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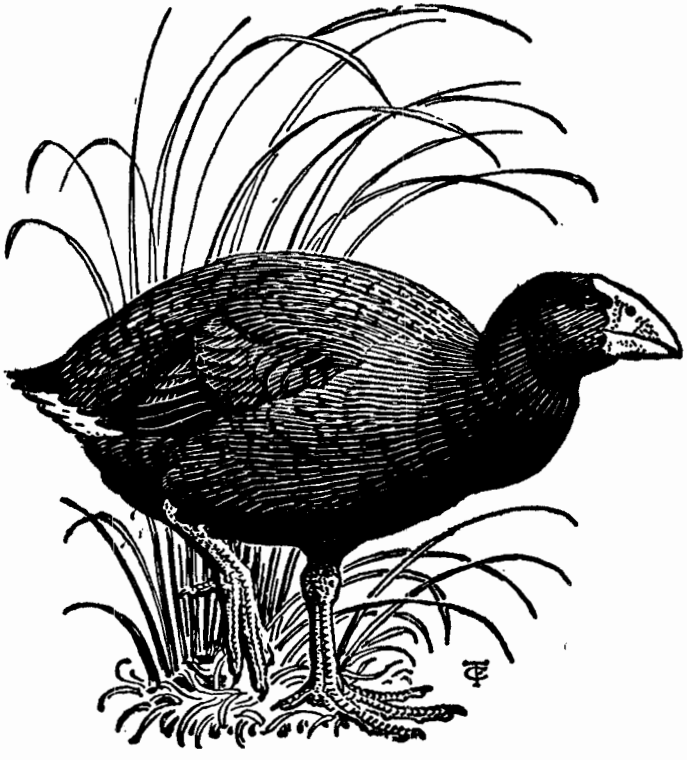
Journal of the Ornithological Society of New Zealand



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BANDED DOTTEREL AT THE AUCKLAND ISLANDS: DESCRIPTION OF A NEW SUB-SPECIES

By R. A. FALLA

The status of Banded Dotterels at the Auckland Islands was not defined until the period of occupation by coastwatcher units 1941-45. McCormick (*in* Ross, 1847: 149) referred to sight observations of " a solitary ring-plover " at Port Ross, in November 1840. Reischek (1888: 383) listed banded dotterel, without further comment, on Adams Island on 26 January 1888.

That the species eluded further notice for so long is not surprising, for it is not abundant and has a restricted pattern of seasonal movement. In 1941 C. Young, radio operator at Ranui Cove, made a sight record of a " bird with a double-banded breast " on the tableland above the southern shore of Port Ross, but the first positive identification was by W. H. Dawbin in the same area, but further inland, on 12 September 1943. Shortly after, on 30 September, E. F. Doley and L. H. Pollock met with an agitated pair of birds defending either territory or a nest on the high tops between the head of Chambres Inlet and the west coast. Finally, on 4 October, R. W. Balham and Doley found a nest in the same area, possibly the same pair. The nest contained 3 eggs, on ground covered patchily but quite heavily with snow. Both birds were standing within a few inches of the nest and remained there during the brief inspection. Meanwhile the party stationed at Carnley Harbour had independently found birds on the high tops of Adams Island, where they were identified by W. H. Dawbin, and two were collected on 11 October, by A. L. Paine.

Specimens from the Port Ross area were not collected until it was found that in mid- to late summer small flocks and odd pairs began to appear on tidal shoreline around Enderby Island. These proved to be post-breeding adults and some juveniles. Further specimens

* The material for this issue of *Notornis* was prepared by the previous editor.

were also collected in 1944 by E. G. Turbott, including a pre-breeding bird from Adams Island in August. These, together with useful distributional notes by H. T. Wenham in 1945 concluded the field studies undertaken by coastwatching personnel 1941-45.

The field work of four or five subsequent scientific expeditions between 1954 and 1976 provided further specimens (as listed in Table 1) and sight records which confirmed studies based on the earlier material, without significant modification. These establish that a form of Banded Dotterel, morphologically distinguishable from *Charadrius bicinctus* as found on the New Zealand main islands and Chatham Islands, inhabits the Auckland Islands where it is resident, migrating only altitudinally from high tops at 600 metres or more, where it nests, to tidal coastline in late summer and autumn.

The existence and general characteristics of this distinctive bird have already been recorded, by Oliver (1955) and in most subsequent publications about Auckland Island birds. An early draft of the present paper, and three specimen skins were available to the late Dr Oliver, who published (*loc. cit.*: 262) a substantially full diagnosis. His inclusion of Campbell Island in the range of the proposed subspecies, however, requires confirmation, as there is insufficient evidence to identify with the Auckland Island form the two Banded Dotterels seen by L. H. Pollock at Campbell Island in March 1944 (Bailey & Sorensen 1962: 255). It remains for the present paper to summarise, with some additional information, and to propose, belatedly, a subspecific name.

Charadrius bicinctus exilis SUBSP. NOV.

Adult plumage generally similar to *C. bicinctus bicinctus*, but upper parts uniformly darker and warmer shade of brown, approximately to brownish olive (shade 29 in Smithe 1975) compared with olive brown (28 in Smithe) in adult *bicinctus bicinctus*. A few dark feathers giving a streaky pattern on the front of the thigh are present in all specimens of *exilis*, these occurring only rarely, and then more obscurely in typical *bicinctus*. Seasonal breeding plumage pattern is as in the typical subspecies, but more transient, being assumed slowly and lost rapidly. Auckland Island birds are larger in all dimensions; not significantly so in length of wing and bill, but especially so in the stout tarsus and toes. Selected as TYPE is N.M. No. 13071 (National Museum of N.Z.) adult male, Adams Island, Auckland Islands, 28 August 1944, collected by E. G. Turbott. Its measurements, in dried skin, are — wing 132mm, tail 60, tarsus 35, toe 27.5, bill 19 (5mm deep at base).

The type specimen is the skin on which Oliver's (1955) description is based, the insignificant differences in dimensions given being no doubt due to variation in measuring technique. The bird is not, however, "immature," but an adult male in full breeding condition, though not quite out of normal adult winter plumage. Of the complete series of fifteen skins now available (see Table 1) none

