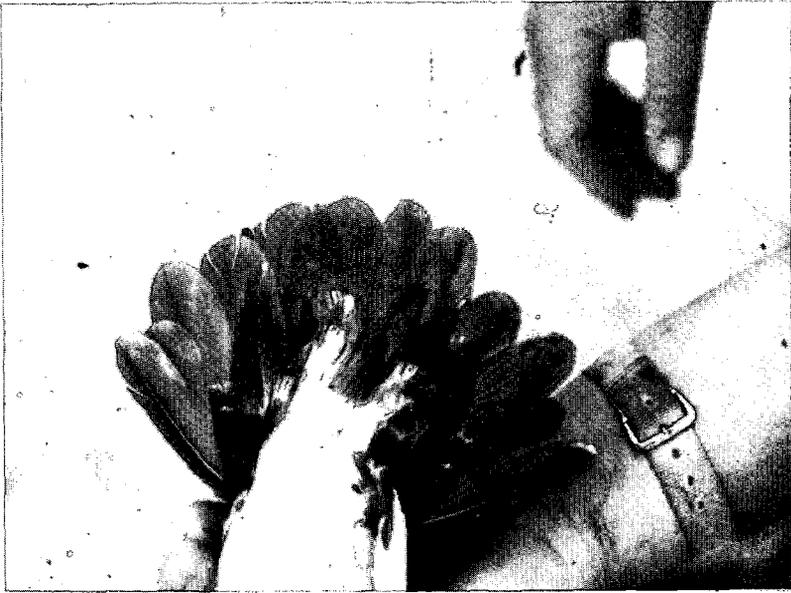


FIGURE 5 — Audubon's Shearwater (*Puffinus lherminieri*), undertail.

Photo: J. Jenkins

their calls can be heard frequently during the hours of darkness. This probably accounts for the frequency with which they are picked up off the deck at night after having flown into various wires up aloft. Tropic Birds are recovered in greater numbers by this means than any other seabirds in this area.

Blue-faced Booby, *Sula dactylatra*:

On 29 October 1967, off the north of the Vava'u group, about 30 birds were seen, 10 of which were in adult plumage, the rest being immature or sub-adult. The birds were not in the least interested in the ship, being busy feeding. This was an unusual sighting as there were three species of booby, Brown, Red-footed, and Blue-faced, present at the one time.

Brown Booby, *Sula leucogaster*:

These boobies are seen about at all times of the year, always in small numbers and usually just one or two at a time. The channel buoys at Nuku'alofa always seem to have a few birds sitting on them and the same is usually true of the entrance buoys at Ha'apai. A few birds are always seen at the northern end of the Vava'u group.

Red-footed Booby, *Sula sula*:

On 27 December 1967, at 20° 15' S, 175° 08' W, 15 miles west of the Nomuka group, a Red-footed Booby landed onboard and was caught and banded. The measurements were — wing 362 mm, tail 225 mm (to end of one feather which was much longer than the rest, but excluding this feather the tail measured 175 mm), bill 74 mm, tarsus 32 mm, toe 69 mm.

On 25 December 1967, off Late Island at 18° 48' S, 174° 39' W, sea temperature 83° F, about 300 birds were seen of which about one third were in adult plumage. All were flying close about the island and feeding in the shallow water inshore. A number of immature birds landed with difficulty on the ship's wireless aerial and sat there with much wing waving for up to ten minutes at a time. On one occasion there were five birds sitting together on the aerial. I have never seen Red-footed Boobies around the southern islands of Tonga and never off the northern islands before in such numbers. It could, therefore, be argued that Late is their breeding ground.

Frigate Birds:

I have never been fortunate enough to see Frigate Birds in Tongan waters although one would expect the Lesser Frigate to be in evidence there.

Sooty Tern, *Sterna fuscata*:

These terns are to be seen at most times of the year at the northern end of the Tonga group around the islands of Toku and Fonualei. When passing these islands at night, especially if it is raining, birds are frequently found on the decks. On one occasion 6 birds were recovered, one of which was dead with a broken neck. It was later sent to the Auckland Museum. The terns were noticeably absent from this area on 29 October 1967 when not a single one was seen. They are also to be seen about the other Tongan islands in the roving parties that one meets in all tropical waters.

Crested Tern, *Sterna bergii*:

These terns are seen in both Nuku'alofa and Ha'apai harbours, always in small numbers. I have never seen more than 6 birds at a time and they are usually in groups of two or three. They seem to be there all the year round.

Grey Ternlet or Blue Grey Noddy, *Procelsterna cerulea*:

While never having been close enough for positive identification, I feel that the small blue grey tern-like birds seen frequently north of Vava'u can only have been of this species. They seem to feed in calm water directly in the lee of the cliffs sheltered from the prevailing South-easterly Trade Winds.

Common Noddy, *Anous stolidus*:

Seen frequently about all the islands of Tonga, this noddy seems to be very abundant near the smaller islands off Nuku'alofa and can frequently be seen in large numbers feeding about the reefs in the harbour itself. A party of 200 plus were seen off Vava'u on 26 November 1967.

White-capped Noddy, *Anous minutus*:

Common throughout the Tongan islands, it is frequently seen in large numbers at the north end of Vava'u and in Nuku'alofa harbour. The alternate name of Black Noddy helps to distinguish it from the Common or Brown Noddy. Seen together, the blackness of the White-capped Noddy is very noticeable against the brownness of the Common Noddy. Once fixed in the mind, this colour difference becomes a major feature of identification in the field.

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OYSTERCATCHER ETYMOLOGY

By P. B. HEPPLESTON

ABSTRACT

The derivation of the specific and subspecific names of the oystercatchers of the world is given as an appeal to the aesthetic sense of ornithologists.

The following account of the derivations of the scientific names of Oystercatchers is in the nature of a supplementary note to an earlier discussion of the species' taxonomy and distribution (Heppleston 1973). It is offered simply that it might appeal to the aesthetic sense of other ornithologists as much as it did to the writer's. Ecological research is by nature an objective discipline and scientific reporting appears to get more unemotional and clinical every year. I get pleasure from Oystercatchers far beyond the bounds of my research programmes; in particular the origins and uses of words as embodied in a name seem to give an added dimension to one's appreciation, as well as recalling to the romantic the halcyon days of the pioneer naturalists. Their day has, alas, almost gone for ever, but their powers of observation, and indeed many of those gentlemen by name, live on in the posterity of the subspecies.

The terminology of these notes follows Peters (1934) although certain status changes have been recently recommended (Heppleston 1973).

GENUS:

Haematopus (Gk. blood; eye) — most species have a bright red iris and eyelid in the adult.

SPECIES:

ostralegus (L. oyster; collect) — feeding on oysters (see later).
Eurasia and the Americas.

leucopodus (Gk. white; foot) — legs a very pale colour. S. America, Falklands.

ater (L. black) — plumage entirely black. S. America, Falklands.

fuliginosus (L. sooty) — a black Oystercatcher. Australia.

SUBSPECIES:

All are subspecies of *ostralegus*, except *fuliginosus fuliginosus*.

*palliatu*s (L. cloaked) — the head plumage is black, the back a lighter grey-black, giving the impression of a cloak. Eastern N. America.

ostralegus (see above for etymology) — North-west Europe.

occidentalis (L. of the west) — Great Britain; a distribution to the west of the main continent of Europe.

- longipes* (L. long; foot) — legs apparently longer than those of neighbouring forms. Central Russia.
- longirostris* (L. long; bill) — literal translation. Australia.
- ophthalmicus* (L. pertaining to the eye) — eye very distinctive (named on account of bright red colour?). Australia.
- fuliginosus* (L. sooty) — a black subspecies of *H. fuliginosus*. Australia.
- malacophaga* (L. soft; eater) — perhaps due to habit of eating soft foods such as earthworms and grubs that are plentiful in the inland breeding ranges frequented by this form. Faeroe Is, Iceland.
- galapagensis* (L. of the Galapagos) — locality name. Galapagos Is.
- osculans* (L. to kiss) — refers to a single (intermediate) form which shows characteristics of neighbouring groups (see Oxford English Dictionary). The details of these characters are not clear. Far East.
- unicolor* (L. of one colour) — plumage almost entirely uniform (black). Most other forms are pied. New Zealand.
- chathamensis* (L. of the Chathams) — locality name. Chatham Is (N.Z.).
- bachmani* (L.) — named after the Rev. Dr. Bachman, a friend of the great John James Audubon (Audubon 1838). Western N. America.
- frazari* (L.) — named by Brewster (1888) after M. Abott Frazar of Massachusetts, U.S.A., who collected the type specimen in 1887. California.
- prattii* (L.) — named by C. J. Maynard (1899) after “my friend Marland L. Pratt.” Bahamas.
- durnfordi* (L.) — named by Sharpe (1896) after Henry Durnford, by whom the type specimen was collected and from whom it was purchased. S. America.
- meade-waldoi* (L.) — named by Bannerman (1913) after E. G. B. Meade-Waldo, a 19th century ornithologist of eminence who spent much time in the Canary Is., from where he collected this Oystercatcher. Canary Is.
- moquini* (L.) — named after Dr C. H. B. A. Moquin-Tandon, a 19th century Professor of Natural History in the Medical Faculty in Paris and author of works on Canary Is birds. S. Africa and (?) Canary Is.
- finschi* (L.) — named after Dr Otto Finsch, of Braunschweig, Germany, who was a world-wide collector and student of birds, especially Australasia (Martens 1897). New Zealand.
- reischeki* (L.) — named by Rothschild (1899) after A. Reischek who shot the type specimen in June 1885 at Kaipara, N.Z. New Zealand.

pitabay — name derived from 'pitunay,' a vernacular name of Indian origin. Peru.

The misnomer 'Oyster-catcher' was first used by North American ornithologists in the 18th century. If the birds do ever feed on oysters, it is a very rare occurrence, since oysters form sublittoral beds and are hardly ever exposed to the air; Oystercatchers are adapted to feed on exposed shellfish beds or mudflats, from which mussels, cockles and mud-dwelling worms form the bulk of their food supply.

Nevertheless, the mere fact that these birds *are* mis-named lends an air of curiosity and intrigue which, to some of us, proves an irresistible pull. Let us hope that our senses will never be dulled by economics to the point where we are incapable of appreciating the 'hidden extras' of ornithological research.

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THE TONGUES OF KIWIS (APTERYX SPP.)

By CHARLES McCANN

ABSTRACT

Kiwis fall into two distinct groups, *striated* (including the North Island, the South Island and the Stewart Island Kiwis) and *spotted* (including the Little Spotted and the Great Spotted Kiwis). Variation, both geographically and longitudinally, is evident. One major character, the tongue with its closely associated sensory tracts, is described and contrasted in three species of kiwi, the North Island Kiwi (*Apteryx australis mantelli*), the Great Spotted Kiwi (*A. haasti*) and the Little Spotted Kiwi (*A. oweni*). It is concluded that the shape of the tongue has an important bearing on the type of food eaten and the terrain occupied by each of the species. The differences in the anatomy of the tongues indicate that the spotted kiwis are distinct from the striated kiwis and a different origin or a divergence of development resulting from early separation in the type of habitat occupied is suggested. The marked difference in the kind of plumage supports this hypothesis according to the contrasting habitats now occupied by the two groups of kiwis.

INTRODUCTION

Kiwis are well-known and need no description. Broadly, they are divided into well-defined groups: the *Striated Kiwis*, distributed in suitable localities throughout the North Island, across Cook Strait, down the eastern side of the South Island and thence on to Stewart Island. Included are the North Island, the South Island and the Stewart Island Kiwis. A certain amount of variation, according to locality, is acknowledged which is to be expected owing to the ecological and biological changes through such a long latitudinal range. The largest form appears in Stewart Island. Individual variation is frequent. The *Spotted Kiwis* on the other hand are represented by two marked species ranging along the back bone of mountains and the western coast of the South Island. The smaller of the two (*Apteryx oweni*) is more restricted in its range, being more or less confined to Nelson and Marlborough Districts. Like the size variation observed in the Striated Kiwis, the larger of the two spotted Kiwis (*A. haasti*) exhibits a similar increase in size the further south one travels.

There are, of course, other fundamental differences beyond the scope of this short paper which is restricted to the variation in the structure of the tongue and its associated tissues.

Material and methods:

The drawings are based on fresh material as it came to hand from carcasses received by the taxidermy department of the National Museum, Wellington. The tongues were first sketched in pencil and final sketches made shortly afterwards with the aid of the pencil sketches and the preserved specimens. The fresh specimens were pinned out on a board before fixation.

Unlike most other birds, the openings of the nostrils are situated at the extremity of the long Whimbrel like bill, they are connected by the long nostril tubes with the large and capacious sinuses and olfactory lobes above the glottis. The tongue, itself, is short in all species and does not extend far into the beak. The beak is well adapted for deep probing into soft substrata in search of food.

The tongues of three species of Kiwis are described and contrasted:

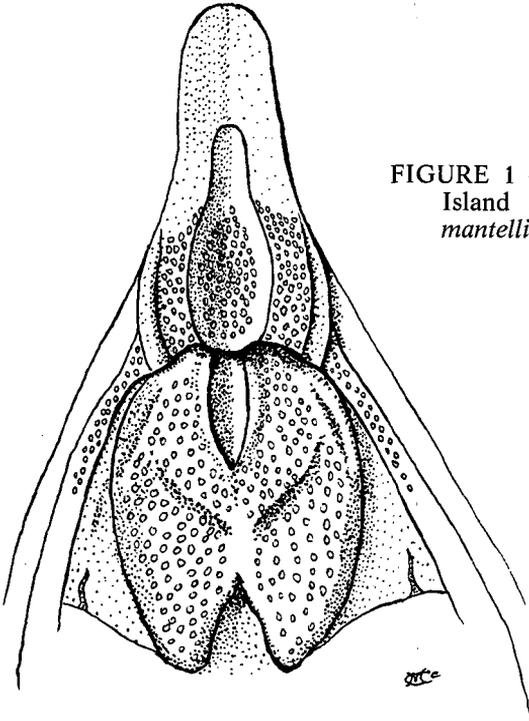


FIGURE 1 — Tongue of the North Island Kiwi, *Apteryx australis mantelli*.

North Island Kiwi, *Apteryx australis mantelli* (Fig. 1)

The tongue is somewhat long-pyriform with half to three quarters of its anterior length free and less fleshy; tip obtuse, retuse or truncate; the posterior margin somewhat fleshy for about 2 to 3 fifths of its length from its base; mesially there is a shorter pyriform depression conforming to the outline of tongue. The lower half of the tongue is closely pitted with largish taste pits. Immediately behind the tongue is the somewhat narrow glottis surrounded by a large laryngeal pad (which, incidentally, is very similar in outline to the swim-bladder of the porcupine-fish!) deeply divided posteriorly for about a quarter of its length and copiously beset with large taste pits arranged roughly in longitudinal rows with a base area just above the angle of the lobed area; a row of small pits stretch for a short distance, at an angle of about 45° from the median line of the pad; other such rows of small pits appear, one on each of the shoulders of the pad. Rows of pits extend along the hyoids to a distance about half way down the pad.

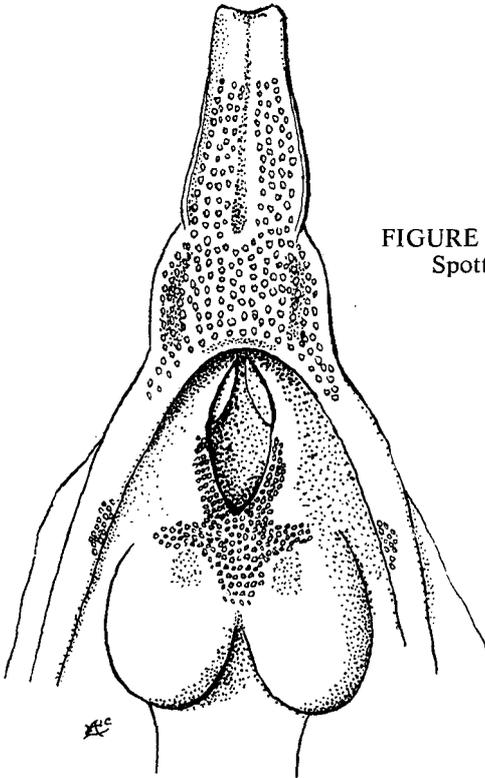


FIGURE 2 — Tongue of the Great Spotted Kiwi, *A. haasti*, female.

Great Spotted Kiwi, *Apteryx haasti* (Fig. 2)

The tongue is more or less oblong with a marked constriction just below the transverse midline. The area below the constriction corresponds to the area encompassed by the thickened margins in *A. mantelli*. A shallow median groove extends from the apex of the tongue to a transverse line drawn at the constriction; except for a short distance (about one fifth) the rest of the tongue is covered with largish taste pits, intermixed with small ones below the constriction towards the margins. The apex is truncate or retuse.

The laryngeal pad in *A. haasti* is not so well-defined as in *A. mantelli*, particularly in the area surrounding the glottis; its most marked feature is the two large ovoid lobes deeply divided from one another; they are devoid of large pits but smaller ones are scattered about. The glottis is large with two "glands" anteriorly; surrounding the lower half of the glottis are the arms of an otherwise cruciform area of large pits extending between the glottis and the division of the ovoid lobes of the laryngeal. On the hyoid arms some distance posteriorly, but almost opposite the transverse arms of the cruciform patch of pits, is a small group of pits, one on either side.

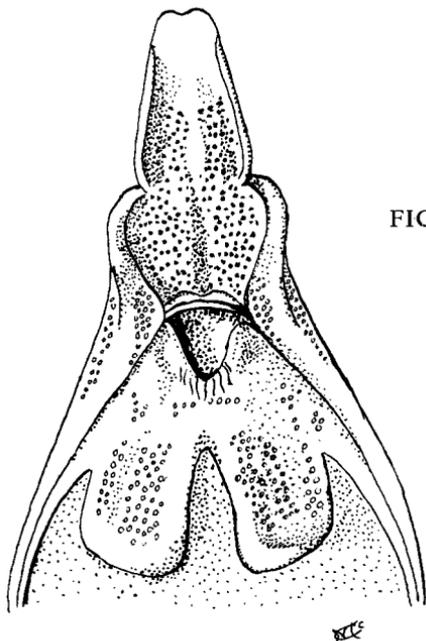


FIGURE 3 — Tongue of the Little Spotted Kiwi, *A. oweni*, male.

Little Spotted Kiwi, *Apteryx oweni* (Fig. 3)

The tongue of *A. oweni* is very similar to that of *A. haasti* in several respects which might be expected, but it is more strongly constricted about half way along its length; the apex is retuse or truncate; the margins are narrowly inflexed as far as the transverse constriction; there is a shallow, median depression. With the exception of approximately one third of the anterior portion, the remainder of the tongue is much pitted with taste pits, as in *A. haasti*, and an increased number of smaller marginal pits. The base of the tongue is margined with a fleshy fold which obscures a portion of the glottis.

The laryngeal pad is not so well-defined as in *A. mantelli* and *A. haasti*; it is formed of two fleshy lobes deeply divided from each other; the lobes are more oblong rather than ovoid as in *A. haasti*; the lobes have scattered large pits interspersed with small pits; a transverse line of a few pits exist below the glottis and a small group of pits at either end of the transverse set. Two series of pits exist on either side of the hyoids, to a level of the posterior end of the glottis.

CONCLUSIONS

After close examination of the one major character, the *tongue* and its closely associated sensory tracts, it is, perhaps, possible to reach some generalised conclusions: (a) The shape of the tongue, and (b) the distribution of the sensory pits in each of the species, both have an important bearing on the type of food consumed and the type of terrain in which it is captured — in short they are general ecological factors.

The marked differences in the structure of the tongues indicate that, although the spotted kiwis show a close similarity amongst themselves, they are distinct from the striated kiwis and suggest a different origin or divergence of development resulting from early separation in the type of habitat.

Again, the marked difference in the type of plumage between the spotted and striated kiwis appears, to some extent, to lend support to this hypothesis: one group, the spotted, inhabits the colder, often snow clad, terrain in open tussock (?) and the other occurs in the more dank or rain drenched areas of both islands (this is true when the birds are abroad, at night, when dew is heaviest).