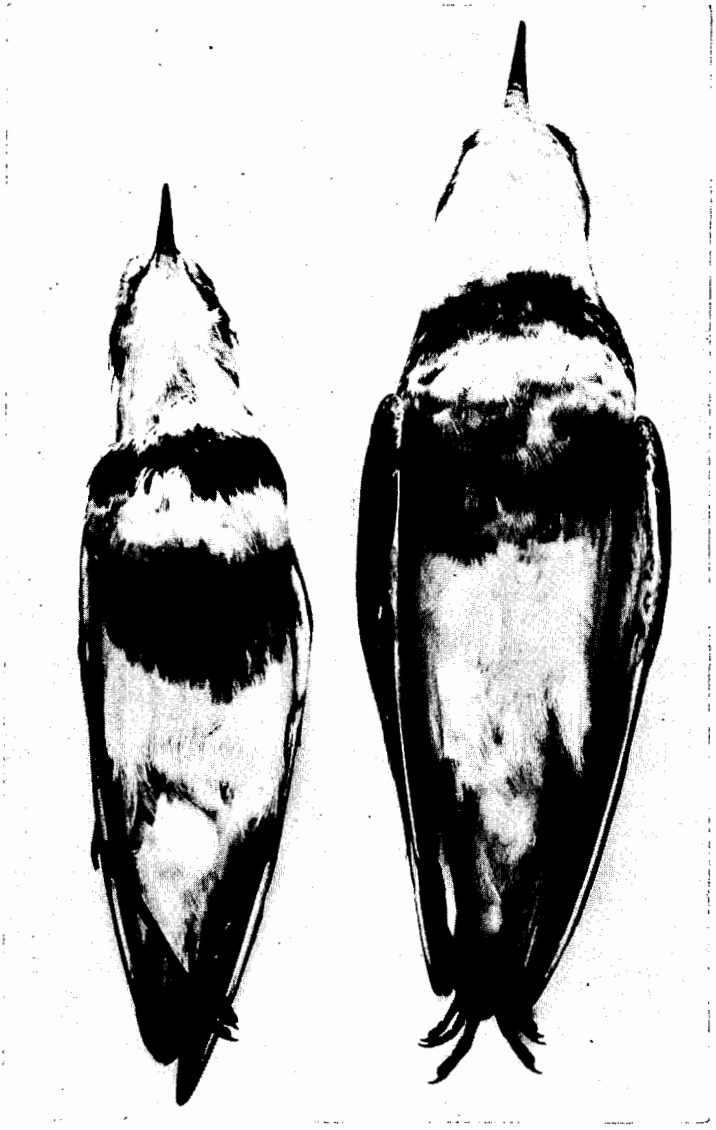

FIGURE 1 — Comparison of mainland and Auckland Island specimens.
Left: ♂ Waitaha River, Westland (Nat. Mus. N.Z.) July.
Right: ♂ Adams Island (type) August.

Photo: National Museum of N.Z.

TABLE 1 — BANDED DOTTEREL SPECIMENS COLLECTED AT AUCKLAND ISLANDS

No.	Sex	Locality	Date	Coll.	Wing	Tail	Tarsus	Toe	Culmen
C.M.21986	♀(?)	Enderby		R.A.F.	126	65	33	27.5	16
C.M.21287	♂(?)	"		"	132	61	33	28	19
N.M.13072	♂	"	19.4.44	E.G.T.	131	60	34	27.5	17.6
N.M.13073	♀	"	"	"	132	61	36	29.5	17.6
N.M.13074	♀	"	"	"	132	62	33.2	26	18.5
N.M.13075	♀	"	"	"	124	59	32	26	16
N.M.13071	♂	Adams	28.8.44	"	132	60	35	27.5	19
N.M. 7946	-	Enderby	8.3.54	R.K.D.	1305	58.5	33.5	26	16.6
N.M.12781	-	"	"	"	117*	60	32.2	26	16.5
N.M.10066	♂	"	17.1.63	B.D.B.	133.2	58	35	27.5	17
N.M.10067	♀	"	"	"	133.5	61.5	36	28	18
N.M.17521	♂	"	25.2.73	"	130	58	37	27	19
N.M.17522	♂juv.	"	"	"	130	59	34	27	17.5
N.M.19288	♂	"	3.2.76	J.A.B.	134.5	60.5	33.5	28.5	18.5
N.M.19289	♂	"	"	"	133	63	37	28	19

* in moult

C.M. Canterbury Museum

N.M. National Museum of N.Z.

R.A.F. R.A. Falla

E.G.T. E.G. Turbott

R.K.D. R.K. Dell

B.D.B. B.D. Bell

J.A.B. J.A. Bartle

have the unbroken uniformly coloured bands of normal mainland adult *bicinctus*. Two December adults have the same peppering of grey in the black of the upper band, and the same spotting of white in the chestnut of the lower, as has the August bird (the type specimen). The only difference is that the former are commencing a moult change from nuptial to basic, and the latter is at the same stage of the reverse process. At present the only evidence that Auckland Island birds may attain full nuptial bands is a photograph taken in blizzard conditions of the adult pair at their montane nest on 4 October 1943. Though unfortunately out of focus the full frontal view of both birds shows well defined banding on the presumed male (Fig. 2) but less distinct in the female. Neither birds nor eggs were disturbed, and no further nests were found. The accompanying sketches based on the photographs are two positions of the same bird.

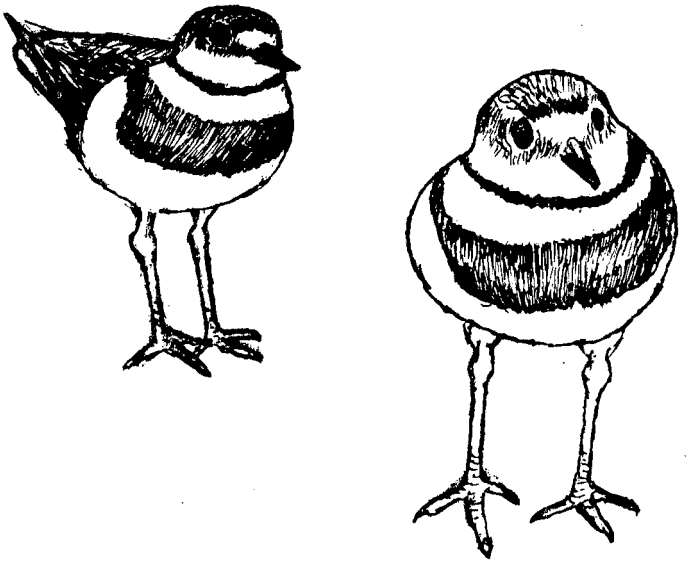

FIGURE 2 — Sketches (of same ♂ bird) based on photograph by R. W. Balham.

Though the specimens selected for dimensions of mainland *C. bicinctus* are all but one from the Auckland district (Manukau Harbour), others examined from the South Island, and the extended dispersal range including Australia, Lord Howe and Norfolk Islands, New Hebrides, and the Chathams, all fall within the size range given in Table 2. The few available specimens of Chatham Island breeding birds, in fact, are slightly below it in bill and wing length, and their inclusion would have lowered the average.

The Auckland Island form is significantly larger in body size than the conventional standard measurements indicate and it would have been helpful to record some comparative weights. For mainland specimens there are some records, giving a maximum of 70 grams as the weight of a fat adult in early stage of moult, but I can find no record for a comparable Auckland Island bird. The accompanying photograph (Fig. 1) of study skins gives some idea of the difference.

Little more can be recorded about the hilltop distribution. H. T. Wenham, in 1945, while working with survey parties, has some records. On 20 February he found a group of three near the summit of Mt Dick, Adams Island. Later two birds flew overhead, calling, and he saw two among scattered rocks. On 24 February on the tops near Little Dome, Adams Island, he saw eight birds altogether, in groups of 3, 2, 2 and 1, and heard further calling. Again, during a

long day on the tops of Adams on 8 March above Fletcher Point he saw only two Banded Dotterel. His last record, on 27 March, was on the main Auckland Island on a rocky plateau behind " Mt Schnackenberg " (= Mt Durville of later maps), where he disturbed 5 birds, together in a group. They took off, and flew strongly out of sight.