ACKNOWLEDGEMENT

I wish to express my sincere thanks to Dr John Yaldwyn, National Museum, Wellington, for his kindly help with the manuscript of this paper.

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DISTRIBUTION AND NUMBERS OF NEW ZEALAND OYSTERCATCHERS

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ABSTRACT

The mainland New Zealand species of oystercatchers have overlapping winter ranges, but their distribution within these ranges is very different. South Island Pied Oystercatchers (*Haematopus ostralegus finschi*) are concentrated in large flocks on major harbours and estuaries. Variable Oystercatchers (*H. unicolor*) have a scattered distribution with flocks never exceeding 150 birds. Black phase Variable Oystercatchers are numerically dominant to pied or intermediate phases throughout New Zealand, although the frequency of the former increases southwards. Intermediate-plumaged birds occur where black and pied phases are sympatric. The rare Chatham Islands Oystercatcher (*H. chathamensis*) is restricted to those islands.

In the breeding season, *H. ostralegus finschi* and *H. unicolor* are reproductively isolated by their mutually exclusive breeding dispersions. They are also largely separated in their winter ranges. Variable and Chatham Islands Oystercatchers have probably maintained their present numbers over the past 100 years. The decline that occurred in the numbers of South Island Pied Oystercatchers over the period 1870 to 1940 was arrested by the prohibition of shorebird shooting in 1940, from which time a spectacular irruption has occurred. At the current rate of increase, the numbers of this species will probably come under density-dependent control in the next few decades. This density effect may be alleviated for some time if the species expands its recent tendency to remain inland at breeding localities throughout the year, and adopt a terrestrial mode of feeding.

INTRODUCTION

In contrast to its paucity of land birds, New Zealand has a relative abundance of shorebirds, though many are seasonal migrants. Conspicuous amongst the residents are the oystercatchers, of which three species are recognized by the Annotated Checklist of New Zealand birds (OSNZ 1970). Two of these, the South Island Pied Oystercatcher (*Haematopus ostralegus finschi*) and the Variable Oystercatcher (*H. unicolor*) occur in mainland New Zealand, whereas the Chatham Island Oystercatcher (*H. chathamensis*) is endemic to the Chatham Islands.

Preparatory to a broader study on the systematics and affinities of New Zealand oystercatchers, the ranges of the taxa involved had to be determined, and the distribution and numbers of birds within

these ranges analyzed. Such an analysis can provide critical information on differential species distributions within coincident ranges, and thus indicate separate species status.

New Zealand oystercatchers gather into easily located coastal flocks or small groups which are especially suitable for census purposes. Although many population counts have accumulated in recent literature, no attempt to synthesize them into a coherent whole has yet been published. This paper presents an analysis of censuses made throughout New Zealand, and compares the distribution and numbers of the three species of oystercatcher.

METHODS

Records of distribution and estimates of abundance were extracted from several sources: (i) the early literature of ornithological discovery in New Zealand; (ii) Classified Summarised Notes (in *New Zealand Bird Notes* and *Notornis*); (iii) the Recording Scheme of the Ornithological Society of New Zealand; and, (iv) personal records and communications. Whenever possible all population estimates were based on figures for 1970-71. When these were not available the next most recent data were used. To minimise discrepancies in counts due to seasonal fluctuations in populations, most figures for South Island Pied Oystercatchers were taken from censuses made in the winter months of May, June and July, by which time post-breeding dispersal and migration had ceased. Unfortunately, winter counts were not available from some locations, so summer records had to be used in lieu of them. Since Variable and Chatham Islands Oystercatchers are non-migratory and tend to remain paired in their territories or localized in small flocks, census figures for these species have lessened seasonal bias. Hence both winter and summer census data were used, but in general, censuses were restricted to a particular season for discrete localities. In this way, errors due to local movements of birds between two census localities were reduced.

Personal records were obtained by counting individual birds in flocks at high water roosts. Large flocks were counted several times and mean figures accepted only if the error between successive counts was less than 5% of the total. For the Variable Oystercatcher it was necessary to ascribe sightings to the three colour phases in a standard way. Although Falla (1939) considered that northern black phase birds in his *H. reischeki* assemblage might differ in plumage characters from southern black birds, spectrophotometric analysis of feather samples did not support this view (Baker 1972). Thus in censuses all black birds were lumped together as the black phase. The pied phase was defined by the absence of distinguishable black markings in the white areas of the breast and belly. The remainder were classified as the intermediate phase.

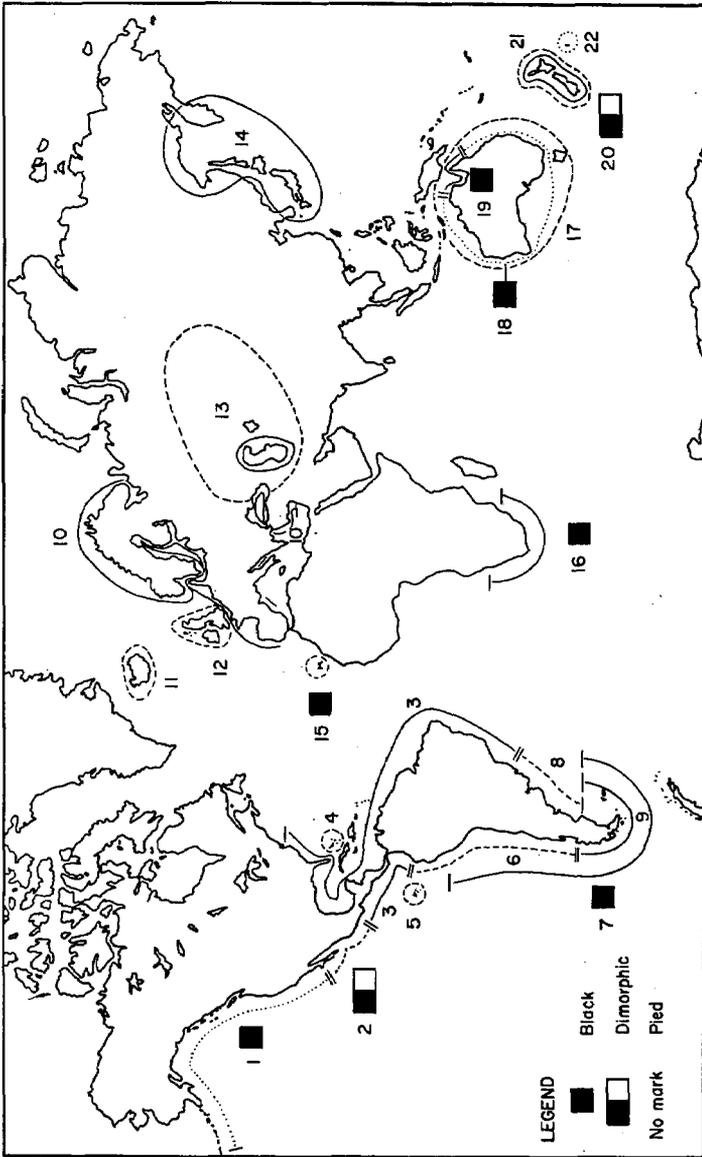


FIGURE 1 — World distribution of oystercatchers (Adapted from Larsen, 1957). Key to species:

- | | |
|-------------------------------------|---------------------------------------|
| 1. <i>Haematopus bachmani</i> | 12. <i>H. o. occidentalis</i> |
| 2. <i>H. palliatus frazari</i> | 13. <i>H. o. longipes</i> |
| 3. <i>H. p. palliatus</i> | 14. <i>H. o. osculans</i> |
| 4. <i>H. p. pratti</i> | 15. <i>H. moquini meadewaldoi</i> |
| 5. <i>H. p. galapagensis</i> | 16. <i>H. m. moquini</i> |
| 6. <i>H. p. pitanay</i> | 17. <i>H. o. longirostris</i> |
| 7. <i>H. ater</i> | 18. <i>H. fuliginosus fuliginosus</i> |
| 8. <i>H. p. durnfordi</i> | 19. <i>H. f. ophthalmicus</i> |
| 9. <i>H. leucopodus</i> | 20. <i>H. unicolor</i> |
| 10. <i>H. ostralegus ostralegus</i> | 21. <i>H. o. finschi</i> |
| 11. <i>H. o. malacophaga</i> | 22. <i>H. chathamensis</i> |

DISTRIBUTION AND NUMBERS

Distribution Related to World Pattern:

Oystercatchers are widely distributed throughout the world, being present on most continental sea coasts. They are absent from the polar regions and remote oceanic islands excepting the Galapagos and Chatham Islands. Their range is most extensive in the breeding season, when they occur from northern Russia in the north to Cape Horn in the south. Although the majority of species are confined to a littoral distribution, some Old World forms have moved inland up the valleys of great river systems. The world distribution of oystercatcher species is shown in Figure 1.

Ranges of New Zealand Species:

The winter ranges of the two mainland species of oystercatcher broadly overlap (see Figs 2, 3, 4 and 5). In the breeding season, however, they occupy mutually exclusive ranges, as South Island Pied Oystercatchers move inland to breed (see Fig. 6) whereas Variable Oystercatchers breed at or near their wintering haunts. The Chatham Islands Oystercatcher is geographically isolated from the mainland species, being restricted to the Chatham Islands approximately 800 km east of New Zealand (see Fig. 7).

Distribution and Numbers of New Zealand Species:

The distribution patterns of the New Zealand species of oystercatcher are quite different. Although both mainland species are widely distributed throughout the country, South Island Pied Oystercatchers occur at fewer localities. A feature of the winter distribution of South Island Pied Oystercatchers is the occurrence of large flocks of birds at major harbours, bays and estuaries. These flocks result from the well developed gregarious behaviour in this species, and such flocks can only exist at localities where adequate food supplies are present. Smaller flocks occur around the coast, usually where rivers discharge into the sea, forming small estuaries in which bivalve molluscs are locally abundant (Fig. 2). South Island Pied Oystercatchers are notably absent or scarce in regions where rocks predominate in the littoral zone, e.g. Coromandel Peninsula, the east coast of the North Island from East Cape south, and Fiordland.

Variable Oystercatchers have a much more scattered distribution than their smaller pied congener. Larger flocks of these birds, nowhere exceeding 150 individuals, occur in the parts of their range where they are either allopatric with or numerically dominant to South Island Pied Oystercatchers. Small widely dispersed flocks occur in regions where the littoral zone is characterized by rock platforms. Variable Oystercatchers exclusively occupy parts of Northland, Coromandel Peninsula, and Fiordland. Where the two mainland species coexist, Variable birds occur only in small numbers. The marked

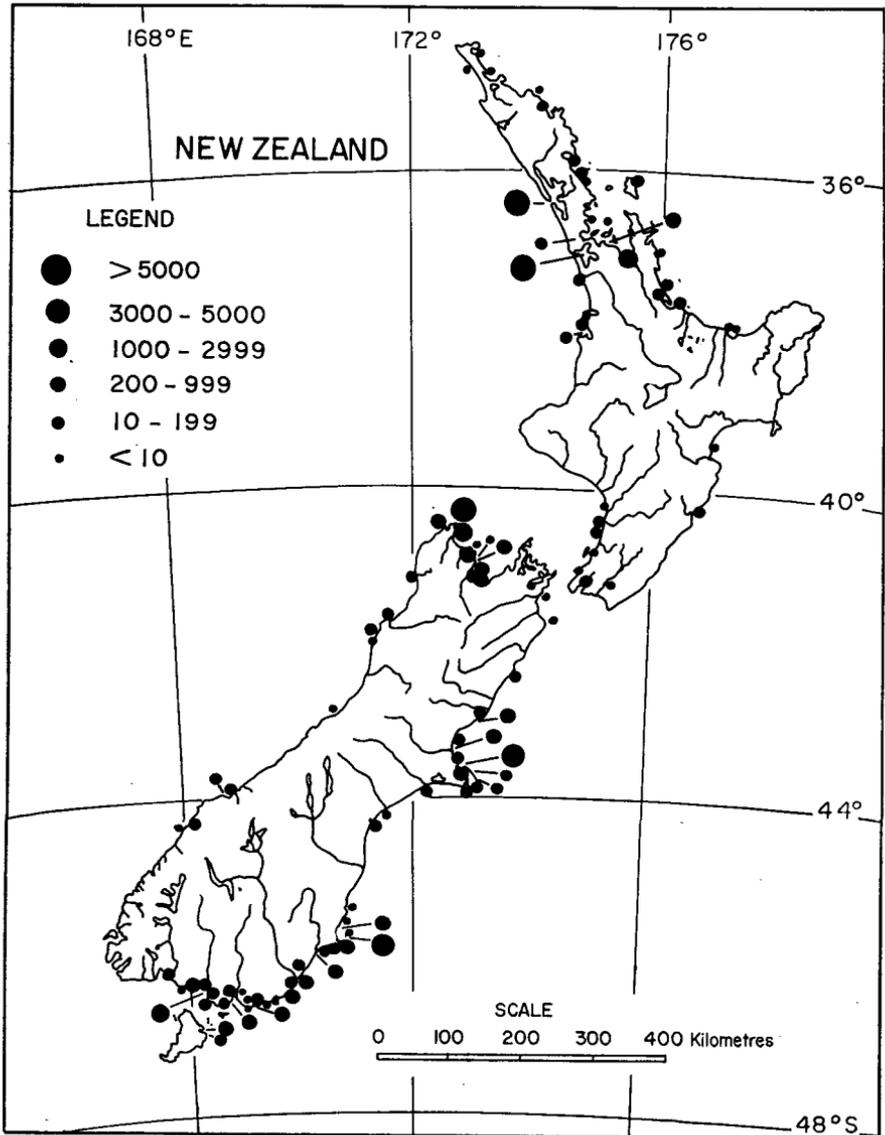


FIGURE 2 — Winter distribution and numbers of South Island Pied Oystercatchers in New Zealand.

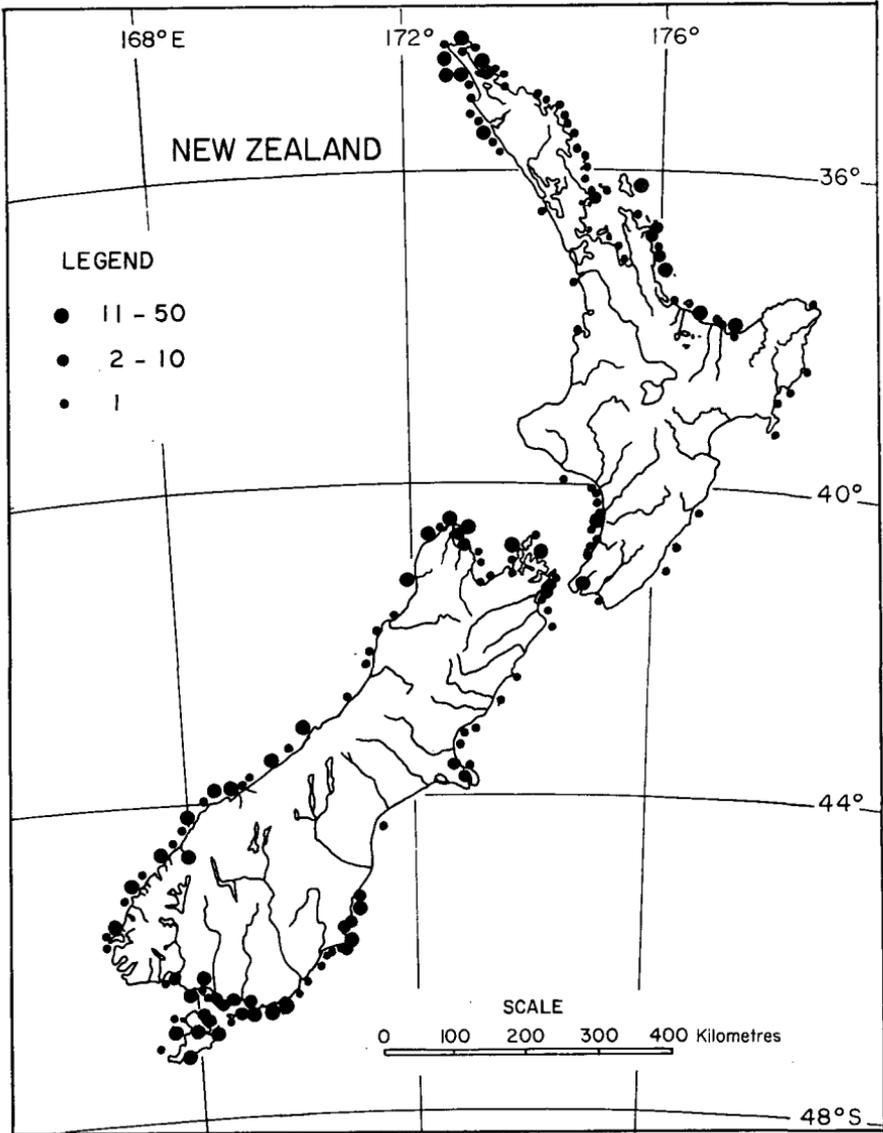


FIGURE 3 — Distribution and numbers of black phase Variable Oystercatchers in New Zealand. To facilitate the plotting of numbers in areas where dense concentrations of census figures occurred, the figures were pooled and plotted as single locality values. See Appendix II for separate locality figures.

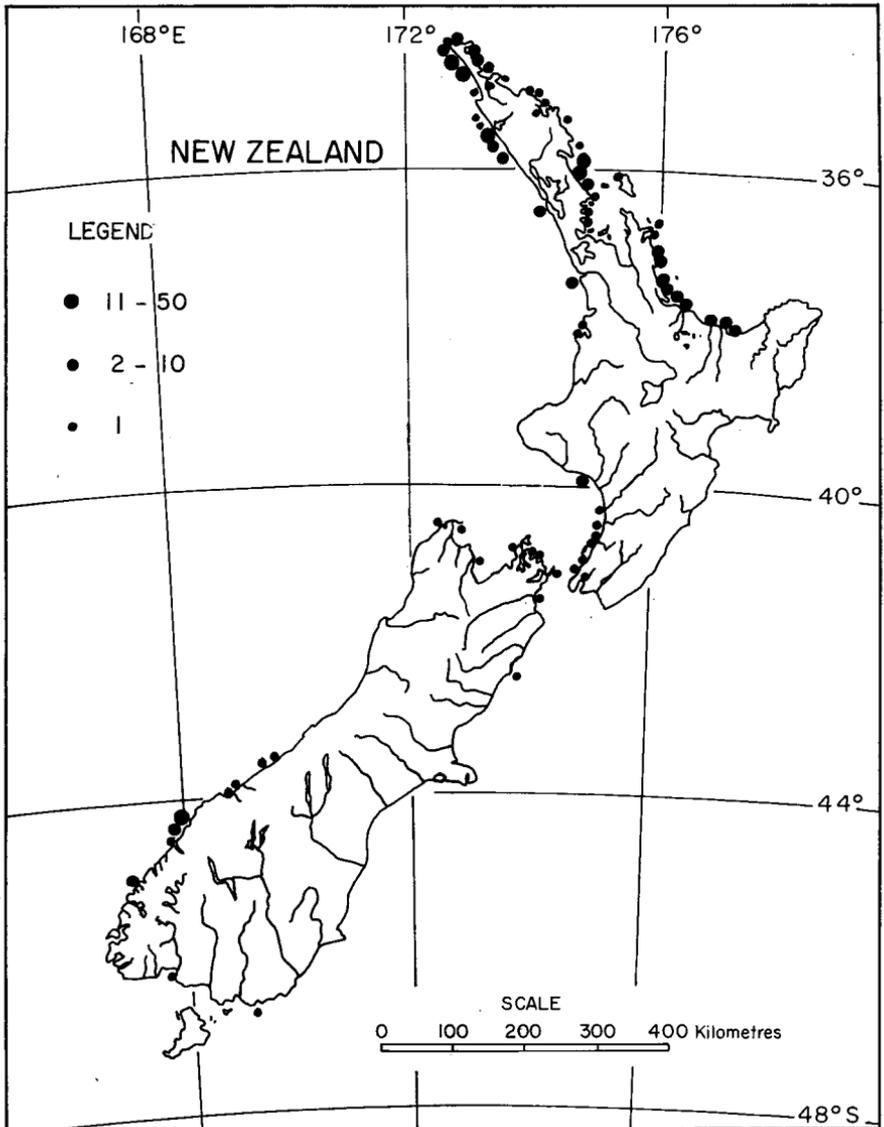


FIGURE 4 — Distribution and numbers of pied phase Variable Oystercatchers in New Zealand. In some localities pooled census figures were plotted as in Figure 3. See Appendix III for separate locality figures.

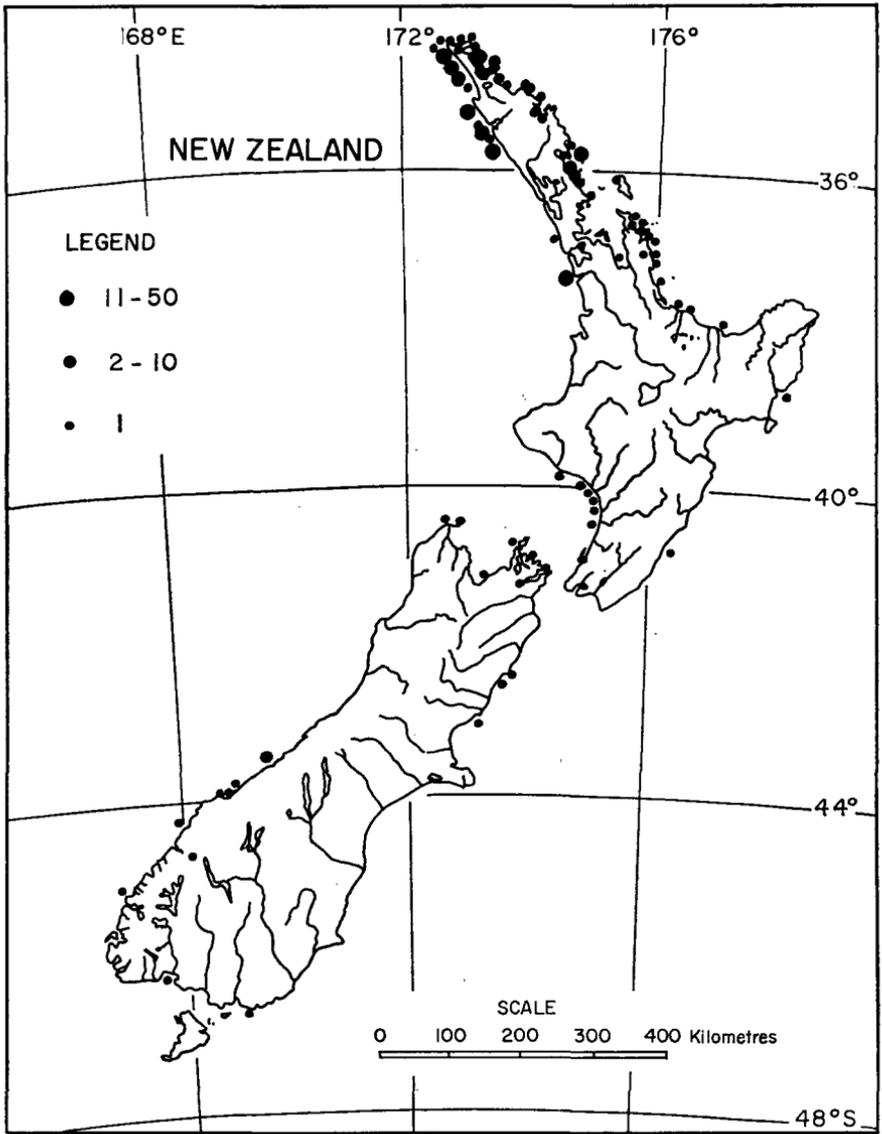


FIGURE 5 — Distribution and numbers of intermediate phase Variable Oystercatchers in New Zealand.

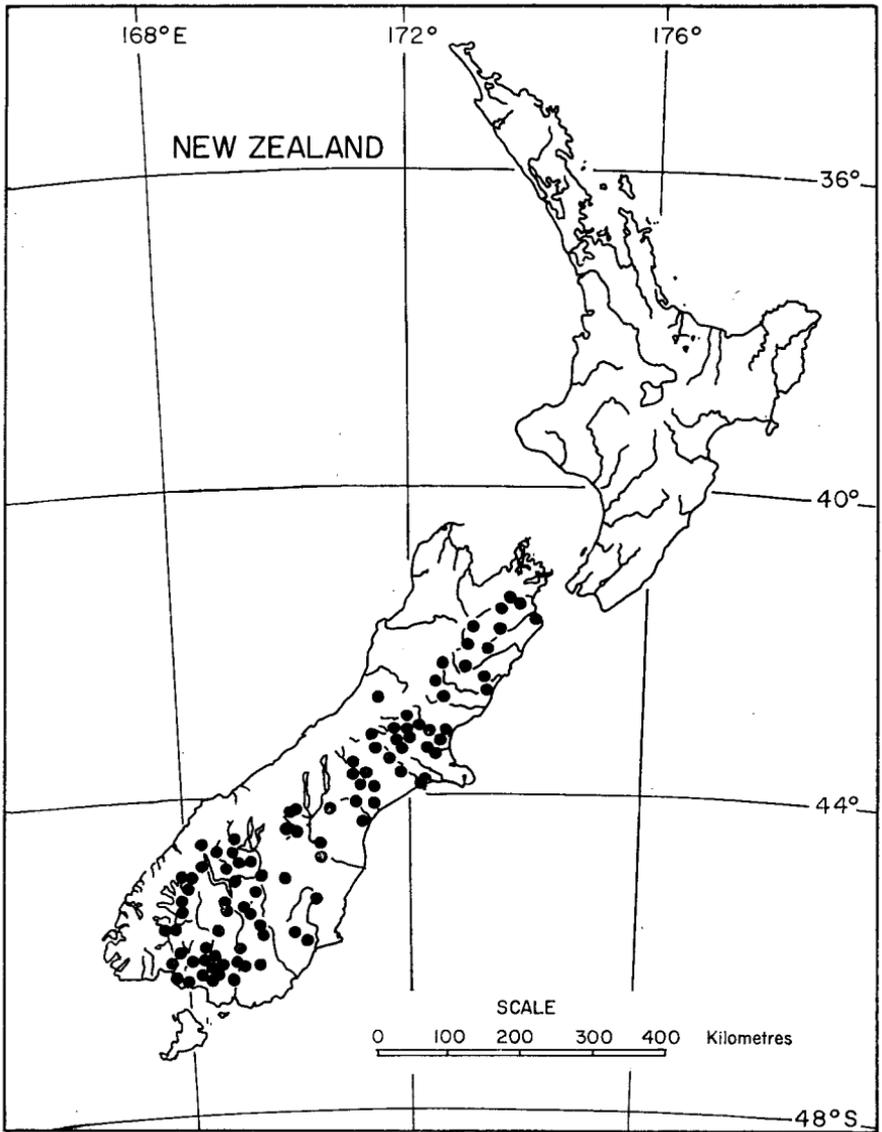


FIGURE 6 — Breeding distribution of South Island Pied Oystercatchers.

TABLE 1. Variation in frequency of colour phases of the variable oystercatcher with latitude.

Latitude Grouping	Colour Phase					
	Black		Intermediate		Pied	
	N	%	N	%	N	%
34° - 39°S.	413	42.89	330	34.27	220	22.84
39° - 44°S.	364	84.85	37	8.63	28	6.52
44° - 48°S.	494	93.92	6	1.14	26	4.94

disjunctions which occur in the distribution of the species are directly attributable to unsuitable feeding habitat in the littoral zone e.g. the scarcity of records from the Taranaki coast is due to the barren gravel beaches of this region.

The colour phases of the Variable Oystercatcher are not uniformly distributed throughout their range, their frequency of occurrence varying considerably with latitude as shown in Table 1.

Black oystercatchers predominate in the southern part of the South Island although small numbers of pied and intermediate-plumaged birds also exist at these latitudes. On transition northwards black phases decrease in frequency, whereas intermediate and pied phase birds increase. However, even in the far north, the black phase is still the most abundant. This type of colour phase gradient in which black phases decrease in frequency on transition from colder higher latitudes to warmer lower latitudes is paralleled on the coast of southern California. Black oystercatchers alone occur from Alaska south to southern California, they then merge and interbreed with pied and intermediate birds, and finally on the Mexican coast of the Gulf of California pied birds reach a frequency of 100%. The greater extent of the North American continent has allowed a clearer pattern to emerge, and possibly if the New Zealand mainland extended into lower latitudes nearer the Equator, the pied phase of *H. unicolor* would reach an exclusive frequency.

As Larsen (1957) has pointed out, these two colour phase gradients occur at approximately the same latitudes, representing the northern and southern limits of the palms. He suggested that the distribution of the various colour phases may be correlated with

temperature. This hypothesis has gained support from recent experimental work, in which black plumage (as compared with non-black plumage) has been shown to have three major physiological effects on birds:

- (1) increased metabolic economy through increased absorption of radiant energy (Hamilton & Heppner 1967; Heppner 1970);
- (2) increased heat stress at high temperatures, as there is little difference in the emission of radiant energy from the integuments of black and non-black homeotherms (Kelly, Bond & Heitman 1954; Hammel 1956); and,
- (3) reduced oxygen consumption when exposed to solar radiation at lower temperatures. (Lustick 1969).

These effects may explain why black oystercatchers are absent from the vicinity of the Equator, and also why black phases of dimorphic species predominate in colder parts of the range.

However, it is doubtful whether temperature alone accounts for the distribution of black oystercatchers. All black oystercatchers occur either in rocky habitats or in habitats where rocks and sand alternate, suggesting that habitat selection is a potent factor influencing distribution. The selection of rocky habitats by North American Black Oystercatchers (*H. bachmani*) has been attributed to predator selection (Bancroft 1927). This view contended that melanistic plumage gave protective colouration against dark rock backgrounds, whereas white-bellied forms were less conspicuous on sandy beaches. It is doubtful whether this hypothesis can account for the distribution of black phase Variable Oystercatchers in New Zealand. Adult Oystercatchers have very few natural predators, especially in New Zealand; no records of predation were found in the literature. However, Jehl (in litt. 1970) felt it would be unwarranted to consider that plumage has no selective value *per se*. He suggested that there was selection by aerial predators such as the Black-backed Gull (*Larus dominicanus*) for cryptic colouration in the chicks, and that this became apparent in the distribution of adult plumages. This view was based on the assumption that pied chicks are grey dorsally and black chicks brown. In New Zealand oystercatcher chicks the dorsal plumage exposed to predators is similar irrespective of the colour phase involved, although some black chicks have dark heads. Further, where cryptically coloured substrate races occur among animal groups they show exclusive selection for matching substrates. For example, the darkly coloured South African lark *Miafra sabota* is restricted to the dark soils of southwest Africa, while its reddish congener *M. africanoides* inhabits the red Kalahari sand. Substrate selection is rigorous even where the two substrates intermingle, and is thought to result from strong predator selection (Niethammer 1940).

Variable Oystercatchers with plumage intermediate between black and pied phases have an interesting distribution. In all but two instances they occur where black and pied phases are sympatric, and in the two remaining cases they occur well within dispersal range of regions where mixed matings were known to occur (cf Figs 3 and 4). Intermediate-plumaged oystercatchers are nowhere abundant, the maximum number at any one locality never exceeding 50 birds.

The Chatham Islands Oystercatcher is not distributed evenly over the Chathams, but rather is concentrated on the smaller more isolated islands, Rangatira and Mangere (see Fig. 7). It tends to occur in rocky habitats, but does feed on some sandy beaches on Chatham and Pitt Islands.

Of the three New Zealand species of oystercatcher, the smaller South Island pied bird is by far the most abundant. Census figures (deposited in OSNZ library, where they may be consulted as Appendices I-V (pp. i-xxxii) of this paper, "Census Data for . . . oystercatchers") indicate that the total population of this species approaches 49,000 birds. Black phase Variable Oystercatchers are less numerous (approximately 1300 birds), and pied and intermediate phase birds are scarce (approximately 300 and 400 birds respectively). The Chatham Islands Oystercatcher is rare enough to warrant Red Book listing, as the population totals only about 50 birds. The above census figures are probably conservative estimates of the true population levels, as figures are not available for some localities where oystercatchers are known to occur, and because old records were the only ones available from some localities where population increases have probably occurred.

Recent Trends in Distribution and Numbers:

South Island Pied Oystercatchers have been abundant in New Zealand for at least the last 100 years. Potts (1869) recorded large flocks of pied birds on estuarine mudflats. He later (1885) recalled having seen a flock of "several thousands" of birds at the Heathcote-Avon estuary in 1858, and recorded a large flock at Port Cooper in 1871. Potts (1885) noted a decline in the abundance of South Island Pied Oystercatchers at that time, and attributed it to increasing human disturbance. Oystercatchers were then subject to considerable shooting pressure, as they were considered by many to be a choice table bird (Douglas *in* Pascoe 1969). Buller (1888 and 1905) confirmed that both pied and black oystercatchers were widely distributed but nowhere abundant. Travers & Travers (1872) recorded oystercatchers of pied plumage on the Chatham Islands as "not common."

The recession in numbers of oystercatchers continued until approximately 1940, when wintering populations of the South Island Pied Oystercatcher began a spectacular irruption, especially in northern New Zealand wintering haunts (see Figs 8A and 8B). This population increase has been attributed by Sibson (1966) to the passing of

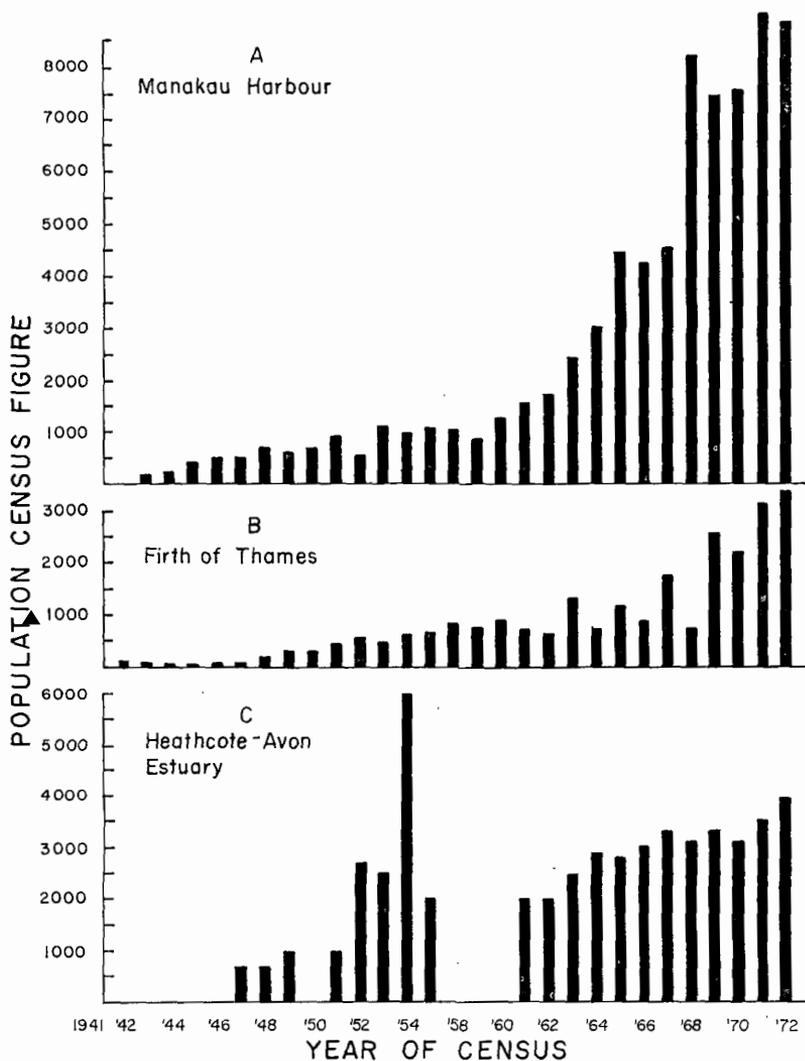


FIGURE 8 — Peak winter census data for South Island Pied Oystercatchers at three major New Zealand wader haunts since 1942.

legislation in 1940 prohibiting the shooting of shorebirds. Population levels at major wintering areas in the South Island have shown smaller increases in comparison with their northern counterparts (see Fig. 8C).

The differential population expansion within wintering haunts can be ascribed to three main factors:

- (1) before 1940, northern harbours and estuaries, probably containing vast supplies of food, were not extensively utilized by oystercatchers (Sibson 1966).
- (2) also before 1940, southern harbours and estuaries were able to adequately support the smaller populations of birds inhabiting them; and,
- (3) ecological pressure from population expansion since 1940 has forced increasing numbers of birds to migrate northward in search of new feeding areas.

As the migratory instinct is best developed in juvenile first-year *H. ostralegus* (Buxton 1957), birds of this age have tended to colonize northern New Zealand (Sibson 1945; Falla, Sibson & Turbott 1966). With population levels of South Island Pied Oystercatchers still rising, saturation of the littoral habitat appears imminent in the next few decades.

In Great Britain, following recent major irruptions of pied oystercatchers (*H. ostralegus*), increasing numbers of birds have moved inland to breed, exploiting terrestrial habitats as they did so (Buxton 1961; Dare 1966). They have recently begun to utilize coastal terrestrial habitats in certain parts of Britain (Dare 1966; Heppleston 1968), probably in response to increased intraspecific competition for littoral food supplies. South Island Pied Oystercatchers have also responded to increasing population densities by seeking food in coastal fields, and in some instances have become wholly terrestrial. Several pairs have remained at their breeding sites in North Canterbury over the past two years. It seems likely that this habit will increase in future if numbers keep on rising at their present rate.

ACKNOWLEDGEMENTS

This study was made during the tenure of a Wildlife Scholarship from the Wildlife Branch, Department of Internal Affairs. I am most grateful to Dr G. R. Williams, B. D. Bell and D. V. Merton for including me in the 1970 Chatham Islands expedition and for supplying me with census data. I would like to thank J. Warham for supervising this research, and for constructive criticism of the text. Dr Jon C. Barlow also made helpful suggestions for improving the manuscript, and Mrs C. M. Goodwin prepared the figures. For field support and census data I am indebted to my wife Sue, A. T. Edgar, K. Horgan, L. R. Moran, and the personnel of the 1970 OSNZ Northland fieldtrip.

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Canada

ILLUSTRATIONS OF FIVE SEA BIRDS' TONGUES

By CHARLES McCANN

ABSTRACT

The anatomy of the tongues of five sea birds, the Blue Petrel (*Halobaena caerulea*), the Grey-backed Storm Petrel (*Garrodia nereis*), the Black-bellied Storm Petrel (*Fregetta tropica*), the White-capped Mollymawk (*Diomedea cauta cauta*), and the Caspian Tern (*Hydroprogne caspia*) is described and illustrated.

The diversity of form and structure of birds' tongues has always fascinated me, partly because of the role the tongue plays in relation to the food of the species, and partly because of the important role some birds play in linking the animal and plant worlds by effecting pollination and seed dispersal. Much work remains to be done in these fields and every little contribution, I feel, is a welcome addition to knowledge of the biology of the species.

The material illustrated here is based on fresh tongues retrieved from the taxidermy department during my period of service (1948-1964) with the Dominion Museum, Wellington.

Blue Petrel, *Halobaena caerulea* (Fig. 1)

The tongue in *Halobaena* is soft and highly vascular with margin and tip translucent; the central region is dense, lanceolate in shape with acute apex and truncate, irregularly serrate base. Between the base of the tongue and the glottis there are five series of large pits, the widest being the series nearest the glottis with fewer and larger pits; margins at glottis smooth anteriorly but followed by large denticles posteriorly merging with the large denticles of the laryngeal pad; between the groups of large denticles there is a single median series of four large spines; the laryngeal pad is broadly ovoid and is provided with small scattered denticles over the anterior surface above the large denticles. The glottis is confined between the two hyoids. At either corner of the tongue there are three larger pits followed by a group of five somewhat small pits.