The altitudes of all these records are consistently among the higher hills of the Auckland Islands. There are thus probably more breeding pairs in the southern part, including Adams Island, but there is no evidence of lack of breeding success of pairs nesting on the main island, at least as far north as the region of the ' Bivouac ' rock above the head of Chambres Inlet.

TABLE 2 — COMPARATIVE MEASUREMENTS OF AUCKLAND ISLAND AND MAINLAND SPECIMENS

Auckland Islands (14 specimens)

Males (7)			Females (5)	
Wing:	130-134.5	(131.9)	124-133.5	(129.6)
Tail:	58- 63	(60)	59- 65	(61.7)
Tarsus:	33- 37	(34.8)	32- 36	(34)
Mid-toe:	27- 28.5	(27.6)	26- 29.5	(27.4)
Culmen:	17- 19	(18.2)	16- 18.5	(17.2)

New Zealand, North Island (10 specimens)

Males (5)			Females (5)	
Wing:	122-135	(128.5)	125-129	(127)
Tail:	50- 59	(54.6)	50- 60	(54.4)
Tarsus:	29- 32	(30.5)	28- 31	(30)
Toe:	22- 23.5	(22.7)	21- 22.5	(22)
Culmen:	17- 19	(17.7)	15- 18.5	(16.8)

Numerous observations of Banded Dotterel on tidal areas around Port Ross were made by several observers throughout 1943-44, most of them on the north coast of Enderby where exposed low rock platforms occur, as at Derry Castle Reef. This area is frequented from October to March by small flocks of migrant Arctic waders of

several species, but mainly Turnstone, and the flocks of Banded Dotterel associate with them. Thus far, observers have found them restless and hard to approach, but this may be a result of the intermittent shooting of rabbits in which short-term visitors indulge, as well as the early zeal for collecting a study series of a "new" bird. There is now an adequate series of these moulting summer specimens for study purposes, and it should be possible in future to observe them with less disturbance. There is no evidence that they are subject to any adverse predation pressures either on nesting grounds or coastal habitat. It is more likely that their low numbers reflect the limitations of the rugged terrain on which they are compelled to nest, well beyond the habitual hunting range of skuas, falcons or feral cats on the main island, and of the first two on Adams. Adams Island birds may spend more time on the tops than those further north. There are few if any shoreline records from Carnley Harbour, which has very little of either exposed tidal platforms or of beaches suitable. On the other hand the flocks met with on the north coast of Enderby Island may derive from all the upland breeders, including those from Adams Island. If this is so the total population of this sedentary race could be fewer than 100. J. A. Bartle *(pers. comm.)* judged from the numbers seen both inland and on the shore at Enderby Island on 8 and 9 December 1976, that the total population on that island at that time was probably less than 50. The more compact flocks seen on Enderby Island in February during several earlier expeditions have also been of less than 50 birds. Soper (1976) however, gave a late February 1973 count as 60. Summarising the field observations made during the Auckland Islands Expedition 1972-73, covering the months of December, January and February, Bell (1975: 139) added records from Rose and Ewing Islands, and reported a few groups on the upper slopes of Adams Island, with none recorded on the main island. He concluded that "from numbers seen it appears this southern race totals only 100-200 birds," which may on available evidence, be considered a generous estimate.

The occurrence of two closely related forms, not overlapping in range, and differing mainly in body size and intensity of plumage pattern is now established for the New Zealand region. It seems to have a parallel in South America where *C. falklandicus,* a species remarkably similar to *C. bicinctus,* is replaced at higher altitudes in the Andes by closely related *C. alticola;* and also in Southern Africa where the robust insular *C. sanctaehelenae* is clearly derived from the mainland *C. pecuarius.* The last two are considered by Bock (1958: 71) to be conspecific.

ACKNOWLEDGMENTS

Assistance in the field from colleagues of the "Cape Expedition 1941-46," and field records from members of later parties, are gratefully acknowledged. The revision of material has been assisted by the ready

granting of facilities at the National Museum of N.Z., and some problems of illustrations overcome with the help of Mr J. A. Bartle of the Museum Staff, and of Mr Martin Cawthorn of the Fisheries Research Division, Ministry of Agriculture and Fisheries.

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★

SHORT NOTE

ALBINO OYSTERCATCHER ON OTAGO PENINSULA

Returning from observing the Royal Albatross at Taiaroa Head on 19 December 1977, I noticed a white bird on a beach between Portobello and Broad Bay. My first impulse was that it might be a Little Egret, but as we drew closer it began to show the long straight orange bill suggestive of an oystercatcher.

By close examination through binoculars, I found that it was an albino oystercatcher in which even the pigment of the bill had been diluted. The whole of the plumage was white, although I could not ascertain whether the eyes were pigmented or not. There were other normally-coloured oystercatchers not far away.

Oliver (1955, *N.Z. Birds*, 2nd ed., pp. 246, 248) has noted several records of albino oystercatchers in New Zealand as follows: South Island Pied — one on several occasions at Ettrick in Otago, another in the Firth of Thames in 1942, an albino almost pure white except for the wings at the mouth of the Waimakariri River, and a white bird with a light fawn head near the entrance to Otago Harbour; North Island Pied — one recorded at Opotiki by Buller.

MIKE TARBURTON, *Biology Dept., Longburn College, P.O. Box 1, Longhurst.*

OBSERVATIONS ON THE NATURALISED DISTRIBUTION OF THE RED-VENTED BULBUL IN THE PACIFIC, WITH SPECIAL REFERENCE TO THE FIJI ISLANDS

By DICK WATLING
Department of Applied Biology, University of Cambridge

ABSTRACT

The present and past naturalized distribution of the Red-vented Bulbul, *P. cafer,* in the Pacific is described. The species was first recorded in Fiji at the turn of the century and probably arrived with indentured Indian labour. Its restricted distribution in the Fiji Islands coincides with that of several weed species which constitute its main food supply and probably limit its spread.

NATIVE DISTRIBUTION

P. cafer consists of a group of clinally graded races stretching from Ceylon in the south, across India to Pakistan in the west and to eastern Burma in the east. Ali and Ripley (1971) distinguished seven sub-species, of which the Pacific representative is *P. c. bengalensis* Blyth, 1845 (hereafter referred to as the Bulbul). Its native range stretches along the Himalayas from eastern Uttar Pradesh eastward through Nepal and Bhutan, to eastern Assam (north of the Brahmaputra), and southward into northern Bihar and Bengal (Peters 1960).