The tongue of *Halobaena* is very similar to that of the Broad-billed Prion, *Pachyptila vittata*, but as I have no drawing of that species, I cannot make any further comparison.

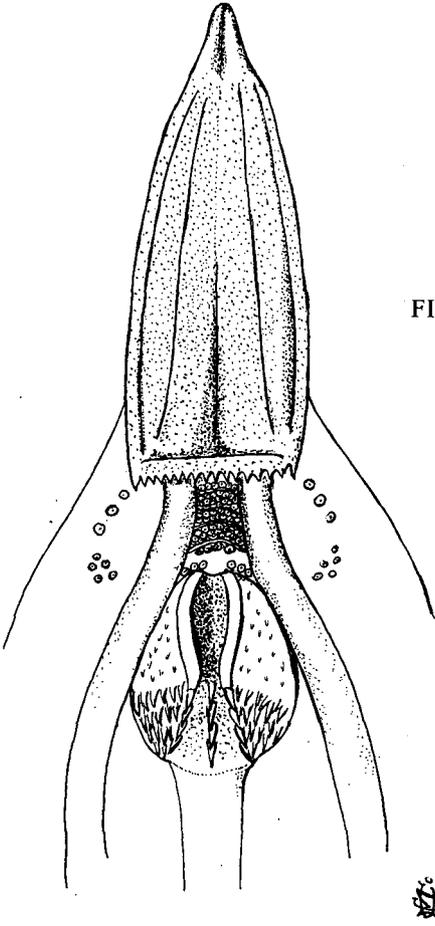


FIGURE 1 — Tongue of the Blue Petrel (*Halobaena caerulea*).
C. McCann del.

Grey-backed Storm Petrel, *Garrodia nereis* (Fig. 2)

The tongue of *Garrodia* is somewhat linear-lanceolate with an acute apex and a truncate base; the base is armed with variously sized denticles, the largest being one on either side of the row, which in addition is slightly incurved. The tongue is divided by a shallow longitudinal groove; it is slightly fleshy posteriorly and its surface appears to be clothed in minute papillae.

Some distance behind the tongue is the glottis (with little or no character in itself) surrounded in its anterior third by fleshy, hooked lobes; to the posterior third of the glottis are attached a pair of testiculate fleshy lobes, separated from each other by a wide interval; these lobes appear to be smooth. The hyoids present no marked character. There appear no pits or denticles in the throat.

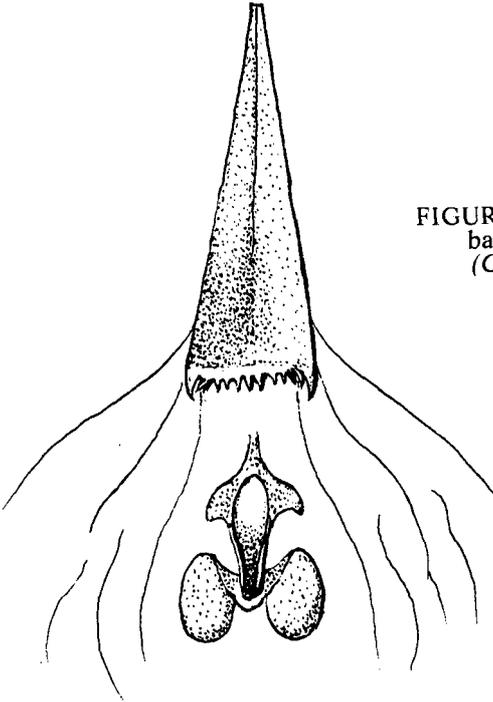


FIGURE 2 — Tongue of Grey-backed Storm Petrel (*Garrodia nereis*).

C. McCann del.

Black-bellied Storm Petrel, *Fregatta tropica* (Fig. 3)

The tongue of *Fregatta* is not unlike that of *Garrodia* in some respects but differs much in detail and the pharyngeal pad is markedly removed in contour and structure.

The tongue is lanceolate with an acute tip; the base is truncate with a series of denticles united with one another; each denticle is minutely serrulate; the outermost denticle on either side of the tongue (as in *Garrodia*) is the largest. A shallow groove extends from the

apex to about the middle of the tongue; the base is somewhat fleshy and minutely pappillate anterior to the denticles.

The laryngeal pad is a short distance behind the base of the tongue; it is broadly pyriform in outline with its base divided into three fleshy lobes, the median being markedly shorter than the lateral ones. The glottis is surrounded by a "fleshy collar" and elevated above the surrounding tissue of the laryngeal pad. No denticles nor pits appear on the structures of the throat. The hyoids are not markedly prominent.

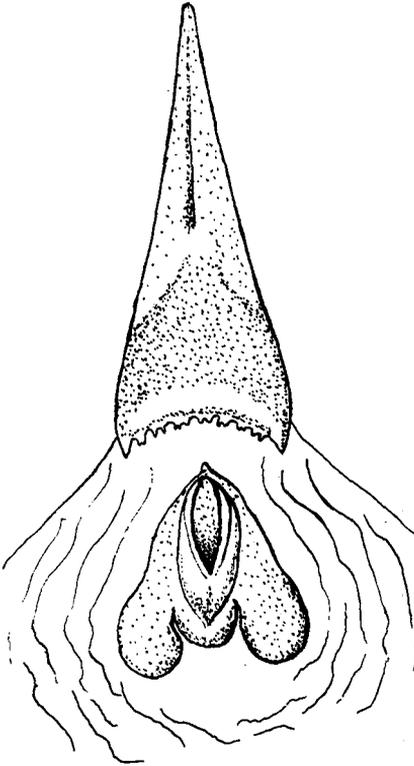


FIGURE 3 — Tongue of Black-bellied Storm Petrel (*Fregetta tropica*).

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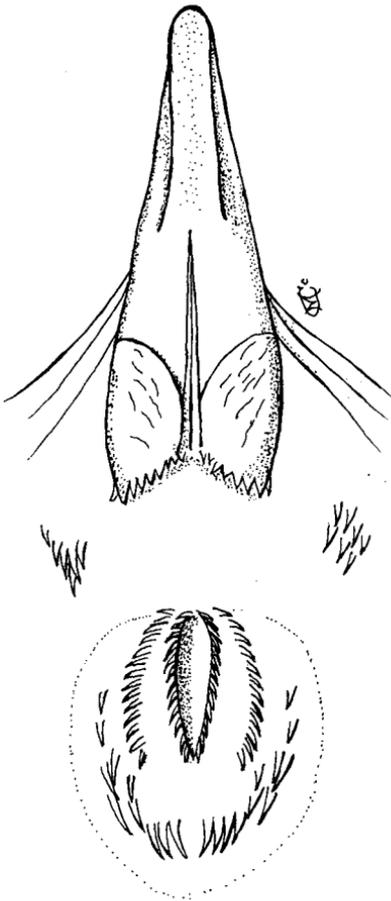


FIGURE 4 — Tongue of White-capped Mollymawk (*Diomedea cauta cauta*).

C. McCann del.

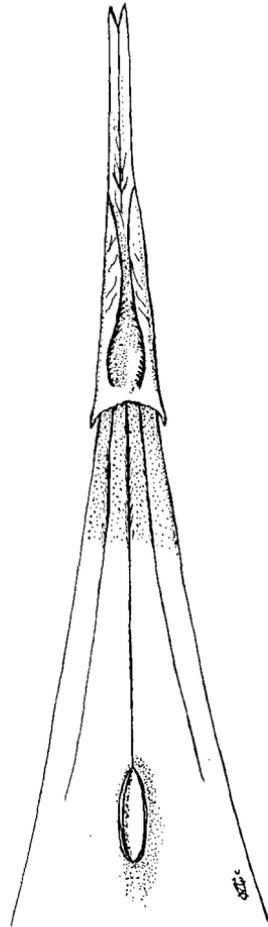


FIGURE 5 — Tongue of Caspian Tern (*Hydroprogne caspia*).

C. McCann del.

White-capped Mollymawk, *Diomedea cauta cauta* (Fig. 4)

The tongue of *D. cauta cauta* is large and fleshy with the anterior half forming a trough with the lateral margins; in shape it is lanceolate with an inverted V-shaped, denticulate, posterior margin. The base of the tongue is composed of two large, fleshy pads, above the serrations, divided by a canal which extends to the base of the trough referred to before.

The laryngeal pad is broadly ellipsoidal in shape, the glottis is margined by sharp slightly recurved denticles or "spines"; outside this denticle series another series of denticles follows the same contours as the series on the glottis. On the fleshy portions of the pharyngeal pad there are a series of large spinous denticles, arranged in a descending curve. A short distance to the right and left of the lingual base are groups of large spines (5-7).

Caspian Tern, *Hydroprogne caspia* (Fig. 5)

The tongue of *Hydroprogne* is linear with a bifid apex; it is grooved anteriorly but markedly half-tubular posteriorly, the tube being formed by the inflexed margins of the tongue. The tube is wider posteriorly with the inner margins of the widened area minutely serrated. For about one third the distance between the base of the tongue and the anterior point of the larynx the area is dotted with minute taste pits. The larynx is at a distance behind the base of the tongue (about the length of the tongue itself) and is not surrounded by a marked "laryngeal pad," nor denticles.

I wish to express my thanks to Dr J. C. Yaldwyn for his kind assistance with this paper.

Charles McCann,
8 Kiwi Street,
Heretaunga,
Upper Hutt

ANNUAL GENERAL MEETING, 1973

The 34th Annual General Meeting took place in Auckland on 12 May 1973 and was attended by about 100 members. Before proceeding with the main business of the meeting the President, Mr F. C. Kinsky, reminded members that two eminent ornithologists, David Lack and Robert Cushman Murphy (an Honorary Life Member of the Society) had died during the year, and asked the meeting to observe a moment's silence in respect.

Apologies for absence included Sir Robert Ralla who was attending his Knighthood investiture that week-end. The meeting unanimously asked the President to send a telegram of congratulation. Arising from the minutes of the last AGM the Secretary reported that a motion asking Council to reconsider the question of joining CoEnCo had been discussed in the November meeting, but had been rejected.

In delivering his annual report, the President said that only two new species had been added to the list of birds recorded in New Zealand during the year — a Manx Shearwater from Wellington West Coast and a White-tailed Tropic Bird recently from the Bay of Plenty. Mr Kinsky stressed the importance of careful examination of any wrecked sea bird as even seemingly common birds sometimes turned out to be extremely interesting. The Society had made a financial loss of \$584 but this was accounted for by the publication of the fifth part of Volume 19 of *Notornis* which contained the Classified Summarised Notes. This would not be a recurring event and there was seen to be no need to increase subscriptions at this stage. The reports of all schemes and sub-committees were summarised, and in the complete absence of any questions or discussion on any of the reports it is taken that the general membership is satisfied with the way in which the elected officers are carrying out the affairs of the Society. The announcement was made that two of our most well-known Regional Representatives, Mr H. R. McKenzie (South Auckland) and Mr A. T. Edgar (Far North) were retiring; they are to be replaced by Mrs Beth Brown and Mr David Crockett respectively. Mr M. J. Imber was retiring as organiser of the Beach Patrol Scheme and Council had appointed Mr C. R. Veitch as his successor. In concluding his report, the President thanked the conveners and organisers for their work during the year.

Five appointments were made to Council in the meeting, four of them new ones. The President explained that Dr J. A. Fowler had taken over the secretaryship from Mr Brian Ellis during the year and his co-option was to be confirmed during this meeting. A vote of thanks to the out-going Secretary was passed with acclamation. Four Council Members, Mr F. H. Boyce, Mr R. W. Jackson, Mrs J. Hamel and Mrs S. M. Reed, were elected as the result of the postal ballot.

One amendment to the constitution, proposed by Mr H. R. McKenzie, was passed by the meeting. Student members (who elect to receive 25% rebate of the full subscription) are now able to cast votes; they are not, however, eligible for election to positions on Council.

A vote of thanks was proposed by the Secretary to our hostess for the weekend, Mrs S. M. Reed, and the meeting closed at about 11.00 p.m.

The annual conference of Regional Representatives took place on the morning of Saturday May 12. Matters discussed included guidance for regional bird study projects, and the activities taking place during Labour Day Weekend 1973. In the North Island, members will converge on the Taranaki-King Country district to attempt to complete the Bird Mapping Scheme project there. South Island members will visit the Black Stilt area in Otago to assist the Wildlife Branch in its studies and to do Mapping Scheme work. Further details will be supplied in due course through Regional Representatives. Please contact your own Representative if you hope to participate in Labour Day Weekend activities.

During the afternoon members enjoyed illustrated talks delivered by Mr B. D. Bell on the Auckland Islands Expedition, and Dr P. C. Bull on recent research on Starlings. Finally a film depicting the lives of the Tui, Bellbird and Stitchbird was screened, following the reading of introductory notes supplied by Sir Robert Falla.

Many members took advantage of the bright Sunday morning sunshine to visit Mangere sewerage works ("Purification Plant") and the airport to see the effects of encroachment into natural habitats. A number of interesting birds were seen and Dr Bull acquired at least three more lists for the Mapping Scheme!

J. A. FOWLER, Secretary

★

CARD COMMITTEE REPORT

The 1972 Christmas card depicted the Banded Dotterel by John Gould in *The Birds of Australia*. The card was very popular but the increase in sales probably reflects the increase in membership of the Royal Forest and Bird Protection Society.

24,000 cards were printed and a total of 1,887 dozen (22,644) cards were sold. Sales were made up as follows: dotterel — 1,240 dozen, mixed — 647 dozen.

Production and packaging costs rose considerably but the net profit was \$600. This is after deductions have been made of donations to the Royal Forest and Bird Protection Society and the Alexander Turnbull Library Endowment Trust. It may be necessary to increase prices next year but this will be avoided if possible. The illustration for this year has yet to be decided.

On behalf of the Society, I would like to thank the Turnbull Library for permission to use the painting, the Royal Forest and Bird Protection Society for circulating brochures and my wife who looked after the packaging and despatch of cards during my absence overseas and on field duties.

B. D. BELL, Convener

THE BEACH PATROL SCHEME IN 1972

In 1972 the high level of beach patrolling that had been recorded in 1971 was continued. However, patrollers were rewarded with fewer birds, mainly because of the absence of big wrecks of any of the commoner species. Teams led by Mrs S. M. Reed in Auckland, D. E. Crockett in Whangarei and D. G. Medway in New Plymouth did most of the work, and there were good efforts by individuals in Southland, Otago, Canterbury South and North, Wellington South and West, and Bay of Plenty.

The following are interim totals for those 13 (of the 15) zones for which cards have been received:—

<i>Zone</i>	<i>Sea Birds</i>
Auckland West	1619
Taranaki	58
Wellington West	681
Westland	10
Auckland East	269
Bay of Plenty	57
East Coast North Island	4
Canterbury North	125
Canterbury South	30
Otago	143
Southland	134
Wellington South	172
North Coast South Island	6
Total	3308

Unusual finds included one Antarctic Skua. From April to July 38 Yellow-eyed Penguins were found on Wellington West and South beaches together with an exceptional number of Spotted Shags.

M. J. IMBER, Organiser

Due to other commitments, Mr Imber has had to resign from his position as Organiser. His place will be taken by Mr C. R. Veitch, Wildlife Branch, Department of Internal Affairs, P.O. Box 2220, Auckland. Mr Veitch requests that all correspondence be clearly marked "Beach Patrol" so that it may be attended to if he is away from his office.

★

BANDING REPORT

The Banding Committee met in May. It decided that, following the publication in *Notornis* 20 of the interim banding report, its policy for the future would be to publish annually a similar, though somewhat improved, version of that report. A full report was considered not to be necessary, but details not furnished in the report could be obtained through the Banding Officer, Wildlife Branch, on permission from the appropriate banding operator.

RECORDING SCHEME

During the year six requests for files or information from files have been received and dealt with. Classified notes 1963-70 and 1971-72 have been published in *Notornis* 19. Regional newsletters from Wellington, Manawatu and Gisborne have been received; much useful information has come from regular correspondents and some other members. Copies of newsletters from other regions and records from individual members should reach the convener, Mr A. T. Edgar, by 31 July if they are to be included in the 1972-73 Classified Notes.

A. T. EDGAR



REPORT OF THE NEST RECORD SCHEME For the Year Ended 30 April, 1973

503 cards representing 11 species were loaned this year to eight investigators, mainly for use in university studies. There are now 10,153 nest record cards available, almost half of which are represented by the four species Song Thrush, Blackbird, Goldfinch and House Sparrow. The remainder of the cards are distributed between an additional 132 species. Two new species appeared in the scheme this year for the first time, namely, Chatham Island Snipe and Long-tailed Cuckoo. The year was also noteworthy for the recording of colonial nesters. Messrs Stidolph, Campbell, Robertson (a junior member) and Munro deserve acknowledgement for their contributions this year.

D. E. CROCKETT, Nest Records Convener



LIBRARY REPORT, 1972

During the year the library has benefited by two books which were presented by their authors, R. M. Lockley and Ross McKenzie, in addition to the usual journals and separates.

H. McKENZIE, Hon. Librarian

TREASURER'S REPORT

For Year Ended 31 December, 1972

PRESENTED AT THE A.G.M. OF THE
ORNITHOLOGICAL SOCIETY OF N.Z. (INC.)
AUCKLAND — 12 MAY 1973

At the end of December membership was 1072, an increase of 44 for the year. Details are: 2 honorary life, 75 life, 22 endowment, 710 ordinary, 59 student, 86 corporate bodies, 59 husband and wife, counting as two, giving the total of 1072. New members admitted were 121, 38 left by resignation or death, and 39 were struck off for non payment of subscriptions.

The income for the year was \$5970, which is \$996 less than last year. Members' subscriptions increased by \$236. Due to increased printing costs, profit from the sale of Christmas cards dropped by \$115 to \$615. The thanks of the Society again goes to those responsible for this very valuable source of additional income. Sales of back numbers amounted to \$207, which is \$355 less than last year. Interest received increased by \$121 due to some of the Society's funds being in investments returning higher rates of interest. Royalties on *Checklist* sales \$32, \$376 less, together with the fact that the Society did not have any Booksellers Margin on direct *Checklist* sales \$459, accounts for most of the reduction in total income for the year.

Expenses amounted to \$6554 as against \$6270. Included in the figure of *Notornis* Printing and Distribution is \$772, the cost of the Supplement issued in September, so that the cost of the four regular issues was \$4857, which is \$736 more than in 1971. Other expenses, the cost of running the Society, totalled \$957.

Lower total income and an increase in expenses has resulted in a deficiency of \$584, as against a surplus of \$696 last year.

During the year royalties on the revised edition of the *Field Guide* \$486 were received and as was done last year were credited directly to the Projects Assistance Reserve Fund. Since balance date a further \$602 has been received. This means that the Society will now have received royalties on sales of 3880 copies.

\$200 which was on term deposit with the Bank of New Zealand together with \$1000 from a maturing Southland Harbour Board loan was reinvested with the Perpetual Trustees Co. Ltd. This is an authorised trustee investment returning 8% interest, the loan being secured by mortgage on a property situated in Victoria St, West Auckland.

The Society has \$5388 invested in shares in public companies and at 31 December the market value was \$7537. In November 68 \$1 shares in N.Z. Forest Products were taken up in their 1 for 8 issue. Local body stocks with a maturing value of \$4000, costing \$3888, are held.

H. W. M. HOGG, Hon. Treasurer

THE ORNITHOLOGICAL SOCIETY OF N.Z. (INC.)

STATEMENT OF ACCOUNTS FOR THE YEAR
ENDED 31 DECEMBER 1972

<u>1971</u>		<u>1972</u>	
\$	<u>INCOME WAS EARNED FROM:</u>	\$	
3657	Subscriptions	3893	
152	Transfer from Life Members	167	(Note I)
33	Donations	41	
730	Profit from Christmas Cards	615	
562	Sale of Back Numbers	207	
9	Surplus Field Study Course	-	
21	Surplus Annual General Meeting	-	
113	Biology of Birds	137	
5	Hire Kermadec Film	-	
5282	<u>TOTAL ORDINARY INCOME:</u>		5060
	<u>PLUS INVESTMENT AND OTHER INCOME:</u>		
441	Interest	562	
292	Dividends	269	
34	Premium on Maturity of Local Body Stock	47	
408	Royalties	32	(Note II)
459	Booksellers Margin on direct Checklist sales	-	
50	Legacy Estate Late V.I. Clark	-	
1684	<u>TOTAL INVESTMENT & OTHER INCOME:</u>		910
6966	<u>TOTAL INCOME:</u>		5970
	<u>LESS EXPENSES:</u>		
4121	<i>Notornis</i> Printing & Distribution	5629	
12	Less Advertising	32	
4109		5597	
-	Annual General Meeting	18	
100	Audit Fee	100	
36	Beach Patrol Scheme	-	
3	Distribution Scheme	10	
60	Donations	-	
126	General Expenses	152	
118	Kermadec Reprints	40	
50	Library Expenses	50	
16	Nest Record Scheme	38	
153	Postages	72	
270	Printing & Stationery	175	
-	Recording Scheme	10	
20	Royal Society Affiliation	20	
235	Travelling Expenses	272	
974	<i>Notornis</i> Reprinting	-	
6270	<u>TOTAL EXPENSES:</u>		6554
	Nett Deficiency Transferred		\$ 584
696	Surplus for year transferred to Accumulated Fund		

THE ORNITHOLOGICAL SOCIETY OF N.Z. (INC.)

BALANCE SHEET AS AT 31 DECEMBER 1972

<u>1971</u>		<u>1972</u>
\$	<u>CURRENT ASSETS:</u>	\$
1488	Cash at Bank of NZ	687
190	Bank of NZ Savings Account	497
5000	Term Deposits Bank of NZ	3000
100	Stocks of <i>Notornis</i>	100 (Note III)
100	Stocks of <i>Biology of Birds</i>	100 (Note III)
<u>6878</u>	<u>TOTAL CURRENT ASSETS:</u>	<u>4384</u>
	<u>INVESTMENTS AT COST:</u>	
5245	Shares in Public Companies	5388 (Note IV)
4841	Local Body Stocks	3888
-	The Perpetual Trustees Co Ltd Group Trustee Investment	3000
<u>10086</u>	<u>TOTAL INVESTMENTS:</u>	<u>12276</u>
1000	Library at Valuation	1000
<u>17964</u>	<u>TOTAL ASSETS:</u>	<u>17660</u>
	<u>LESS LIABILITIES:</u>	
1726	Amounts owed by Society	1190
234	Subscriptions in Advance	425
	<u>RESERVE FUNDS:</u>	
1096	Projects Assistance Reserve Fund	1582 (Note V)
1371	Life Subscriptions	1510
1000	Publications	1000
<u>5427</u>	<u>TOTAL LIABILITIES:</u>	<u>5707</u>
12537	Value of Accumulated Funds as below	\$ <u>11953</u>
	<u>ACCUMULATED FUNDS:</u>	
11879	Balance at 31/12/71	12537
-	Deficiency for year	584
696	Surplus for year	-
<u>12575</u>		<u>11953</u>
38	Transfer to Projects Assistance Reserve Fund	-
<u>12537</u>		<u>\$ 11953</u>

We report, that in our opinion, the foregoing accounts and notes attached of THE ORNITHOLOGICAL SOCIETY OF N.Z. (INC.) for the year ended 31st December 1972 are in agreement with the books and reports of the Society and give a true and fair view of the Society's position at that date and the results of its transactions for the year. The Society has kept proper books and supplied all the information required.

THOMPSON & LANG, Chartered Accountants

Auditors
DUNEDIN, 6 February 1973

THE ORNITHOLOGICAL SOCIETY OF N.Z. (INC.)SHARES IN PUBLIC COMPANIES
AS AT 31 DECEMBER 1972

<u>COMPANY</u>	<u>SHARES HELD</u>	<u>PAR VALUE</u>	<u>COST OF PURCHASES</u>	<u>APPROXIMATE MARKET VALUE AT 31/12/72</u>
Andrews & Beaven Ltd	650	\$1	\$ 986.79	\$ 715.00
Farmers Trading	500	50c	1018.50	965.00
NZ Forest Products Ltd	616	\$1	1370.25	2303.20
General Foods Ltd Convertible Notes	168		84.00	137.76
Alex Harvey Ltd	210	\$1	486.41	913.50
Golden Bay Cement	500	50c	372.31	740.00
Wattie Industries Ltd	656	50c	697.23	852.80
Winstone Ltd	500	50c	372.31	910.00
			<u>\$5387.80</u>	<u>\$7537.26</u>

NOTE I Life Members Transfer : 10% of Balance at 31/12/72.

NOTE II Royalties from Sales of Checklist.

NOTE III Stocks of *Notornis* and *Biology of Birds* and Valuation of Library are at Standard Values. No attempt has been made to accurately value these assets.

NOTE IV Shares in Public Companies cost \$5388 and had an approximate market value of \$7537 at 31/12/72 as per list above.

NOTE V Movement in this Reserve Fund during the year is as follows:

Balance as at 1/1/72 \$1096.09
Plus Royalty on Revised Field Guide \$486.38
which leaves a balance at the end of the year
31/12/72 of \$1582.47.

INVESTMENTS IN LOCAL BODY STOCKS
AS AT 31 DECEMBER 1972

Auckland Hospital Board	\$965	due	17/6/73
Waitemata County Council	1533	due	17/2/74
Southland Hospital Board	990	due	1/11/74
Auckland Electric Power Board	400	due	15/10/75

DONATIONS 1972

The following donations of \$1.00 or more were received during the year ended 31/12/72 (22 members contributed an extra dollar through their Endowment subscription) :

R.E. Satherly \$5; J.A. Fagan \$1; Dr A. Thorson \$1; W.H. Ross-Lowe \$1; G. Watola \$1; N.H. Young \$1; E. St Paul \$2; Mrs L. Collingwood \$1; J.W. St Paul \$1; Dr G. Huxley \$2; R.C. Muller \$6; Miss E.R. Lethbridge \$1; P. Warren \$1; Dr D. Cook \$6; R.N. Holdaway \$1; M.J. Criglington \$5; L.J. Paul \$1; R. Galliene \$1; M. Keillor \$2.

The Society is grateful for these sources of income.

BIRD DISTRIBUTION MAPPING SCHEME

Annual Report for 1972

Last year's report (*Notornis* 19: 267-270) summarised progress for the eight months ending 31 December 1971 and the present one, the fourth in the series, is the first to cover a full calendar year. The report is in three parts: the first summarises progress towards the goal of at least one good bird list from every ten thousand yard square in New Zealand; the second discusses some of the scheme's potentialities and limitations as exemplified by data on the distribution of magpies (*Gymnorhina tibicen*); and the third presents some views concerning the scheme's future.

Progress

By 31 December 1972, 6433 lists of species had been received since the scheme began late in 1969, and 2040 of these were completed during 1972. The year's cards were submitted by 134 observers, but the total number of participants was greater because some cards were the work of more than one person. The squares marked in Figs 1 and 2, whether black (magpies listed) or white with central black dot (magpies not listed), are the ones from which one or more lists had been received up to 31 December 1972; the remaining areas (in white) are those from which no lists had been received. By the end of 1972, lists were available from 70% of the 1600 North Island squares (61% in December 1971) and from 59% of the 2000 South Island ones (33% in December 1971). Figs 1 and 2 do not indicate how thoroughly each square was surveyed, and it is important to note that, in a few squares, the only list available was compiled in but one of the several habitats present in the square. Bird lists are now available from 153 (80%) of 190 squares in south-west Nelson and northern Westland, but in only 68 (36%) of these squares do the lists include more than 20 non-marine species, with forest, swamp and farmland (if present in the square) each contributing at least five characteristic species to this total. Thus, many more lists are needed even from this relatively well-surveyed area.

Distribution of Magpies

Magpies are widely distributed in the North Island (Fig. 1). They are recorded from almost every square in the southern quarter of the Island and are also widespread in Taranaki, Hawke's Bay, Poverty Bay-East Cape, western Waikato, and from Auckland north to the Bay of Islands; they are relatively uncommon in many central districts (especially Taupo and the Bay of Plenty) and in the Far North. Their distribution in the South Island is more restricted (Fig. 2); they have been reported from nearly all of Canterbury

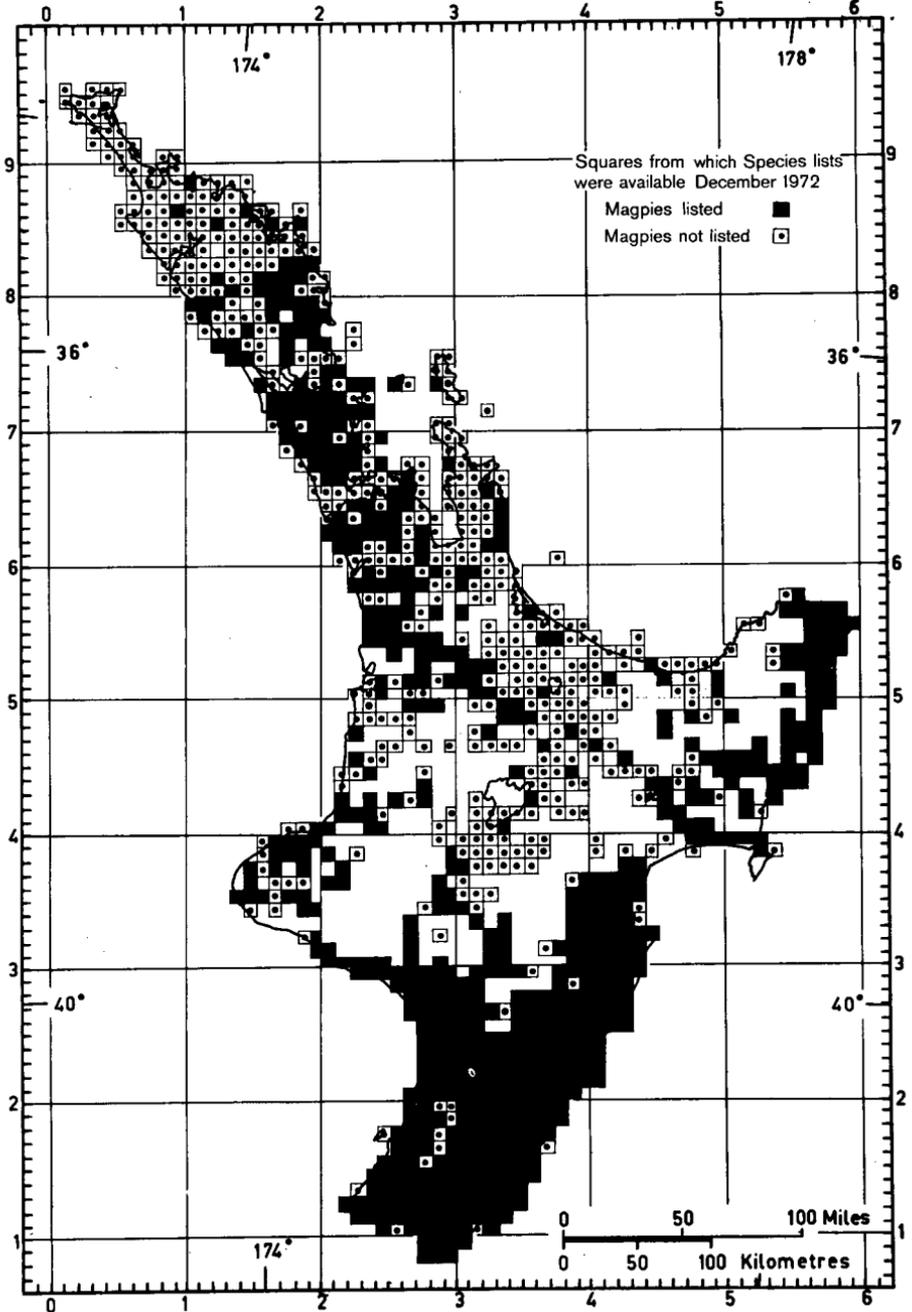
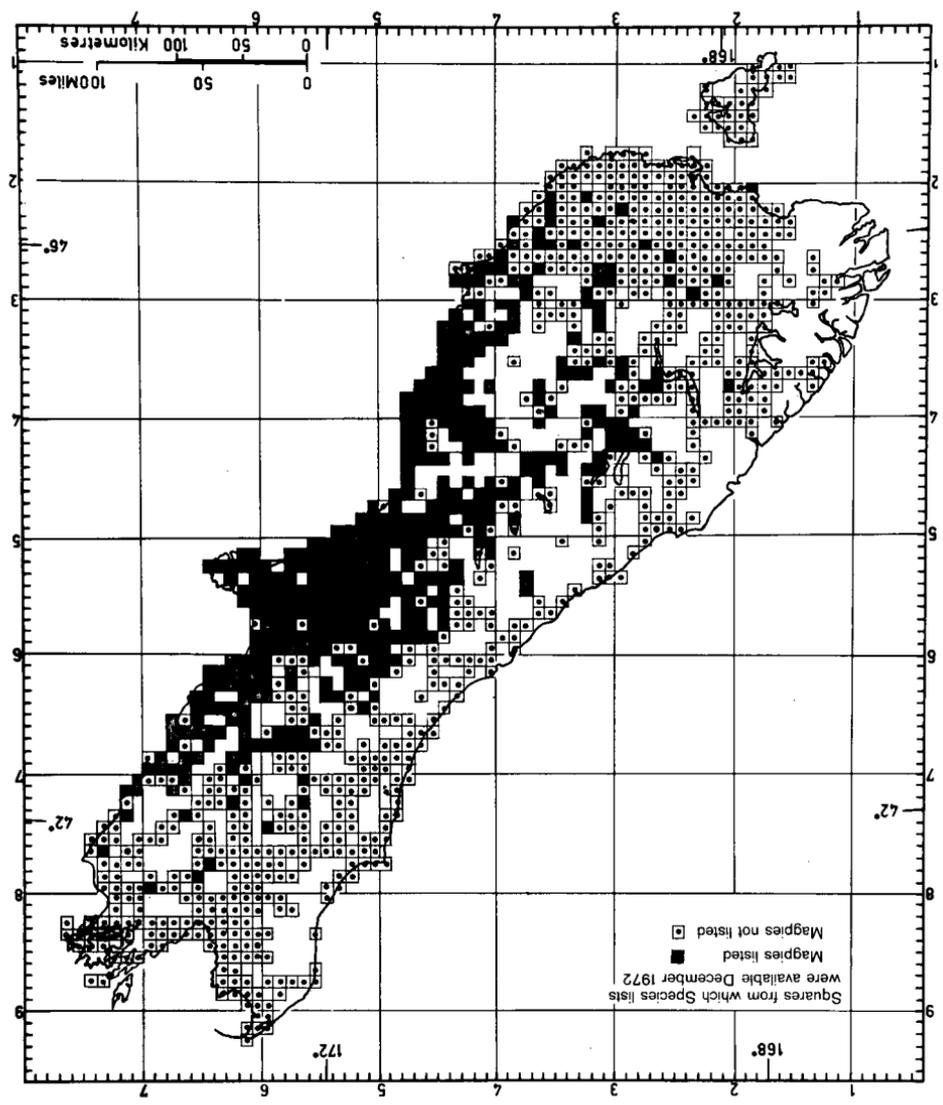


FIGURE 1 — Distribution of Magpies in the North Island. Squares from which species lists are available are either shaded black (Magpies recorded) or have a central black dot (Magpies not listed); the remaining areas (white) are those from which species lists are not yet available.

FIGURE 2 — Distribution of Magpies in the South Island. Presence, seeming absence and 'no data' are indicated as in Fig. 1.



(except some mountain lands), but are much less common in Otago, and absent from much of Marlborough, Nelson, Westland and Southland.

The pattern of distribution shown in Figs 1 and 2 is substantially the same as that reported by McCaskill in 1945 (*N.Z. Bird Notes* 1: 86-104), except that there is no longer an extensive area of magpie-free country separating the magpies of Northland from those of Taranaki and Poverty Bay; the birds seem also to have extended their range a little in Northland and, more markedly, in Otago. The extent of this spread between 1945 and 1972 could be somewhat exaggerated if some of the magpies reported by the present mapping scheme were from localities not covered by McCaskill's informants (mainly student teachers).

A disadvantage of the mapping technique used in Figs 1 and 2 is that a square in which a single magpie was seen once is marked in the same way (in black) as a square in which magpies were recorded often and in large numbers. Repeated visits to a square increase the probability of recording rare species, so a substantial though quite spurious increase in magpies could be recorded merely by compiling more lists or by spending a longer time in areas where the birds are scarce or local (e.g. Otago in Fig. 2).

Fig. 3 attempts to overcome this problem by mapping frequency of occurrence (number of lists with magpies, expressed as a percentage of all farmland lists for the area) rather than mere presence or seeming absence. The analyses were confined to lists from farmland which is the usual habitat of magpies in New Zealand and, to obtain sufficient lists for meaningful percentages, the survey units had to be squares with sides of 100,000 yards instead of the usual 10,000 yards. The general pattern of distribution shown in Fig. 3 is broadly similar to that indicated by Figs 1 and 2, but the figures for frequency of occurrence (Table 1) provide a more useful basis for detecting future changes in the distribution of magpies. At present the main problem in mapping distribution in terms of frequency of occurrence is the lack of sufficient bird lists. The 100,000 yard squares are so big that they produce an over-generalised and highly unnatural pattern of distribution. The picture would be greatly improved by using smaller squares (perhaps with sides of 50,000 yards) and, hopefully, field observers will soon provide sufficient lists to permit this.

The Future

The districts now most in need of further surveys are central parts of the North Island (especially Taranaki and, in the east, the main axial ranges from the northern Ruahines to the Raukumaras), and some western and southern parts of the South Island (but Southland is relatively well covered). Some of these areas have very limited road access and few resident observers, so complete coverage

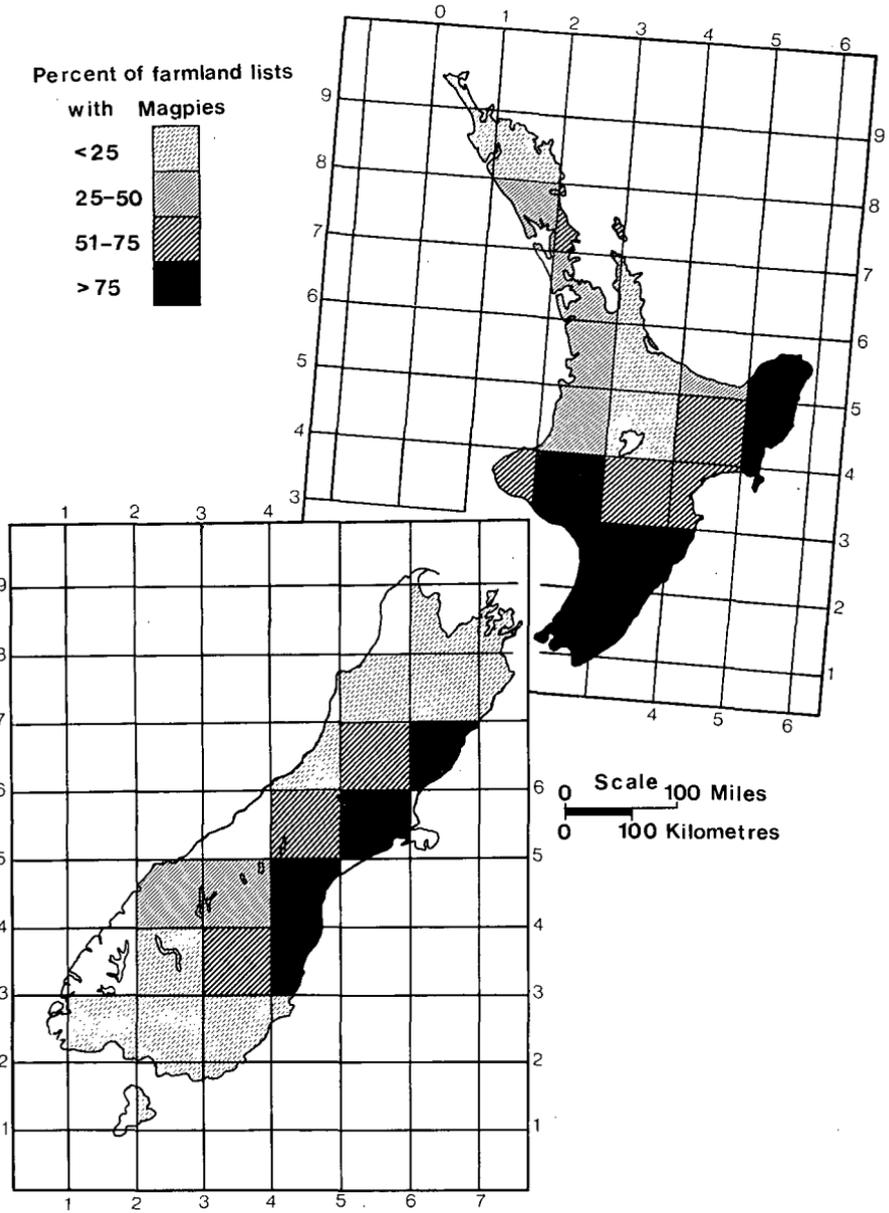


FIGURE 3 — Frequency of occurrence of Magpies (see Table 1 for sample sizes and percentages). Squares with less than ten lists from farmland are left unshaded.

can be expected only if ornithologists are prepared to make field trips of at least two or three days' duration. The value of such expeditions was clearly demonstrated last January when three parties (led by Frank Boyce, Dick Jackson and Roger Sutton) entered Westland by three different routes; these trips yielded many bird lists from new squares but, because they refer to 1973, the results are not shown in Fig. 2.