THE NATURALIZED DISTRIBUTION OF THE BULBUL AS A POST-EUROPEAN INTRODUCTION TO THE PACIFIC (Fig. 1)

FIJI

The earliest record of the Bulbul in the Pacific area is from Fiji where it was introduced about 1903 (Parham 1955). It was not a deliberate introduction, but it can be linked with the arrival of indentured Indian labour around that period. As with the early English settlers in New Zealand, who brought with them many English birds for sentimental reasons, so the Indian immigrants might be expected to have brought the Bulbul, because it holds a special place in Indian poetry, folklore and literature. Most of Fiji's Indian immigrants came from Uttar Pradesh with large numbers from Bengal and Bihar, the main port of embarkation being Calcutta (Gillion 1962), areas which coincide with the distribution of *P. c. bengalensis.* Possibly the strongest reason for the immigrants bringing the Bulbul to Fiji was its widespread use as a fighting bird (Ali & Ripley 1971; Whistler 1928; Finn 1906). Fighting birds were fed on a special diet and highly prized by their owners. During a fight, the adversaries were

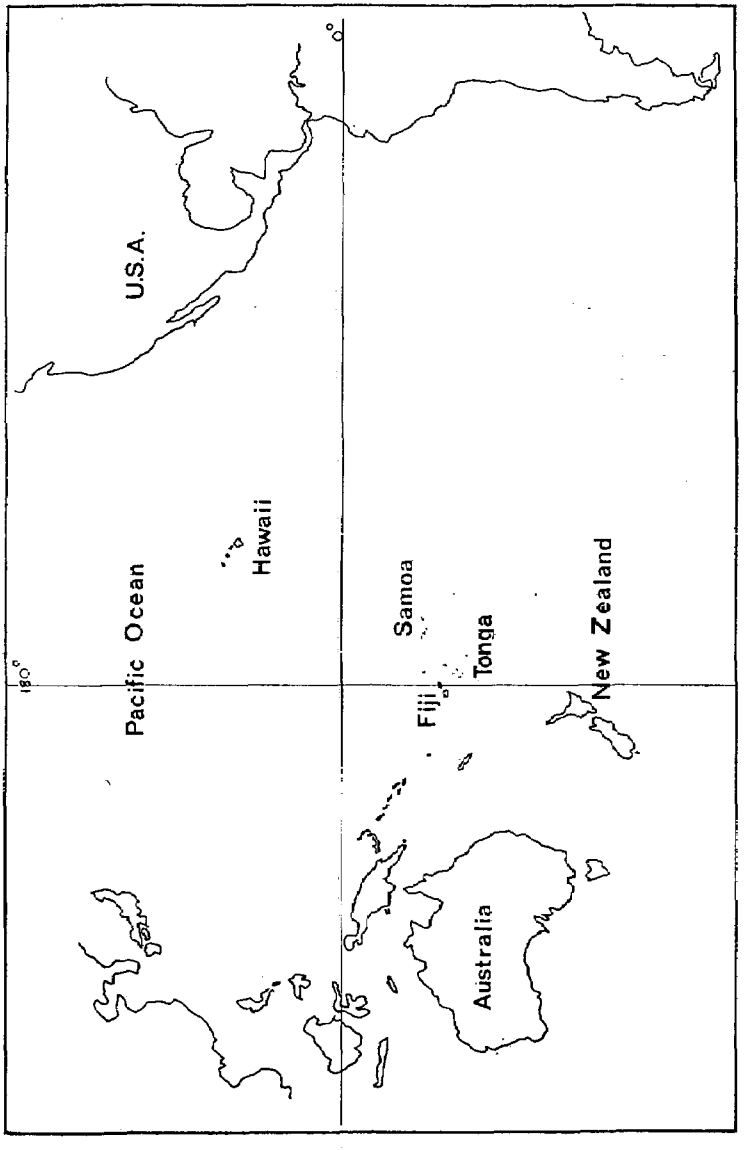

FIGURE 1 — The Pacific, illustrating the island groups where the Bulbul is at present or has in the past become established.

tethered on a T-shaped perch by a cord fastened to a soft string around the body to prevent them escaping. Heavy bets were placed and occasionally fights continued until the death of one of the combatants occurred. Although animal fighting is now prohibited in India, Bulbul fighting still continues as a popular rural sport in some provinces (Ali & Ripley 1971). The sport is not practised in Fiji today.

At present the Bulbul is common only on the main island of the group — Viti Levu, and its small adjacent islands (pers. obs.). It is present at a reduced density on Ovalau (pers. obs.) and on Wakaya (Clunie, pers. comm.) and Beqa (Fijian resident, pers. comm.). A small population exists on Taveuni - Wairiki (Beckon, pers. comm.) and Waiyevo (Pernetta, pers. comm.). It is absent from Vanua Levu, Kadavu, the Yasawas and Mamanuca groups (pers. obs.), and is reported as being absent from Vatulele, Lakeba, Ono (Clunie, pers. comm.), Gau and several islands of the Lau group (Fijian residents, pers. comm.) (Fig. 2).

On Viti Levu, the Bulbul is an abundant bird in agricultural and suburban habitats and is commonly observed in clearings and patches of secondary growth in the forests. It can sometimes be found in mature forest but is generally associated with immature secondary habitats.

TONGA

The Bulbul is resident on the islands of Tongatapu, 'Eua and Niuafo'ou (Carlson 1974). Although not listed as present in Tonga by Mayr (1945), the introduction and spread of the Bulbul in Tonga can be traced from a pair of birds which were either released or escaped on Niuafo'ou in 1928/9. In the 1940's they were brought to Tongatapu by Prince Tungi to control unwanted insects, from where they spread to 'Eua (Carlson 1974).

Although recorded as abundant on Tongatapu by Dhondt (1976a), I found it nowhere near as common, on a visit in June 1976, as it is in Fiji, an observation confirmed by Dr B. Robinson (pers. comm.). It is found all over Tongatapu (pers. obs.), an island which is devoid of any large areas of natural habitat

SAMOA

The Bulbul is established on the islands of Savai'i and Upolu in Western Samoa and on the island of Tutuila in American Samoa (Dhondt 1976b; Stunzner pers. comm.; Amerson pers. comm.).

The Bulbul was not listed as occurring in Samoa by Armstrong (1932) or Mayr (1945). Stunzner (pers. comm.) stated that the Bulbul was introduced into Western Samoa by the U.S. Marines in

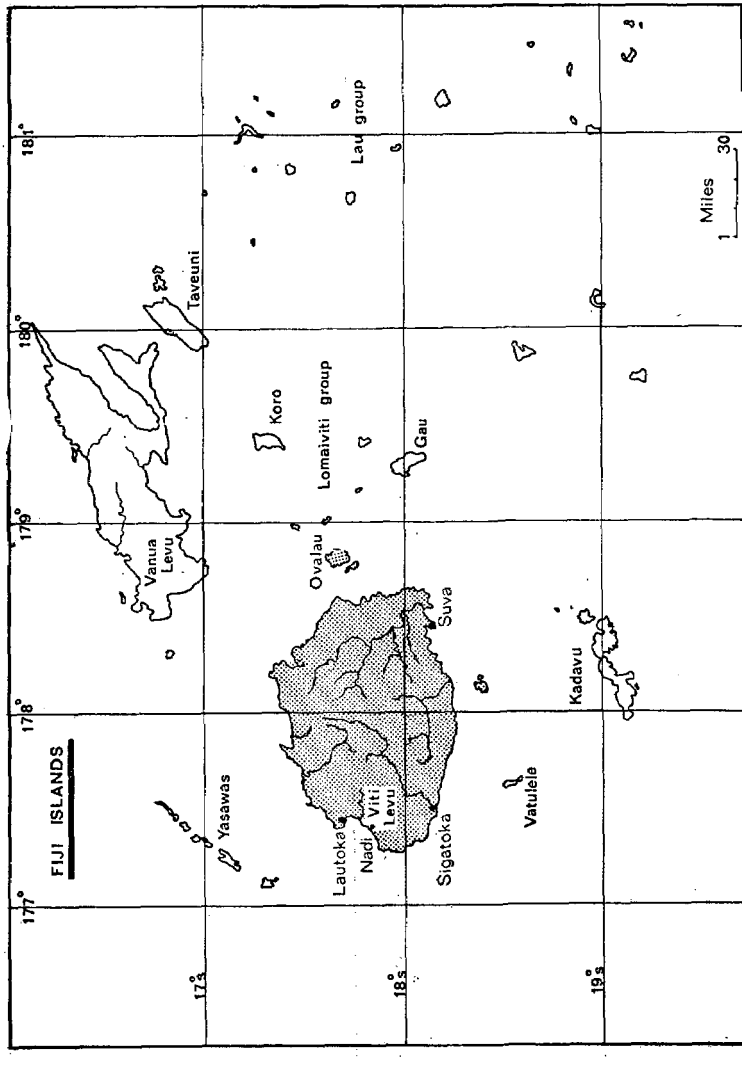

FIGURE 2 — The Fiji Islands, illustrating the present distribution of the Bulbul (stippled).

1943.* These birds were collected in Fiji and were originally sent on an American troopship to a bird dealer in New Caledonia. It was, however, re-routed to Apia where the birds were subsequently released. Keith (1957) found the Bulbul only on Upolu. By 1963, it had reached Tutuila (Clapp & Sibley 1966), but it probably arrived in the late 1950's (Amerson pers. comm.). It was not recorded on Savai'i until 1974 (Dhondt 1976b).

On the islands of Tutuila and Upolu the Bulbul is common only in residential and agricultural areas. It is less numerous on the island of Savai'i (Stunzner pers. comm.; Amerson pers. comm.; Dhondt in press).

HAWAII

The Bulbul (subspecies not determined) was first recorded in Hawaii on Oahu in 1966 and is now well established although still confined to that island (Berger 1975). Another closely related alien, the Red-whiskered Bulbul, *P. jocosus*, is also established on the island of Oahu where both species are confined to residential areas (Berger 1975).

NEW ZEALAND

The Bulbul became established in the Auckland city area in 1952, probably from escaped cage birds. By 1954 the New Zealand Agriculture Department was pursuing an eradication policy (Turbott 1956). This was evidently successful as no birds have been seen since 1954-55. The decision to eradicate the Bulbul was made on the grounds that it "had undoubtedly proved to be something of an agricultural and orchard pest in Fiji" (Turbott in litt.).

AUSTRALIA

There is a small population of wild *P. cafer* in the suburbs of Melbourne which has been established since 1918 (Lendon 1952; Slater 1974). *P. jocosus* is found more commonly in both the suburbs of Melbourne and Sydney.

DISCUSSION

Throughout its naturalized range in the Pacific, the Bulbul is associated with man-modified habitats. In the temperate areas which it has colonized — Melbourne and formerly Auckland — it is confined to residential localities where it probably subsists on the fruit of

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* There is an unconfirmed report that the Bulbul first appeared in W. Samoa in 1912 as a self introduction and the German Governor of the time, Dr Solf, ordered its eradication (Stunzner pers. comm.). This report has not been substantiated by a search of German Colonial Government records (U. Beichle pers. comm.).

ornamental shrubs and trees. In tropical areas, it occupies residential, agricultural and immature secondary habitats; it has not been able to colonize mature forest although it will readily visit it. As such, it occupies the same habitat in its naturalized range as it does in India (Ali & Ripley 1971; Stuart Baker 1932; Vijayan 1975; Whistler 1928). Its avoidance of primary forest and association with forest clearings and cultivation is emphasised by Stuart Baker (1932) and Vijayan (1975). In Fiji the Bulbul is a mixed feeder, specializing on the fruits of a few primary plant colonists, all of which are introduced (Watling 1977, in prep.). Several of these are recorded foods of the Bulbul in India, for example, Lantana, *Lantana camara, Physalis* sp., *Solanum torvum* and Guava, *Psidium guajava* (see Henry 1955; Mason & Maxwell-Lefroy 1912). The study of the feeding ecology of *P. cafer* in Southern India by Vijayan (1975) indicates that although its annual diet is more diverse in this habitat, with a constant succession of different foods being eaten, the type of fruiting plants utilized is the same as that in Fiji. Of nineteen principal foods, eleven are fruits of shrubs or creepers — typical primary colonists — and only three are fruits of large trees.

The Bulbul has a restricted distribution in the Fiji Islands, being confined to all intents and purposes to the main island of Viti Levu and a few small adjacent islands. The distribution of native birds within the group shows many of the anomalies that are characteristic of oceanic archipelagos (Cain & Galbraith 1956; Darlington 1957; Lack 1947; MacArthur & Wilson 1967). Several species have discontinuous distributions and are absent from some islands where one might expect to find them, for example the Silktail, *Lamprolia victoriae;* the Red-throated Lorikeet, *Charmosyna amabilis;* the Pink-billed Parrotfinch, *Erythrura kleinschmidti;* the Woodswallow, *Artamus leucorhynchus;* the Versicolor Flycatcher, *Mayrornis versicolor* and the Giant Forest Honeyeater, *Gymnomyza viridis.* Geographical replacement occurs in the Fruit Pigeons, *Ptilinopus* (= *Chrysoenas*) *luteovirens* group and in the following genera: Musk Parrots, *Prosopeia;* Fantails, *Rhipidura,* and the Honeyeaters *Myzomela* and *Foulehaio (Xanthotis).* Thirteen species have three or more distinct subspecies. Finally there are three 'supertramp' species (Diamond 1974) — the Pacific Pigeon, *Ducula pacifica;* the Crimson-crowned Fruit Dove, *Ptilinopus porphyraceous* and the Blue-crowned Lory, *Vini australis* — whose distribution is confined to outlying islands.

The distribution of the Bulbul, which is common only on one island — Viti Levu (Fig. 2), might be considered normal in comparison with some of the indigenous birds of Fiji. However, several of ten other introduced birds have become widespread, and although the dispersal ability of one species cannot be used to assess that of another, one might expect that a species as opportunistic as the Bulbul would have no problem in crossing the usually short distances between the islands. Williams (1953) recorded the dispersal of 21 European

passerines introduced into Australia or New Zealand. Within 30-40 years, many had established themselves on small islands in Australasian seas (*i.e.* between 320 - 800 kms). Although a few cases were direct introductions by man, most were self-introductions. A. Berger (pers. comm.) has recorded the natural inter-island dispersal of two introduced species in Hawaii. In Fiji, the Fijians themselves often take birds between islands as pets (F. Clunie pers. comm.; pers. obs.). Lack (1976) has argued convincingly that ecological limitations, rather than dispersal difficulties are more important in determining the composition of insular avifaunas.