Those unable to participate in expeditions to other districts can, nevertheless, still make important contributions by compiling additional lists from squares already "covered." Return visits to the same square usually produce a few species missed in the first visit, and the number of additional species may be quite large if different habitats are surveyed; in any event, more lists, even of common species, will provide useful information on frequency of occurrence (Fig. 3). On the other hand, the number of "new" species will decline as more and more visits are made to the one square, and obviously there comes a time when it is more profitable to go to another square than to continue seeking additional species in a square already well surveyed. In compiling lists to show frequency of occurrence of different species, it is usually more useful to have a few lists from each of several squares than many lists from a single square.

TABLE 1 Occurrence of Magpies in lists compiled in farmland, 1969-72

NORTH ISLAND			SOUTH ISLAND		
100,000 yd Square Ref. No.	No. Cards from Farmland.	% Cards with Magpies*	100,000 yd Square Ref. No.	No. Cards from Farmland.	% Cards with Magpies*
21	274	78	21	27	0
31	116	85	31	36	0
22	106	83	12	30	3
32	187	88	22	171	4
42	76	92	32	131	21
13	40	62	42	23	22
23	57	77	13	9	#
33	70	61	23	36	16
43	187	74	33	54	59
24	49	37	43	64	84
34	78	10	24	24	46
44	35	63	34	32	44
54	55	76	44	64	91
25	124	37	35	7	#
35	110	16	45	34	68
45	24	25	55	153	90
55	72	92	65	34	74
26	159	27	46	23	0
36	67	10	56	22	41
17	81	49	66	120	76
27	44	55	57	112	5
08	40	2	67	89	8
18	122	20	77	35	17
09	17	0	58	3	#
			68	48	0
			78	31	0

* Frequency of occurrence
No Magpies recorded, but less than ten cards received

Negotiations with government agencies for help in providing electronic data processing facilities, mentioned in last year's report, are now reaching a satisfactory conclusion; hopefully, the work of transferring data from record cards to computer tape will begin within the next few months. Once these computing facilities are fully operational, a wide range of data from the mapping scheme should become readily available.

In 1970, Council agreed to sponsor the Bird Mapping Scheme for three years as one of the Society's official activities, but now considers the work must continue on this basis for at least another one or two years. The Scheme's future will then be reconsidered; it might continue at a reduced tempo (but with special attention to squares with important habitats, such as native forest, not yet sampled for birds) for some five to ten years until another intensive survey, probably involving metric squares, was needed to reveal changes in distribution during the intervening years.

In conclusion, the authors wish to acknowledge the help of the numerous people who have made this scheme such a successful team effort. Many field naturalists have devoted their skill, time and money to compiling the bird lists, and Regional Representatives have also undertaken the onerous work of dispatching and checking cards and of arranging field trips. We are grateful to the Cartographic Section of DSIR for redrafting Figs 1 and 2, to Dr J. A. Gibb (Director, Ecology Division, DSIR) for permission to use official time and facilities for servicing the scheme, and to Dr J. E. C. Flux for helpfully commenting upon the typescript. Mr C. J. R. Robertson of the Wildlife Service (Department of Internal Affairs) has successfully persevered with his efforts to expedite the provision of computing services.

Dr P. C. Bull,

Mr P. D. Gaze,

Ecology Division, DSIR,

P.O. Box 30-466,

Lower Hutt

SHORT NOTES

FIRST RECORD OF BULLER'S MOLLYMAWK IN THE KERMADECS

On 1 July 1972 Mr Evan McGregor, then Officer in charge of the Meteorological Observatory on Raoul Island, found a dead Buller's Mollymawk (*Diomedea bulleri*) on the beach at Denham Bay, Raoul Island. The bird was judged to have been dead about a week. Mr McGregor cut off the head and the skull was later sent to the Auckland Museum. This is the first record of Buller's Mollymawk in the Kermadec group. The weather map for 22 June 1972 shows a trough of low pressure in the Tasman with moderate to fresh westerly winds. There were no storms or very strong winds in the area over the period 21 to 24 June. The skull is now registered in the Auckland Museum as AV Skel. No. 455.

SYLVIA REED

*Auckland Institute and Museum,
Private Bag,
Auckland, 1.*

★

MYNAS ON THE POOR KNIGHTS

In January 1973 a small research party spent 18 days on Aorangi, the southern island of the Poor Knights group and saw up to 16 mynas (*Acridotheres tristis*) along the N.E. coast of the island. The birds were most often seen either feeding among dried algae around the rock pools or in the canopy of the coastal pohutukawa trees. On one occasion a bird flew to Tawhiti Rahi Island, some 500 metres to the north. We found no evidence of mynas breeding on the island.

This, the first record of mynas from the uninhabited Poor Knights Islands, is surprising since on the mainland the species is usually associated with man. The effect of these aggressive, hole-nesting birds on the islands' parakeets and other native fauna should be observed closely in the future. Mynas present and breeding on Cuvier I. in 1964 had disappeared by 1966 (Blackburn 1967: 6).

REFERENCE

BLACKBURN, A. 1967. A brief survey of Cuvier Island. *Notornis* 14 (1): 3-8.

P. D. GAZE

*Ecology Division,
DSIR,
Lower Hutt*

NOTORNIS 20: 166-170 (1973)

LITTLE WHIMBRELS AT NAPIER

On 17 January 1969, during a visit to the Ahuriri Lagoon area, three birds quite new to us flew from a patch of bare earth and scattered grass across the stop bank beside the Ahuriri outfall channel. Their flight in the still air was notably languid, with short, deliberate wing-beat, and the brown upper surface showed no rump or wing pattern.

Sketches and notes were made from telescope examination of them on the ground, where they were associated with stilts and Golden Plovers and somewhat obscured by the growth of *Salicornia*. Their height brought them to about the level of a standing stilt's bend of wing; size about that of a Golden Plover, though a little taller because of longer legs. Bill short compared with godwit/whimbrel proportions, i.e. slightly longer than its head length, down-curved, dark at tip and pink at base. Top of head when seen from in front clearly striped with two broad dark bands above each eye. Back and wings brown with primaries showing as very dark and covert feathers brown with lighter margins; chest and flanks buff wash; abdomen and under-tail greyish-white. Legs pale with bluish or olive-grey tinge. No call was heard.

At the time we felt that these birds could only be Little Whimbrels (*Numenius minutus*), one of which had been recorded here by Brathwaite in July and October 1952 and in April 1953. Any remaining doubts were dispelled when on 22 October 1972 BDH and A. Blackburn, together with seven others of the OSNZ Field Study group, saw one on the main Ahuriri estuary feeding among scattered godwits and Golden Plovers. A first impression was of whimbrel colouring and stance, but with very short bill and smaller size, clearly smaller than nearby godwits, and with similar body size as but taller than Golden Plover. When it flew, alone, a "tchoo-tchoo-tchoo" call was heard, and its uniform brown upper surface with darker primaries was clearly seen.

REFERENCES

- BRAETHWAITE, D. H. 1953a. Wader seen at Napier. *Notornis* 5 (4): 117.
 ——— 1953b. Little Whimbrel at Napier. *Notornis* 5 (6): 181.

B. D. HEATHER

10 Jocelyn Crescent,
 Pinehaven,
 Upper Hutt

N. B. MACKENZIE

Pakowhai,
 Napier, R.D. 3

FAN-TAILED CUCKOO PARASITISES FIJI WARBLER

On 11 March 1973 amongst dense undergrowth in a mahogany plantation some 100m above sea-level on Mount Korobaba near Suva, I saw a Fiji Warbler (*Vitia ruficapilla*) feed a young Fan-tailed Cuckoo (*Cacomantis pyrrhophanus*), thus proving that this species is parasitised by the cuckoo.

The young cuckoo, which was fully fledged, was flying from bush to bush after the warbler — which was working amongst dense fern just above ground-level — and uttering a plaintive, almost cicada-like “zeep zeep zeep zeep zeep” continuously. While I watched the warbler twice flew up and fed the cuckoo with small insects.

FERGUS CLUNIE

*Fiji Museum,
Suva, Fiji.*

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PROBABLE SIGHTING OF FORK-TAILED SWIFT

In early September 1972, I had a strange bird on my farm at Kaipara Flats, North Auckland, for one week. The farm is grazing country, moderately hilly.

It was a swallow-like bird, a little smaller than the Spine-tailed Swifts which I had previously closely observed there (Hudson 1968: 42). It fed at times up to about 150 feet, its frequent calling being audible up to a quarter of a mile. The Spine-tailed Swifts had not called at all although they were swooping right down at my dogs, no doubt seeking disturbed insects.

On a visit to H. R. McKenzie, “Slater” (1970) was studied and it was decided that “shrill excited chattering” fitted the call better than did the “shrill twittering or chattering” given for the Spine-tailed Swift.

The tail was definitely forked but I did not have the bird close enough to get detailed colour markings. It was certainly too large to be the fork-tailed birds, Welcome Swallow, Barn Swallow or White-backed Swallow, according to the illustrations given by Slater *et al.* (p. 130).

The Annotated Checklist (OSNZ 1970) gives four records of the Fork-tailed Swift in New Zealand, the last being in 1960.

REFERENCES

- HUDSON, F. P. 1968. Spine-tailed Swifts over Kaipara Flats. *Notornis* 15 (1): 42.
 OSNZ, 1970. Annotated checklist of the birds of New Zealand . . . The checklist committee (F. C. Kinsky, convener), Ornithological Society of N.Z., Inc. 96 pp. Wellington: A. H. & A. W. Reed.
 SLATER, P., *et al.* 1970. A field guide to Australian birds. Non-Passerines. Pp. xxxii + 1-428, text illus., pls 1-64, 396 maps. Adelaide, &c.: Rigby Limited.

F. P. HUDSON

*Kaipara Flats,
North Auckland*

SPUR-WINGED PLOVER ON THE WEST COAST

In early December 1972, the sawmilling staff of Donaldson's (Ngahere) Ltd approached members of our field staff to find out if they knew the name of a strange bird that had been inhabiting the swamp at the end of their sawdust dump.

Naked eye observations at a range of 50 to 60 yards gave the bird a tentative identification as the Spur-winged Plover (*Lobibyx novaehollandiae*). A positive identification was made on 15 December by Forester Jackson and Forester Trainee Corsan, using 7 x 50 binoculars over a range of 30 to 80 yards. Four birds were seen, two adults and two juveniles, and they were identified from the revised edition of the "Field Guide" (Falla *et al.*, 1970).

The adults had black caps and an incomplete black collar coming down both shoulders but not meeting in front. The front and belly feathers were white and the back appeared to be a grey to grey-brown colour. The yellow face wattles were prominent and a spur on the carpal flexure of the wing was seen. The legs were a very dark red colour. The adult birds stood about 12 to 15 inches high while the two juveniles were of different sizes, one being about 8 inches and the other 10 to 11 inches. The young birds were similar in many respects to the adults but they were still retaining a large proportion of juvenile plumage, giving a mottled fluffy effect to the beginnings of the adult plumage.

The mill staff indicated that the birds had been seen for about three or four weeks prior to our identification and that they had captured the chicks one evening on the sawmill roadway. The birds had been heard for nearly a month prior to this somewhere in the surrounding bush area but had not been seen.

The geographical location of these observations can be found on the topographic map NZMS 1, Sheet S 44, Ref.: 948916, Deadman Creek.

The distribution maps of the Spur-winged Plover in New Zealand given by Barlow (1972: Figs 2A-2B) show that the species has been only rarely recorded from the western and northern parts of the South Island so that, whether or not this sighting is indicative of a spread of the breeding range, it is one of the few positive records for the West Coast region, the closest other being that from Barrytown in 1968.

REFERENCES

- BARLOW, M. 1972. The establishment, dispersal and distribution of the Spur-winged Plover in New Zealand. *Notornis* 19 (3): 201-211, 3 figs, 1 table.
- FALLA, R. A.; SIBSON, R. B.; TURBOTT, E. G. 1970. A field guide to the birds of New Zealand and outlying islands. 2nd ed. Pp. 1-256, text illus., pls 1-18. London: Collins.

R. J. JACKSON

New Zealand Forest Service,
Ahaura

FAR-INLAND SIGHTINGS OF SPOONBILL AND GODWIT

On 21 October 1972 while completing a survey of the Makarora riverbed I was skirting the shoreline at the head of Lake Wanaka about 4.30 p.m. when a large white bird was seen resting on a small grassy island about 70 yards from the lake edge. As a White Heron had been reported to me a few days earlier from Clyde, Central Otago, my first thoughts were that this could be the same bird making its way back to Okarito, South Westland, where they traditionally breed. However, through the glasses I was surprised to find it was a Royal Spoonbill (*Platalea leucorodia*), easily identified by the large, black, spatulate bill and the long black legs. There was a well-defined crest characteristic of breeding plumage, but no sign of a sandy-buff wash on the foreneck. A strong westerly wind was blowing at the time, keeping the birds on the ground, and the Spoonbill was resting among a small flock of Mallard, Paradise and Grey Duck. Jet boats later disturbed it but it flew back to the same spot.

It was still present in the same area, feeding in shallow water at the lake edge with characteristic scythe-like motions of the bill, on 29 October.

The day after my first sighting (22 October), while examining the waterfowl and waders in one of the shallow reaches of western Lake Wanaka (near the Matukituki River mouth) we were even more surprised to find four Bar-tailed Godwit (*Limosa lapponica baueri*) feeding in a swampy lakeside field among a scattered flock of 44 South Island Pied Oystercatchers. The birds were viewed to within 25 yards in brilliant late afternoon sunshine. They were all very pale in plumage and seemed to be relatively small in body size and not especially long in the bills, and hence were thought to be all males. When flushed, the very pale rump and barred tail were prominent; the birds then settled on the lake edge mud 100 yards away and recommenced feeding. A week later (28 October) only three could be found in the same area. They were feeding at the lake edge in a tight group, with the oystercatchers 50 yards away in drier pasture.

The distributional qualifications of "seldom reported inland" (Godwit) and "rarely inland" (Spoonbill) in the *Field Guide* appear to be very conservative understatements. The only other inland sightings I have been able to trace (with distances from the nearest coast added in brackets) are:

Godwit: 3 January 1949 — 8 flying over Lake Rotorua (22 miles), JHC in Black 1954: 226; 28 September 1971 — 1 at confluence of Rakaia and Wilberforce rivers, with a flock of c. 30 South Island Pied Oystercatchers (52 miles), D. G. Geddes pers. comm.

Spoonbill: 26 January 1959 — 1 at Lake Wahi, near Huntly (18 miles), Merton 1960: 202; 3 January 1961 — 1 at Wanstead Swamp, Hawkes Bay (12 miles), Heighway 1961: 240.

For comparison, the birds at Lake Wanaka were considerably further inland — Godwit: c. 50 miles from west, 100 from east coast; Spoonbill: c. 36 miles from west, 100 from east coast.

Thanks are expressed to Mr A. T. Edgar for checking in the Recording Scheme.

LITERATURE CITED

- BLACK, M. J. S. 1954. Eastern Bar-tailed Godwit. J.H.C. *in*: Summarised Classified Notes. *Notornis* 5 (7): 226.
- FALLA, R. A.; SIBSON, R. B.; TURBOTT, E. G. 1970. A field guide to the birds of New Zealand and outlying islands. 2nd ed. Pp. 1-256, text illus., pls 1-18. London: Collins.
- HEIGHWAY, J. S. 1961. Royal Spoonbill *in*: Classified Summarised Notes. *Notornis* 9 (7): 240.
- MERTON, D. V. 1960. Royal Spoonbill *in*: Classified Summarised Notes. *Notornis* 8 (7): 202.

LETTERS

The Editor,
Sir,

CREDIT TO THE BARD

I have read with great interest and pleasure the paper in your March issue entitled "The Snares Western Chain," by C. A. Fleming and A. N. Baker.

Could I presume to take them up on a very small literary point? In the final paragraph they offer an apology to John Milton. Might I suggest that in the first paragraph they should do likewise to John Keats, whose casements opened on perilous, not magic, seas?

G. FENWICK

17 Mount Street,
Auckland, 1.
26 April 1973

★

The Editor,
Sir,

CALLS OF BANDED DOTTEREL

Regarding the comment of J. M. Cunningham (1973: 22) on the call of the Banded Dotterel, in which, referring to the quickly repeated notes "chair-kik-kiker," he stated: "It is curious that . . . he [Stidolph] 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."

The reason is this: A March entry in my diary some years ago relating to a Wairarapa Lake area states that about forty Banded Dotterel in winter plumage were feeding along the water's edge. On several occasions one was seen chasing another and uttering the notes referred to above. The diary entry at the time added — "just like they do in the breeding season."

R. H. D. STIDOLPH

120 Cole Street,
Masterton

REFERENCE

CUNNINGHAM, J. M. 1973. The Banded Dotterel, *Charadrius bicinctus*: Pohowera or Tuturiwhatu? Call notes and behaviour. *Notornis* 20 (1): 21-27.

The authors of the article referred to comment: "The apology to Milton was for an intentional misquotation, but the misquotation of Keats and the mis-spelling of forlorn were unintentional and deeply regretted since we knew the quotation (who does not?) and Subantarctic seas are as perilous as any. No proofs were seen and the lapse was not picked up till too late. Apologies to the Gentle Reader as well as to Keats." C. A. Fleming & A. N. Baker, 15 May 1973.

The Editor,
Sir,

A PLEA FOR A STANDARD CENSUS METHOD

Bird censusing has received little attention in New Zealand in the past. Those ornithologists who have studied bird densities have nearly all used different methods.

Turbott's method was to count in observation periods (Turbott & Bull 1954). Gibb (1961) counted birds sighted per hour, and Kikkawa (1966) indicated relative abundance percentages by the total number recorded.

Although all systems have obvious merits, they could contribute considerably more to our knowledge and, therefore, to the conservation of the New Zealand land avifauna if results were comparable. It should, therefore, better serve the interests of ornithology if the Society were to promote a standard census method.

The same can be said for counting birds at sea. A paper was offered for general discussion at the XV International Ornithological Congress at the Hague in 1970. A useful reference is that of Bailey & Bourne (1972).

I would like to see a discussion of this problem in the pages of this journal.

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H. F. HEINEKAMP

*Marsden Valley,
Stoke, Nelson
4 April 1973*

ROBERT CUSHMAN MURPHY — A TRIBUTE

Robert Cushman Murphy, curator emeritus of birds of the American Museum of Natural History, died at his home, Stony Brook, Long Island, New York, on 19 March 1973, at the age of 85. He was best known in scientific circles as a pioneer in the systematic and ecological study of oceanic birds. In any evaluation of the many outstanding achievements of his professional life priority must be accorded to the period in which adventurous field work and dedicated research culminated in the publication of *The Oceanic Birds of South America* in 1936. This by any standard is a masterpiece. It is notable first for its fine writing and lucid style. The relevant data is clearly presented — almost a mini-monograph of each species described. The accompanying essays on the geography and physical environment are equally masterly. The whole work has become the foundation on which marine ornithology has found its place in the framework of oceanographic studies, and the debt of modern workers in all parts of the world to Robert Cushman Murphy is acknowledged by all.

The man behind this and other notable achievements started his career with no advantage other than his natural endowment of ability and a strong constitution, coupled apparently with a passion for nature study which manifested itself at a very early age. There were no ready openings when he graduated from high school in Port Jefferson and his first job in commercial work was so unsatisfying that he wrote in some desperation to the American Museum of Natural History about his ambitions. The director, Dr Bumpus, and bird curator, Dr F. M. Chapman, must have been impressed for they created an assistant post at forty dollars a month, and later secured a scholarship for him at Brown University where he graduated B.Sc. in 1911. His first responsible job was in the Brooklyn Museum, from which in 1912 he set out, under joint sponsorship of the American Museum of National History, to carry out a year's biological survey of South Georgia in the far South Atlantic. Initially he had declined the assignment because of his approaching marriage, but his wife-to-be, Grace Barstow, refused to let him miss the opportunity and agreed to be wed and left. It was an epic voyage, made in one of the last of the old sailing whalers, the brig *Daisy*. The young naturalist took full part in ship work and in the hazards of the chase of sperm whales in open boats. He came back full of whaling lore, of unrivalled knowledge of subantarctic birds, and with the Southern Ocean in his blood. He had commenced also the meticulous daily recording, not only of his field data, but also journal entries of events, in polished style, full of wit and perception. There must now be an unbroken sequence of these, spanning more than sixty-five years of a colourful life. All that was relevant, of course, went into his scientific reports, but in later life he did publish several books in more personal vein, such as *Log Book for Grace* 1947, *A Dead Whale or a Stove Boat* 1967 and *Fish-shaped Paumanok* 1964, a nostalgic and evocative essay on his own beloved Long Island.

In 1915 he carried out pioneering field studies in the Mexican portion of the Colorado Desert, and his report on this shows his competence in the analysis of a total ecosystem, building constructively on the study of association of plants and animals which Grinnell had begun in that area only a year earlier. The accompanying narrative is

again characteristic in style. "Next morning I awoke before dawn, when the golden moon was just sinking behind the western crest of mountains. A very heavy dew had fallen, and the lagoon had risen several inches during the night. Killdeers were piping, nighthawks and bats were darting about, and railbirds skulked stealthily across the wet flats. While I was broiling a cottontail rabbit over Pancho's early fire, a great file of cormorants passed against the dawn, and many blue herons lumbered up from their roosts in the brakes."

In 1919 he made the first of several visits to the west coast of South America, and it was here that his work on the seabirds of the Humboldt Current provided the insights which so illuminated the content of *The Oceanic Birds of South America* of which his earlier *Bird Islands of Peru* was a forerunner. Other aspects of his work there established him as a geographer and oceanographer in his own right. Back at the American Museum of Natural History administrative responsibility, for which he was well fitted, competed with the demands of his research. For years he shouldered both with distinction, becoming in turn curator of birds in 1926, chairman of the department in



Dr Robert Cushman Murphy with Mrs Grace E. Barstow Murphy at Caswell Sound during the N.Z.-American Fiordland Expedition, 1949.

Photo: K. V. Bigwood, National Publicity Studios

1942, and Lamont Curator in 1948. During this time he initiated field work, research and display. The Whitney Memorial Hall of Pacific Bird Life was his special achievement. In international contacts his influence was significant, and there is no doubt that he could easily have been a distinguished diplomat. The delicate negotiations involved in the transfer of the great Rothschild collection from Tring in England to New York, when its financier-owner in the depression year 1932 was obliged to dispose of it to the highest bidder, was entrusted to him. His social adaptability and charm of personality seemed equally effective in his many visits to South America, where he acquired an easy command of Spanish. He had a remarkable and diverse fund of erudition and a good memory which enabled him to conjure up appropriate reference for all occasions, or to entertain friends and family with word-perfect renderings of prose passages, or of verse grave or gay. Not surprisingly he was in great demand as a prestige lecturer, and he could hold any audience with his exceptional gifts of oratory. The Annual Report of the American Museum of Natural History for 1972 carries a photograph of his tall figure in characteristic pose on the occasion of one of his last public lectures.

Dr and Mrs Murphy made the first of several visits to New Zealand in 1947. It was primarily a study trip to gather material for the two habitat groups from this region which now adorn the Whitney Hall. The location for the seabird material was the Snares Islands (see *N.Z. Bird Notes* 2 (8), 1948: or Grace Murphy's book *There's Always Adventure* 1951), and for the land birds a camp in the bush at Lake Brunner. The reconstruction included extinct species, and envisaged the addition of a model of a moa of medium size. So the next venture was participation in the Canterbury Museum excavations at Pyramid Valley. In 1949 the Murphys were back for a second season of moa digging, and his summary of the work was communicated to the Tenth International Ornithological Congress at Uppsala in 1950. Other activities in New Zealand were attendance at the 7th Pacific Science Congress, and journeys to every part of the country and several offshore islands. The husband and wife team made many friends, and Dr Murphy was generous with his professional advice to colleagues on museum matters, and to government agencies on Conservation. The link was never severed, for many of their New Zealand friends have reason to remember the ready and warm hospitality of their Long Island home, first "Briarlea" and then "Ninth Innings." Moreover they came back, Bob briefly in 1961 on his way to the Antarctic, and both of them on a nostalgic visit in 1971 to see old friends and a few familiar places. Professionally he was still at work, checking data for a projected monograph of the petrels (which is now in other expert hands at his old museum). Privately he was his usual stimulating self, missing little of the life around him. It is hard to realise that it is less than two years since I watched him train his telephoto lens in Wellington on one of his favourite "Kelp Gulls" with the same enthusiasm that must have marked his first meeting with the same species at South Georgia sixty years ago, and less than one year since he drove me in his own car along a crowded freeway out of New York. His physical vigour and mental alertness seemed little impaired, and at the end he died in his sleep — as one friend put it "as gracefully as he had lived."

R. A. F.

REVIEWS

The Sounds of Antarctica. Recorded and introduced by Hank Curth. A Kiwi Musiccolour Book. 16 pp., illus. One 33 1/3 r.p.m. record. Wellington, &c.: A. H. & A. W. Reed. 1965. \$1.90.

This record published in 1965 by Kiwi Records of Wellington (the record division of A. H. & A. W. Reed Ltd.) was the first commercial disc published anywhere in the world devoted entirely to sounds of Antarctica and since it is sufficiently important to be included in a catalogue of bird sounds from the Antarctic (Boswall & Prytherch, 1969: 604) it deserves to be brought to the attention of New Zealand readers because it is still readily available from the publishers. The record comes with a 16 page booklet containing colour photographs and descriptions of Antarctic scenery, activities and animals. It is a 7 inch (17cm) 33 1/3 r.p.m. disc and begins with the sounds made by the USS *Glacier* as she breaks through the ice some miles from McMurdo then going on to a recording of Adelie Penguin chicks with adults. The third recording on side one is unfortunately not clearly identified, but is of McCormick's Skua made in McMurdo Sound. Other tracks include Weddell Seals, ice noises, aircraft sounds, Emperor Penguins, huskies, an interview with a New Zealander at Scott Base and a recording of seals and small fish in the sea via a hydrophone. As a matter of local interest, the Editor of *Notornis* tells me that he shared a cabin in the *Glacier* with Mr Curth for several days and saw some of these recordings being made on a Uher machine.

The only complaint I have is that the scientific names have not been included in either the spoken introductions or the colourful booklet.

This record, which sells in most shops for about \$1.90, is the best buy available, the only other disc currently on the market being three times the price. For those interested in further information about this and other records of bird song (including much unpublished), I would suggest that you consult the following reference: Jeffrey Boswall & Robin J. Prytherch, 1969. A discography of bird sounds from the Antarctic. *The Polar Record* [Scott Polar Research Institute, Cambridge, England] 14 (92): 603-612, 1969, a reprint of which is in the OSNZ Library.

L. B. McP.

A Field Guide to Western Bird Song. Introduced by A. A. Allen and Roger Tory Peterson. Three 33 1/3 r.p.m. records. Ithaca, N.Y.: Cornell University Laboratory of Ornithology. US \$14.95.

This set of three 12 inch (30 cm) records was published to match Roger Tory Peterson's famous "A Field Guide to Western Birds." This is done very well with only a few omissions. This set of records has special interest to New Zealanders as it includes recordings of species both resident and migratory. Among the credits on the back of the cover are two names well known in New Zealand: William V. Ward, who was responsible for the Hawaiian birds, and G. R. Williams, who supplied a Pitcairn Island recording of the Bristle-thighed Curlew. Other well-known names included are those of

Ludwig Koch and Eric Simms. The species are introduced verbally by Dr Arthur A. Allen and Roger Tory Peterson. The set covers more than 600 species; therefore the time allotted to each is rather brief, only 15 seconds. The cover of this set gives the species in order of appearance, the function of the sound illustrated as well as the locality and the month of recording. The Hawaiian recordings on side two of disc three are the only ones currently available.

I would highly recommend this set, which is available from the Laboratory of Ornithology, Cornell University, 159 Sapsucker Woods Road, Ithaca, N.Y. 14850, U.S.A.

L. B. McP.

HUTCHINSON, J. N. *Australian bird calls index* — Series 1, Western Australia, 12 inch LP record or one hour tape-cassette. Available from John N. Hutchinson, Gascoyne Research Station, Carnarvon 6701, Western Australia. A\$5.00 incl. postage.

This full length 33 1/3 r.p.m. recording was produced by John N. Hutchinson and he has provided a magnificent example of what can be done with an open microphone when recording bird song. The quality on this disc is excellent and reminds one of that famous pioneer of nature recording, Dr Ludwig Koch, who always used open microphones.

This disc has 50 species on it, three of which were supplied by Norman Robinson. The species are presented in taxonomic order and are introduced by Miss Gillian Waite, who made one small mistake on one of the announcements. The second bird on track two is announced as a Boobook Owl and is, in fact, listed as such in the main notes on the back of the cover; however, a little sticker attached to the cover states that the recording is a Barking Owl. Of the 50 species, 38 are, as far as I can tell, first recordings for Australia, some of them being of uncommon to rare birds. The cover photograph is a nice shot of the Wedgebill, *Sphenostoma cristatum*.

Mr Hutchinson is to be commended for this record: one hopes that he will go on recording more birds. The record is the result of nine years of patient field work with two Ficord tape recorders.

L. B. McP.

[A review of this recording has appeared in *Emu* 73 (1): 37, by "P.N.R.", January 1973].

BIGWOOD, K. & J. *A treasury of New Zealand bird song*. Introduced by G. R. Williams. Wellington: Kiwi Records (A. H. & A. W. Reed), LP SLD-25 (also available as cassette, TC SLD-25). \$5.50.

This long-playing record is a re-issue of the boxed set that was published some years ago and has many of the faults of that set. The long spoken introductions by Dr Gordon Williams are a waste of valuable needle time and could have been printed on the cover or on a supplementary page. These introductions do not always indicate which race of bird is being presented nor does the data on the cover help much.

These recordings were obtained by Ken and Jean Bigwood on EMI L2 machines and tend to show their age a little except for

two, the Takahe and the Blue Duck, supplied by Dr Williams. This record has the first birds ever recorded on a commercial disc in New Zealand, 30 in all, but I feel it is overpriced at \$5.50. This record (or cassette) which has a full colour photograph of a Tui on the front cover is available from most good record shops along with two supplementary records which will be reviewed at a later date. These are EP EC-25, 10 more New Zealand birds, including North Island Kiwi, Kingfisher, Whitehead, and Pipit, and EC-34, 10 sea birds, including the Wandering Albatross, Sooty Shearwater, Gannet, and Diving Petrel; both records are priced at \$1.75 each.

L. B. McP.

[A review of Vols 2 and 3 of this series appeared in *Notornis* 20 (1): 85-86, 1973 (not on p. 387 of Vol. 19 (4), 1972, as indicated in its table of contents); Vol. 5 will be issued in 1974.]

Birds in Surrey, 1900-1970, edited by Donald Parr. B. T. Batsford Ltd., London. N.Z. Agents Whitcombe & Tombs Ltd., Chch. 293 pp. illust. 1972. \$7.95.

This attractive volume is edited by the well known ornithologist Donald Parr assisted by a committee of the Surrey Bird Club, and compiled from the records of the Club, unpublished diaries, the B.T.O. Common Birds Census, and the records of the London Natural History Society, and is a model of its kind. Surrey being one of the most densely populated counties in the British Isles, it is somewhat surprising to find that the systematic list contains 271 species, of which 121 have been proved to breed since 1900. The remarkable diversity of habitat, rivers, marshes, sewage farms, reservoirs, woodland, downs and commons, has resulted in a correspondingly rich birdlife, and the five introductory chapters on habitat are most informative and interesting, as are the other chapters on a history of birds and man in Surrey, and on migration and other movements.

About half of the excellent black and white photographs are of types of habitat mentioned in the text, and the other half of representative birds. The present status, and changes in status, are clearly stated for all species, together with details of distribution of common species, and of occurrences of the rarer ones. The 16 diurnal birds of prey recorded in the systematic list provide a sad story, due to the increasing use of pesticides after the last war. The voluntary ban on the use of dieldrin on spring sown wheat has now alleviated the position somewhat; but the increasing employment of game-keepers has been much to the detriment of these birds. All but one of the 16, the Kestrel, are described as scarce, or extremely scarce, vagrants, migrants, or residents. No less than 15 species of warbler are listed, of which 10 are common, 4 scarce, and 1 sporadic.

Two highly ornamental introduced ducks appear to be firmly established in Surrey, for the Mandarin Duck is described as a moderately common resident, and the American Wood Duck as occasionally breeding. Would not these species add beauty and interest to the New Zealand scene?

This book contains much of general interest, and is an invaluable guide for a visitor to Surrey.

A. B.

McPHERSON, L. B. *Sounds of New Zealand Birds*, Vol. 4. A 45 r.p.m. extended play record, PR 699. Christchurch: McPherson Natural History Unit, P.O. Box 21-083, Edgeware, 1973. \$1.50 plus postage.

This fourth volume in Mr Les McPherson's series consists of the following well-known New Zealand birds:

Tui	North Island Fantail
Bellbird	Silvereye
North Island Robin	Brown Creeper
Whitehead	Pied Tit
South Island Fantail	Long-tailed Cuckoo

which were taped in 1956-57 by Carl and Lise Wiesmann of Lyngby, Denmark. This record is of the highest quality so far in this series. No extraneous background noise can be heard, and Mr Wiesmann obviously took pains to do his recording on windless days with his microphone close to the bird. There is, however, some overrecording on most of them, and I do not know whether this occurred during original recording or transcribing tapes to disc. EMI L2a and L2bs field recorders were used on Scotch 11A and 12 tapes with a 36 inch parabolic reflector. The call of the Long-tailed Cuckoo on side two is incorrectly attributed to the Indian Myna on the record cover but Mr McPherson has since issued a correction slip.

As John Kendrick said in his March 1973 *Notornis* article, "Methods and applications of natural sound recording," while it is possible to achieve pleasing bird tapes with inexpensive equipment, the higher-quality recorders operating at the faster speeds do produce the better tapes.

One of the problems we meet in taping birds is that some birds produce terrific volume on their high notes. Designers of tape recorders don't know this and manufacture machines to reproduce music and voice where the greatest volume comes not from the high notes but in the middle tones (or frequencies). Thus, when a bird such as the Hedge Sparrow, Song Thrush, Fantail, or Tomtit, sings, it is important not to set the volume too high, otherwise a distortion known as over-recording will occur. The more expensive tape recorders operating at a speed of 15 inches per second, with VU meters and headphone monitoring, are able to handle this more effectively because the operator can hear the distortion through his phones and set his volume control lower. Also, tape passing the recording head at 15 inches per second is able to separate more of the rapid, high-frequency bursts than is a slower-speed tape.

Aside from this technical factor, the great secret in obtaining high-quality bird tapes anything like the standard of *Sounds* Volume 4 is to get the microphone close to the bird in a situation where there is no wind, no noise from streams or ocean surf, no tractors, cars, planes, dogs, etc. It isn't easy; but those who have the know-how, patience, perseverance and luck, can get some delightful tapes with average equipment.

Wm. V. W.

Index Ornithologorum. Edited by W. Rydzewski. Being *The Ring*, Vol. VI, Nos 71-73. Pp. iv + 1-112. Wrocaw: Polish Zoological Society. 1972. Price US \$3.

Dr W. Rydzewski, to whom we were much indebted some years ago for his imagination and effort in founding and maintaining that highly useful international bulletin of bird banding *The Ring*, has made a brave attempt to produce a "Who's Who" of the World's ornithologists. Like any other encyclopaedic volume, its success can best be judged by examining what we know in it, i.e. the comprehensiveness of the New Zealand section. Dr Rydzewski explains in his preface that: "The idea of the present Index was formed by the editor's personal need to find people with similar interests in various parts of the world. . . . The most useful part should be the Subject Index showing the principal interests in ornithology of the individual persons listed in the first part of the Index. It should facilitate the finding of pen-friends in remote parts of the world."

The *Index* is divided into two sections, as the preface indicates: Personal Index in which the following information is listed about each ornithologist: "surname, other names, year of birth, title, occupation or situation, membership of principal ornithological organisations, principal interests in ornithology, address"; Subject Index, a rather miscellaneous assortment of headings obviously derived from what those listed have said are their "principal interests." Its greatest defect, as will be shown, is that many people have said the same thing in different words or have hidden any specific interests in a general heading. Hence its usefulness is distinctly limited and its reality suspect.

The ornithologists of the world, as they appear in the *Index*, consist of 711 names representing 59 countries. Under "New Zealand" are 28 names; nearly 4% of the ornithologists in the world are New Zealanders! How comprehensive is the picture of ornithology in New Zealand (presumably a "remote part of the world") given to our overseas colleagues? For a start readers of *Notornis* may care to know what names are listed: J. A. Bartle, B. D. Bell, A. Blackburn, P. C. Bull, T. A. Caithness, D. E. Crockett, E. W. Dawson, C. A. Fleming, R. A. Fordham, J. A. Gibb, G. E. Hamel, [J.] A. F. Jenkins, F. C. Kinsky, R. B. Lavers, D. V. Merton, J. A. R. Miles, G. J. H. Moon, R. E. R. Porter, T. P. G. Purchas, B. E. Reid, C. J. R. Robertson, M. F. Soper, J. Warham, R. B. Sibson, K. E. Westerskov, P. R. Wilson, K. A. Wodzicki, E. C. Young. Surely it is not mere modesty that has prevented more of the 1,072 members of the OSNZ from being listed as "ornithologists." Of those included, 16 are professional ornithologists, 6 are professional scientists in other fields and only 6 can be said to be truly amateur. Other countries, doubtless, reveal a similar picture. I cannot believe that the single name of a bird artist living in Istanbul reflects the true state of ornithology in Turkey nor a mere two names from Italy, three from Japan and four from India. Some others helping to make the world total of 711 are: Argentina 1, Australia 42, France 22, Great Britain 61, Indonesia 1, Netherlands 26, Poland 30, South Africa 12, and USSR 105.