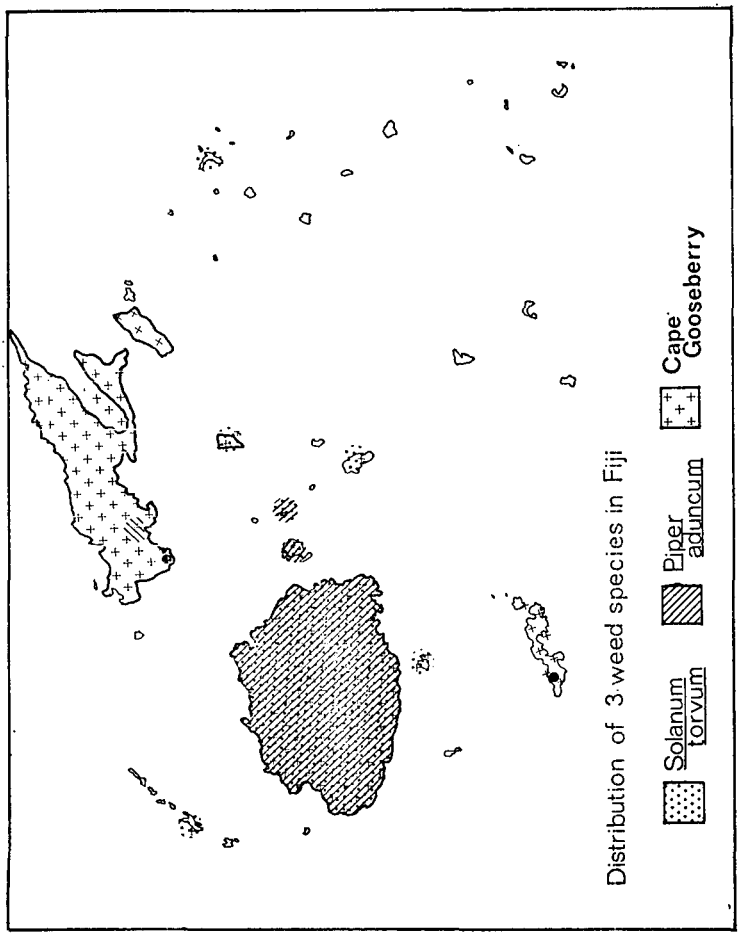

FIGURE 3 — The distribution of the principal food plants of the Bulbul in the Fiji Islands.

Fig. 3 illustrates the distribution of the three weed species which were found to be the principal diet of the Bulbul in Fiji (Watling 1977; in prep.). Only on Viti Levu and Ovalau are all the weeds found growing abundantly together. *P. aduncum* and *S. torvum* are effectively absent from the other main island of the group — Vanua Levu (although *P. aduncum* is present in one small area on the south coast and a few plants of both species were seen near Nabouwalu). All the other major islands lack at least two of the main food plants of the Bulbul and it may well be that the distribution of these plants determines the distribution of the Bulbul. Vijayan (1975) after surveying 54 localities in India, concluded: " it is evident that vegetation is the most important single factor which determines the distribution of Bulbuls." Morton (1973) believed that the patchy distribution of many tropical bird species can be explained by habitat characteristics.

It may be envisaged that since *P. aduncum* and *S. torvum* have now gained a foothold on Vanua Levu, they will probably spread quickly, particularly *P. aduncum* which is dispersed by Fruit bats — *Pteropus* species. In consequence it would seem likely that the Bulbul will be able to colonise Vanua Levu in the future.

The Bulbul has been held " largely responsible for the spread of the noxious weed, Guava *P. guajava*" (Mercer 1966). This it certainly is not. Guava is a seasonally fruiting plant and is only a minor food of the Bulbul (Watling 1977 and in prep.). It is present and abundant on all the major islands of the group, many of which lack the Bulbul. People, together with cattle and horses, are probably the main dispersal agents (Watling 1977).

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SHORT NOTE

A MYNA MATTER

Dhondt (1976, *Notornis* 23 (1): 29-43) gave notes on bird observations made in Western Samoa during 1973-74. He reported the breeding of a recent arrival — the Common Myna *(Acridotheres tristis)* — which had been established in Upolu since at least 1972.

During a brief visit to Western Samoa in January 1978, no observations of the Common Myna were made, despite extensive travelling on Upolu. However, in several localities the Jungle Myna *(A. fuscus)* was observed. It was not common, localised small flocks being seen in the suburbs and environs of Apia, generally in association with cattle or horses or on pasture or playing fields.

Two aggressive interactions with the Samoan Starling *(Aplonis atrifuscus)* were seen, the latter being victorious on both occasions. There appears to be scope for competition between the two species and it will be interesting to see if the Hill Myna is able to flourish on Upolu as it has in Fiji. *A. fuscus* was introduced into Fiji at the turn of the century to combat armyworm (Mercer 1964, *Field Guide to Fiji Birds*, Suva) and both it and the Common Myna *(A. tristis)* are abundant on the main islands of the Fiji group (Watling 1975, *Notornis 22* (1): 37-53).

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NEW BIRD RECORDS FROM THE FIJI ARCHIPELAGO

By F. CLUNIE, F. C. KINSKY and J. A. F. JENKINS

ABSTRACT

This is a complete list of species and subspecies recorded from the Fiji Archipelago subsequent to the work of Mayr (1945), Mercer (1966) and King (1967). Some of these new records have been published previously, but fifteen new specific and subspecific records of birds are listed here together with a new breeding record and confirmation of some earlier doubtful sightings.

INTRODUCTION

The standard work dealing with Fijian birds has been Ernst Mayr's (1945) *Birds of the Southwest Pacific*, which lists 16 species of "sea birds" (Procellariiformes 3; Pelecaniformes 6; Sternidae 7), six species of migratory waders, and 64 species of land and fresh-water birds. Some of the "sea birds" are listed within a wider distributional pattern without specifically mentioning Fiji. Mercer's (1966) field guide includes six additional land birds and one migratory wader not listed by Mayr (1945). King (1967) summarised knowledge of Fijian "*sea birds*," listing 19 breeding species (including two doubtful breeders) and seven non-breeding visitors.

A comprehensive list of all new records from Fiji was considered necessary as a recent work (du Pont 1976), claiming to be "a ready identification guide to all known South Pacific Birds" is, as far as Fiji is concerned, badly out of date and incomplete.

An increasing amount of fieldwork since about 1963 has resulted in several new records, and some doubtful sightings have been confirmed. These new records, whether published or not, are listed below. Records published here for the first time (14 new species and subspecies) are preceded by an asterisk (*). Most of these result either from voyages made by J. A. F. Jenkins through the Fiji islands on merchant vessels or from a continuing series of combined National Museum of New Zealand and Fiji Museum ornithological expeditions (1972, 1973, 1974, 1975).

Fijian waters are here defined as extending from 15° to 22°S and from 177°W to 175°E.

NOTORNIS 25 118-127 (1978)

LIST OF SPECIES

ORDER PROCELLARIIFORMES

*Wandering Albatross *(Diomedea exulans)*

There have been several sightings of Wandering Albatrosses within Fijian waters, but apparently only immature birds of this species follow ships into these low latitudes. One bird was seen on 31 July 1967 at 19°40'S 176°55'E, another on 30 August 1970 north of Cape Washington at the western end of Kadavu Island. Two more were recorded 96km SSW of Kadavu on 16 September 1973. Hence it appears that Wandering Albatrosses may stray into southern Fijian waters quite frequently, but the nearest previously published record of this species to Fiji seems to be that of Morgan & Morgan (1965: 158), at 27°S.

Black-browed Mollymawk *(Diomedea melanophris)*

A century ago Baron von Hugel (Layard 1876: 393) saw a lone bird of this species while his ship was in sight of Kadavu Island. Wood (1926: 106) questioned this sighting, and King (1967: 103) listed it as needing verification.

On 4 August 1968 an immature New Zealand Black-browed Mollymawk *(D. melanophris impavida)*, which had been banded as a chick on Campbell Island (some 3500km south of Fiji) on 19 March 1968, was found dying on the beach near Levuka, Ovalau Island. This record confirms the occasional occurrence of this species in Fijian waters. The bird was not retained but the band was returned to the N.Z. Bird Banding Scheme.

*Cape Pigeon *(Daption capensis)*

Cape Pigeons are often seen as far north as 21°S, and individuals have been recorded in the Kadavu Passage. One bird was seen some 10km west of Cape Washington, Kadavu, on 17 September 1973, and another about 56km south of Kadavu on 25 August 1974.

*Tahiti Petrel *(Pterodroma rostrata)*

On the night of 9 October 1972 while a party from the National Museum of New Zealand and Fiji Museum was based at the Marist Training Centre at Tutu, Taveuni Island, the first Tahiti Petrel to be recorded from Fiji flew into a light at the mission station, which is about 200m above sea level. The skin of this bird, an immature female, is held by the National Museum of New Zealand, Wellington (NMNZ 17801).

Two birds of this species were seen off Beqa Island, south of Viti Levu, on 3 October 1973, and another at 19°09'S 177° 52'E on 9 May 1976. At present there is no evidence that this species breeds in Fiji.

*Black-capped Petrel *(Pterodroma externa cervicalis)*

A Black-capped Petrel landed aboard ship just outside Suva Harbour on 18 May 1955. This specimen, the first record from Fiji, is now in the Auckland Institute and Museum (Av. 136. 14). Several other records were made on 9 May 1976 when lone birds were seen at 18°50'S 178°04'E; 19°38'S 177°46'E, and 20°29'S 177°43'E.

Morris (unpublished) reported a sighting of this species from 113km south of Kadavu on 8 June 1963.

*Juan Fernandez Petrel *(Pterodroma externa externa)*

We have a tentative record of a Juan Fernandez Petrel, observed at 21°58'S 177°24'E, well south of Cape Washington, Kadavu Island, on 5 December 1974. This bird lacked the white collar of *P. externa cervicalis.*

*Mottled Petrel *(Pterodroma inexpectat)*

A single Mottled Petrel was recorded west of Cape Washington, Kandavu, at 19°14'S 177°33'E on 27 March, 1978. According to King (1976: 16) this New Zealand breeding petrel migrates northward through the central Pacific in April and May, returning southward from sub-arctic waters in October and November. This record indicates that some birds at least move northward through Fiji waters.

*Black-winged Petrel *(Pterodroma hypoleuca nigripennis)*

Black-winged Petrels are frequently met with at sea south of Taveuni and near Kadavu Island (JAFJ). Morris (unpublished) encountered an individual 130km south of Kadavu on 8 June 1963 and another 21km south east of Yalewa Kalou Island (NE of Yasawa, the northernmost of the larger islands of the western Yasawa Group) on 14 June 1963.

Buller's Shearwater *(Puffinus bulleri)*

Cheshire (1974: 183) was the first to have recorded this species from the Fiji area. He saw a lone bird at 18°30'S 178°13'W, about 24km east of the Lau Group on 22 May 1972. The next day he observed three birds at 18°39'S 173°16'W. Buller's Shearwaters were next recorded off Taveuni, at 16°54'S 179°42'W, on 7 February 1974.

*Sooty Shearwater *(Puffinus griseus)*

On 21 September 1963 Morris (unpublished) recorded small flocks of Sooty Shearwaters flying SSW from near Yalewa Kalou Island towards the west coast of Viti Levu, and flocks of 150-200 birds were seen frequently on 24 September 1963 heading in the same direction. The occurrence of this species in Fiji was confirmed on 28 September 1967 when the close approach of a ship put up about 35 birds 8km SW of Batiki Island in the Lomaiviti Group.

Short-tailed Shearwater *(Puffinus tenuirostris)*

Bahr (1912: 312) regarded this species as one of the commonest seabirds in Fiji, specifically mentioning sightings in the Koro Sea.

Morris (quoted in Serventy *et al.*, 1971: 130) saw this species " off Fiji in late September."

One of us (JAFJ) encountered large numbers of Short-tailed Shearwaters on their southward migration from late September until as late as November 1976.

On 23 September 1976 the following records were made of birds flying towards the SW:

1300 hrs	21°06′S 177°42′E	more than 200 birds
1500 hrs	20°42′S 177°41′E	more than 50 birds
1600 hrs	20°29′S 177°44′E	7 birds
1615 hrs		more than 200 birds

At 1740 hrs, at 20°04′S 177°48′E, Short-tailed Shearwaters were visible on each side of the ship as far as the eye could see, not bunched in flocks, but spread out all over the ocean. This continued until dark at 1825 hours, thousands of birds being involved. Next day the ship was at Suva, but on 25 September 1976 Short-tailed Shearwaters were again encountered, flying SW.

0800 hrs	17°25′S 179°55′E	more than 100 birds
1200 hrs	16°57′S 179°57′E	more than 30 birds
1225-1240 hrs	At least 2500 birds seen, spread out all over the ocean	
1300 hrs	16°50′S 179°25′W	37 birds
1330 hrs	16°47′S 179°20′W	several flocks of from 7 to more than 100 birds seen
1340 hrs		hundreds of birds spread over the ocean
1400 hrs	16°44′S 179°14′W	70 birds
1600 hrs	16°34′S 178°58′W	80 birds

On 26 September 1976 at 0800 hours 7 birds were seen at 15°42′S 175°36′W, but no more were recorded between there and Pago Pago, in American Samoa. On 2 October 1976 Short-tailed Shearwaters were encountered between 24°36′S 178°25′W and 25°25′S 178°46′W, the birds again flying SW.

Only small numbers were seen at any one time, but birds were passing the ship at a rate of about 500 an hour. During another voyage smaller numbers of Short-tailed Shearwaters were seen on 9 November 1976 flying SW in flocks of 8 to 18 individuals from 23°44′S 177°23′E to 22°52′S 177°27′E, no more being encountered northwards. On 12 November 1976, on voyage from Suva to Nukualofa, Tonga, Short-tailed Shearwaters were again recorded, the birds flying in a southwesterly direction:

1120 hrs	19°21′S 179°21′W	two flocks on 200 and 130 birds
1600hrs	19°40′S 178°22′W	30 birds

No more birds of this species were recorded between here and Nukualofa, although a few Short-tailed Shearwaters were seen off Apia, Western Samoa, on 15 and 16 November 1976.

ORDER PELECANIFORMES

Greater Frigate Bird *(Fregata ariel)*

Although it was generally assumed that Greater Frigate Birds occur in Fiji waters regularly, there seem to have been no previous reliable records of this species from Fiji. Mayr (1945: 20) recorded them as occurring " throughout the Indian and Pacific Oceans," and King (1967: 103) listed them as non-breeding visitors to Fiji. Wood's (1926: 107) statement that he had never seen a Lesser Frigate Bird in Fiji and that the Greater Frigate Bird is commoner in the area than *F. ariel*, is almost certainly due to mistaken identity, as the Lesser Frigate Bird is far more common than its larger relative in Fijian waters.