How useful is the subject index? Does it readily help in "the finding of pen-friends in remote parts of the world"? For the Israeli, Ethiopian or Brazilian ornithologist looking for a contact in the Soviet Union this could be an undoubted aid (with a ratio of 105 to 2, 2 and 1 respectively), particularly if the subject matter to be discussed was of no consequence. I cannot see, however, that some "remote parts" lack ornithologists simply because they are remote. The subject index, which also includes systematic groups occasionally down to generic or specific level, shows that of the 28 New Zealanders — two are interested in agricultural problems (both are employees of the DSIR's Ecology Division); none are concerned with the Anatidae or even Anseriformes, nor in "birds of prey" or "birds of islands"; but 5 are listed as being interested in "birds of New Zealand" with only one interested in "birds of the Pacific." Of world interest in "birds of the Antarctic," only 3 names are given, one each from Chile, Norway, and New Zealand; and I can say, with some authority, that the New Zealander listed would not be a very suitable pen-pal for someone in, say, Surinam or South West Africa seeking information on this topic.

Two New Zealanders are listed under "*Corvus*," both from the Ecology Division station at Havelock North. Three Australians are concerned with *Eudiptula* but apparently no one in New Zealand. World interest in sea gulls (called Laridae in the *Index*) is represented by one worker in the USSR and another in Uruguay. "Migration" hardly interests people from "down under" but is a major concern of Europeans and North Americans. Interest in the Myna is supported by a single New Zealander and only one ornithologist in the world seems concerned about oil pollution. Only three ornithologists are sufficiently interested in the genus *Passer* to list it among their interests. "Population Dynamics" and "Ringing" are fashionable branches of ornithology. Of the world's interests in the Procellariiformes, all 6 names listed are from New Zealand and similarly for the Sphenisciformes all 4 names are well-known to us.

Unhappily for would-be pen-friends, most of the world's ornithologists (at least the 711 listed here) find their interests in "Behaviour," "Breeding Biology," "Conservation and Protection," "Distribution," and similar wide subjects. Hence, one doubts that Dr Rydzewski's hope of people sharing their interests could be realised. Still, as I began to say, it is a brave, commendable and potentially useful attempt and gives some immediate help even if only to provide some fascination in finding out how old one's colleagues are!

The editor of such a compilation must obviously depend greatly on the cooperation of other ornithologists who must, themselves, make the effort of ensuring that their names are included (some New Zealanders may, perhaps, hang their heads) and, as well, he must use his own knowledge and list of correspondents (perhaps with one in each country to provide local lists); hence the 30 names from Poland contrasting with the 7 from Czechoslovakia.

If, in its first edition, the *Index Ornithologorum* is not the success we might wish, it is our fault alone. Dr Rydzewski's intentions

were widely advertised in many bird journals but it seems that there must be many who either abhor questionnaires, are unduly modest or are full of good intentions but . . . The current membership list of the American Ornithologists' Union gives 3,135 names but Dr Rydzewski has captured only 118 with many conspicuous non-recoveries. The recently published *Index to Current Australian Ornithological Research* compiled by Dr Douglas Dow for the RAOU is unsuccessful for much the same reasons.

There is, however, a lesson to be learned from a study of Dr Rydzewski's *Index*. I think that there is a need and a good use for such a compilation as this and we would wish a second edition well; but I do believe that the only way to a really adequate *Index Ornithologorum* will be for each ornithological society or bird club to publish its own membership list with a similar but more carefully-phrased statement of each member's interests. Dr Rydzewski could then compile and edit an Index of (or from) such lists geographically and cross-referenced as he thinks fit. It might be a marathon task.

The present volume will, however, be quite welcome in the hands of many ornithologists despite the limitations which I have discussed. We thank Dr Rydzewski for giving us the opportunity of commenting upon his efforts. Orders should be sent to: The Editor, "The Ring" Laboratory for Ornithology, Sienkiewicza 21, Wroław, Poland, with a bank draft for US \$5 made payable to the Polish Zoological Society.

E. W. D.

NOTES AND NEWS

BEECH FOREST UTILISATION

The latest report to appear in the series so far produced by various organisations on the question of the proposed utilisation of beech forests in the South Island is a critique by the N.Z. Ecological Society of the Environmental Impact Report to the Officials Committee for the Environment (February 1973).

The Ecological Society's statement, 50 pages in length, seems to provide a reasoned and documented criticism and concludes that the proposals of the NZ Forest Service "are not ecologically acceptable in their present form," and the Government is urged "to hold them in abeyance until sufficient information is published on which to base a properly informed decision. Further, the Society finds serious deficiencies in the Environmental Impact Report . . ." The reader is referred to the Ecological Society's critique for further details but one of the conclusions, in particular, will interest OSNZ members: "There is no real evaluation of the loss of habitat for fauna, and this should be stated. In reality we do not yet know the likely effects, so the scheme should be held in abeyance until the necessary soil, forest-type and fauna surveys are complete." Since this Report is the first of the Government's new "Impact Reports" to be made available to the public and, hence, to be critically examined, the Ecological Society's findings deserve special attention and may well guide the form and depth of future Government reports of this sort.

It will be recalled (see *Notornis* 19 (2): 185, June 1972) that the Council of the Royal Society of New Zealand has set up an ad hoc committee whose objectives are to provide a bibliography of previous and current scientific work undertaken on the beech forest and its setting, involving, in particular, studies in botany, zoology, hydrology, soil science and geology, as well as forestry as such. The Committee (convened by Mr E. W. Dawson with Dr C. J. Burrows, Dr R. R. Forster, Mr H. S. Gibbs, and Mr C. Toebes) has already amassed considerable information on publications and current projects, also pointing to gaps which need to be filled, which will complement the Ecological Society's report. More information is, however, needed from members of the Ornithological Society of N.Z.

As a member body of the Royal Society of N.Z., the OSNZ is able, through its members rather than through its Council in this instance, to do its part in helping the work of this Committee. Would members of the OSNZ, or other readers of *Notornis*, who have published notes or articles on the birds or on other aspects, of beech and pine forests, or who are currently engaged in such studies, please send titles of their publications and a few words about current activity to the Royal Society committee before 31 August 1973? *Address:* The Convener, Royal Society Committee on Beech Forests, P.O. Box 12249, Wellington.

This year the N.Z. Ecological Society is holding its annual conference in Invercargill from 22 to 25 August. The main business will be a symposium entitled: "Ecology and management of South Island Beech Forests."

Further details are obtainable from the Secretary, N.Z. Ecological Society, P.O. Box 1887, Wellington. The Royal Society's ad hoc committee intends to complete its work after the holding of this symposium but, meanwhile, any help from members of the OSNZ will be greatly appreciated.

A DUCK RETURNS

A "mystery" duck shot recently in Hawkes Bay has now been revealed as an Australian White-eyed Duck or Hardhead, *Aythya australis*. A contemporary newspaper report reads — "The 'extinct' duck which reappeared recently in Hawke's Bay probably flew in from Australia, said the National Museum's curator of birds (Mr F. Kinsky) today. The museum had definitely identified the unusual bird shot in Hawke's Bay on May 5 as a karakahia or white-eyed duck, said Mr Kinsky. The bird had been seen in New Zealand previously in 1895 and the last known sighting was one duck in 1934. 'The sightings have probably always been stragglers from Australia,' he said. 'The species has never bred here. Small flocks probably fly, or are blown, across the Tasman from time to time, but are not seen or not reported. They are quite common in Australia. There are at the moment rare stragglers in New Zealand. If a small flock settles here and starts to breed, we'll have a new bird.'"

An illustrated guide on "How to recognise the Hardhead" can be found on pp. 14-15 of *Australian Waterfowl* by Downes & Watson (1960) and New Zealand observers may be glad of its help while watching for further sightings of this interesting duck.

Source and Reference: 'Extinct' duck probably flew in from Australia. *The Evening Post* [Wellington], 31 May 1973, p. 6; DOWNES, M. C. & WATSON, I. 1960. *Australian Waterfowl*. 48 pp., illus. Melbourne: Fisheries and Wild Life Department, Victoria, and ICI of Australia & N.Z. Ltd.

BIRDS AND THEIR SONGS

Mr Les McPherson, of Christchurch, is becoming well known in the pages of *Notornis* as a maker and purveyor of sound recordings of bird song. A writer, John Collins, in *The Press*, the Christchurch morning newspaper, recently had this to say about him:

"Birds play an important part in Mr L. McPherson's life. In his job he packs ladies' lingerie and whenever he has the chance he tries to get a glimpse of even finer plumage. Mr McPherson, of Sherborne Street, has been an ornithologist since the age of 12, and he is now in his third year of tape-recording their calls. He has just had released his fourth commercially-produced record, which, he said in Christchurch yesterday, was selling briskly to both birdwatching clubs and schools. He has developed his own identification library

of world birds and has a wide collection of commercial recordings from all over the world. His own recordings had sold internationally, Mr McPherson said, including a full set to the B.B.C.'s library of natural history. Of particular interest to overseas enthusiasts were the calls of common local birds such as the blackbird and sparrow. They wanted to see if separation had led to a different call. Mr McPherson thinks it definitely has. Had they developed Kiwi accents? "More than that, they have regional dialects. If I played a recording of a Whangarei bellbird to a Southlander he'd scarcely recognise it." Mr McPherson has travelled all over New Zealand and to the mutton-bird islands to listen to the birds. His career nearly had a premature ending at the bottom of a 200-foot cliff on Bank's Peninsula, but this he dismisses as one of the occupational risks of recording spotted shags. He would like to make a living with his recordings, but thinks that this is not yet possible. "I'd probably have to branch out into insects and animals, eventually," he said."

Source: COLLINS, J. 1973. A call of the wild. *The Press*, 19 May 1973, p. 1.

FROM THE EDITOR'S DESK

ON READING AND WRITING IN THE JOURNAL

From time to time, in the pages of this journal, we shall offer reviews of books in fields of natural history other than ornithology which is, supposedly, the principal interest of readers of *Notornis*. Few of us are so specific in our appreciation of Nature that we fail to be moved by or impressed with the sights, sounds and sensations afforded by the marvellous diversity and activity of other forms of animal and plant life about us. Often, however, we need an authoritative guide to help us to explore more fully something which has attracted our interest. As I have said often, we, in New Zealand, suffer in many instances from having inadequate works of reference for the identification and further study of many of the obvious forms of animal life, in particular, and of those that do exist there are some notable examples of how the publisher has done a disservice to his public in allowing books of subsequently recognised dubious merit to come into unsuspecting hands. We need better books on identification, life histories and general biology of such groups as shellfish and insects, to think of two obvious ones, but we also need to be awakened to the potential of interest in other neglected or apparently less attractive creatures such as spiders, crabs or ants. One such book, very welcome in this way and written by those who know their subject, is reviewed in this issue of *Notornis* and we trust that bird watchers will welcome it and broaden their horizons during their field activities, perhaps even adding to our still expanding knowledge of these fascinating and not so abhorrent animals.

Naturally, a departure from strictly words about birds, although quite in line with what one may read in *The Ibis* or any journal which wishes to keep its readers broadly informed, leads me to make another point with some feeling.

In the year and a bit during which your Editor has held office he has received both brickbats and bouquets, sometimes together and sometimes separately, and, let me say, both have been and will continue to be welcome. However, for those who say, let's have less science and more popular articles in *Notornis* or more Short Notes and less long papers, let me say just this. The editor does not *write* the journal. He can only take what is offered to him (although he does, more often than he wishes, solicit material from those close to him). Whatever is sent in for publication *will* be considered, whether it is popular, scientific, long-winded or (editor's delight) short and pithy. But it must be sent in! There is room for a wide range of interests in the pages of *Notornis* and no one need feel that an offering from his (or her) own hand would be turned away without proper consideration.

Understandably, many possessors of worthwhile observations from field work or of ideas stimulated by previously-published articles may be reticent about trying to get into print. Writing is not easy.

As an editor, I beg you not to be afraid. We, Regional Representatives, Editors, fellow members of the OSNZ, are all here to help and very willing to do so. We want to see you getting things on paper so, please, do not feel that because *Notornis* does sometimes seem heavy with the names and doings of professional ornithologists that you, the amateur ornithologist, bird-watcher, call yourself what you will, need be hesitant.

As an editor my hours are fuller than most people might believe so how about following this line towards getting yourself into *Notornis*? Have a chat with your Regional Representative as to how you might write up your work (he should know the local scene well enough) and, then, heed his comments on your first draft (which you should show to him and one or two others as well); now tidy it up following, please, the "Instructions to Authors" printed in the back of *Notornis* and send it in. There is no favouritism for the big names or the ponderous title. The Editor is a reader of *Notornis* too and pays his subscription to the OSNZ like any one else. He wants to have something to enjoy in each issue for his money just as you do.

ABOUT OUR AUTHORS

JEAN & ALLAN BATHAM came originally from England. They lived for 10 years in the Virgin Islands in the West Indies and, on retiring, planned a round-the-world trip on a 33 ft ketch since sailing had always been their hobby and, as they have said, almost their way of life. They set off at the end of 1967 and came via the San Blas Islands off Panama, Galapagos, Marquesas, Tahiti, the Cook Islands, Samoa, Fiji, thence to New Zealand, arriving in December 1968. They say: "We so fell in love with this lovely country that we have bought property here and have given up our wanderings with the intention of settling here for good."

At the time of their voyage, the Smithsonian Institution was making its survey of the sea birds of the Pacific and the Bathams thought it would add interest to their trip to have a job to do and they asked if they might assist the survey in keeping a bird log across the Pacific. They write of this: "Not a day passed at sea that we did not see birds, even in mid Pacific, 1500 miles from anywhere. Of course we had a marvellous opportunity to observe them, usually from their own level above the water and from a slow-moving vessel. We spent six weeks at Penrhyn and were able to explore many of the uninhabited 'motus' on the reef, which one felt belonged entirely to the birds. Man was the alien there."

PAUL HEPPLESTON graduated B.Sc. (Wales) in 1965 and Ph.D. (Aberdeen) in 1968. His research interests are primarily on oystercatchers and he has written a number of papers on their ecology and behaviour.

Dr Heppleston's thesis from the University of Aberdeen was entitled: "An ecological study of the Oystercatcher (*Haematopus ostralegus occidentalis* Neu.) in coastal and inland habitats of north-east Scotland." He has published a number of papers following this work, including — Anatomical observations on the bill of the Oystercatcher (*Haematopus ostralegus occidentalis*) in relation to feeding behaviour. *J. Zool., Lond.* 161 (4): 519-524, pls I-III (1970); Sexing Oystercatchers (*Haematopus ostralegus*) from bill measurements. *Bird Study* 17: 48-49 (1970); Nest site selection by Oystercatchers . . . in the Netherlands and Scotland. *Neth.J. Zool.* 21 (2): 208-211 (1971); Feeding techniques of the Oystercatcher . . . *Bird Study* 18: 15-20 (1971); The feeding ecology of oystercatchers . . . in winter in northern Scotland. *J. anim. Ecol.* 40 (3): 651-672, 5 figs (1971); The comparative breeding ecology of oystercatchers . . . in inland and coastal habitats. *J. anim. Ecol.* 41 (1): 23-51, 8 figs.

He has also published ecological work on snails in relation to liver-fluke disease in Orkney, and on seals around Britain with particular interest in the amounts of pollutant chemicals reaching their tissues. Dr Heppleston has now become a schoolmaster, retaining his ornithological research interest as a sideline.

JOHN JENKINS is a shipmaster serving with the Union Steam Ship Company. He was born in Monmouthshire and after a period in various United Kingdom shipping companies joined the Union Steam Ship Co. of N.Z. Ltd in 1955. He has been interested in seabirds for some twenty years and has contributed a number of articles to *Notornis* since living in New Zealand. He is one of the few New Zealand members of the Royal Naval Birdwatching Society which he joined in 1954. Captain Jenkins is, at the time of writing, Master of the M.V. *Kaimiro*. He says he is trying to organise some scheme of cooperative bird recording between ships in his Company.

CHARLES McCANN has had a long and interesting career in natural history. He has been a prolific recorder of his field observations and laboratory studies in both botany and zoology and has published over 200 notes, articles and scientific papers, many of them in the *Journal of the Bombay Natural History Society*. He has also written several books and monographs on Indian trees and grasses. Mr McCann was born at Castlerock, Goa Frontier, India, on 14 December 1899. He writes of himself:

"Some of the grandest tropical forest surrounded the area and the fauna abounded with wildlife, from elephants to flies, so much so that doors had to be closed at sundown for fear of dangerous intruders — even the King Cobra, though rare, occurred in the area. Such an environment seems to have influenced my future as a student of nature! (?). My parents informed me that I was the bane of their existence for I froze on to everything that moved. All attempts at shaping my ends had no avail. From "misdirected" babyhood onwards the "kink" increased out of all proportion (according to some I was just daft!).

After a chequered scholastic career, Dr E. Blatter invited me to join the biological laboratory of St Xavier's College, Bombay. I served as a lab. assistant and general factotum. At the same time I was made to attend the B.A. and B.Sc. courses in biology only. During my "spare time" I carried out research in systematic botany specialising in the glumiferous orders and in Agristology in particular. During the latter years of my college life I was appointed a Fellow in the Biological Department and instructed classes of the Inter-science, First Year Medical and took the practicals of the B.A. and B.Sc. in both botany and zoology.

During this period (1916 to 1920) I published several papers dealing with floristic aspects, either on my own or in association with Dr Blatter or others. The work on the *Grasses of Bombay Presidency* (and the collections) was completed during this period and was held in abeyance till the Imperial Council Agricultural Department to the Government published it in 1934.

At the end of 1921 I joined the Bombay Natural History Society as a field collector. After a few months in the field, I was recalled to take up the post of Assistant Curator. From then on I passed

through most phases of museum technique, helped in the construction of the Natural History Galleries of the Prince of Wales Museum, Bombay, the conservation and preservation of the collections in every department, further the duties of taxidermist, modeller and general preparation. In addition to these duties I also became a co-editor of the Society's Journal till I relinquished my post in 1947 to come to New Zealand.

Some months after arrival in New Zealand, I joined the Dominion Museum, Wellington, as zoologist. I concentrated on the arrangement of the mammals and birds and giving a hand in the taxidermy department. Gradually, I concentrated more and more on the Cetacean and Seal collections which today are second to none for material. During my time at the Dominion Museum, I contributed several papers on Cetaceans and fish, not neglecting some ecological studies. In 1964 I was retired from the Dominion Museum and after a spell in hospital joined the N.Z. Oceanographic Institute and worked on papers dealing with fish, particularly deep-sea fishes (Macruridae). In December 1969, I was now retired for a second time! Financial circumstances necessitated some form of work, so I worked in a motor firm as garage assistant for two years — retired once more! Now, I am spending my time trying to catch up with much unfinished mss."

ALLAN BAKER is at present Assistant Curator of Ornithology at the Royal Ontario Museum in Toronto, Canada. He is also cross-appointed as a Research Associate to the Department of Zoology at the University of Toronto. Besides having interests in general ornithology, he is specialising in applications of multivariate statistics to ornithological data. He was born in Westport in 1943 but has lived mostly in Golden Bay where his interest in oystercatchers was kindled by the huge flocks which feed there. Having gained his University Entrance through Correspondence School, Dr Baker graduated M.Sc. with distinction and Ph.D. from the University of Canterbury under the supervision of John Warham and R. S. Bigelow. The topic of his Ph.D. research was systematics and affinities of New Zealand oystercatchers. He is currently working on multivariate geographic variation in New Zealand House Sparrows, and is writing a monograph on systematics and evolution in the world's oystercatchers.

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R. B. Sibson and E. G. Turbott, 2nd rev. ed. | \$5.00 |

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| A biology of birds, by B. D. Heather. | \$1.33 |
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| Field guide to the waders, by H. T. Condon & A. R.
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*The following are available from Mrs. H. R. McKenzie, P.O. Box 45,
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| OSNZ Library catalogue, 70 pp. | 50c |
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