During May 1975 two of us (FC & FCK) found the Greater Frigate Bird in considerable numbers in the Astrolabe Lagoon (east of Kadavu Island). The identity of this species was confirmed by the collection of an immature female and a sexually mature male. The latter bird had not yet attained the pure black under-side of adult-plumaged males, and with its black throat and white breast closely resembled an adult female Lesser Frigate Bird in the field. Both Lesser and Greater Frigate Birds were present daily, especially about Yabu Island off the coast of Ono Island, where they gathered to harry and rob the hundreds of Red-footed Boobies *(Sula sula)* coming in to nest and roost. Smaller numbers of Brown Boobies *(Sula leucogaster)*, not nesting at that time, but roosting on the island, were also occasionally chased by Frigate Birds. The largest number of frigate birds seen at one time was when a mixed flock of about 150 birds congregated above Ono Island following a storm. It was estimated that about one in five of the several hundred frigate birds in the Astrolabe Lagoon during May 1975 was a Greater Frigate Bird.

Because the size difference between the two species of frigate birds is not nearly as obvious in the field as is suggested in the literature, close attention must be paid to all frigate birds observed in Fiji.

ORDER CICONIIFORMES

*White-faced Heron *(Ardea novaehollandiae)*

One bird of this species was observed resting at high tide on a sandy beach just north of Taunovo village on Vatulele Island on 19 July 1973. It was associating with two dark phase Reef Herons *(Egretta sacra)* and, when approached, the three birds flew northward along the beach. The lighter overall colour of the White-faced Heron compared with the Reef Herons was even more apparent in flight, when the flashing white underwing coverts contrasted with the dark underwings of its companions. The bird was later collected when feeding on a tidally exposed reef, still in company with two dark phase Reef Herons. The skin of this specimen, the first ever collected in Fiji, is currently held by the National Museum of N.Z., pending its

return to the Fiji Museum. This bird was almost certainly a vagrant from Australia.

A general eastward movement of this species from Australia during 1973 was also evident on the Kermadec Islands where J. G. Ireland (pers. comm.) saw a lone bird from 9 March to 3 April 1973, found a corpse on 23 April 1973 and recorded a single bird on 7 May 1973. Two additional birds were recorded from the Kermadecs in mid-July 1973.

*Glossy Ibis *(Plegadis falcinellus)*

On 25 August 1973 a Glossy Ibis, another probable Australian vagrant, was found associating with a flock of 15 Reef Herons in a rice paddy at Lakena, near Nausori (eastern Viti Levu). The birds were fishing for Tilapia *(Tilapia mossambica)* trapped in large puddles in the partially drained field. Contrary to the visual hunting tactics of the herons, the ibis swept the muddy shallows by moving its partly open bill from side to side. It seized and swallowed any fish it chanced upon, but dropped any stone, picked up in error. The ibis was feeding almost constantly, whereas the herons rested at frequent intervals. Several herons and the Glossy Ibis flew off westwards at 1630 hours, presumably to their night roost. Next day the Glossy Ibis was found with Reef Herons in the same paddy field. It was collected and proved to be an immature female in fresh plumage.

The head and neck were dark brown with some pale streaking, the wing coverts dark green with purple and red glosses and the primaries were glossy green. The skin of this specimen, the first recorded from Fiji, is located in the Fiji Muesum (FM-14).

The rice paddies at Lakena, which support a teeming population of small fish, can attract flocks of up to 100 Reef Herons. The paddies also have a strong attraction for Crested Terns *(Sterna bergii)*, and Marsh Harriers *(Circus approximans)*, which frequent the area regularly, though in smaller numbers than Reef Herons. Marsh Harriers regularly catch and eat fish throughout Fiji.

ORDER CHARADRIIFORMES

Smart (1971) recorded several new migratory waders for Fiji, which are included in this list. His paper should be consulted for greater detail.

Banded Dotterel *(Charadrius bicinctus)*

First recorded by Morgan & Morgan (1965: 162) from Suva Point. Smart (1971: 270) reported this species from Vatuwaqa and the Rewa Sandbank, and also reports a sighting from Ono-i-Lau Island.

Long-billed Curlew *(Numenius madagascariensis)*

Recorded by Morgan & Morgan (1965: 162) from Suva Point, and by Smart (1971: 272) from Suva Point and Rewa Sandbank.

American Whimbrel *(Numenius phaeopus hudsonicus)*
Recorded by Smart (1971: 272) from the Rewa Sandbank.

Siberian Tattler *(Tringa brevipes)*
Recorded by Smart (1971: 273) among flocks of Wandering Tattlers *(Tringa incana)* on Rewa Sandbank.

Terek Sandpiper *(Xenus cinereus)*
Smart (1971: 274) recorded a lone bird from Rewa Sandbank.

Knot *(Calidris canutus)*
This species was first recorded from Rewa Sandbank (Smart 1971: 279) but du Pont (1976), who otherwise lists the waders recorded by Smart, does not include it in his field guide. Two of us (FC & FCK) saw a flock at Sausau Island off the north coast of Vanua Levu on 26 June 1974, confirming its occasional presence in Fiji.

Sharp-tailed Sandpiper *(Calidris acuminata)*
Recorded by Morris (*in* Smart 1971: 24) from Suva Point.

Red-necked Stint *(Calidris ruficollis)*
Recorded by Smart (1971: 274) from Rewa Sandbank.

Sanderling *(Calidris alba)*
Recorded by Smart (1971: 275) from Rewa Sandbank, Navua (southern Viti Levu) and Toberau Island. Du Pont (1976: 57) listed it from Ono and Ono-i-Lau, apparentiy in error, as Smart referred to "large numbers of shorebirds occurring on Ono and Ono-i-Lau Islands" in the paragraph following his Sanderling notes. We saw a lone Sanderling daily on Vorovoro Island off the north coast of Vanua Levu from 13 to 16 November 1973.

*Pomarine Skua *(Stercorarius pomarinus)*
A lone bird, the first for Fiji, was seen at sea, 11km north of Cape Washington (Kadavu Is.) on 27 February 1974. Several records have been made since. On 3 September 1976 one bird was seen at 21°40'S 177°27'E, another on 27 February 1978 at 18°49'S 177°20'E, and two at 18°39'S 177°18'E rafted with 10 Wedgetailed Shearwaters *(Puffinus pacificus)* and another two at 19°06'S 177°26'E in company with two Arctic Skuas, on the same day.

*Arctic Skua *(Stercorarius parasiticus)*
A single bird of this species was observed flying in a NNE direction at 20°23'S 177°44'E on 26 February 1975. One was recorded at 22°13'S 177°21'E on 23 September 1976, and two more harrying a Sooty Tern *(Sterna fuscata)* seen with two Pomarine Skuas at 19°06'S 177°26'E on 27 February 1978.

Both this and the above species migrate from their northern breeding grounds south to New Zealand, but neither have been recorded from Fijian waters previously.

Crested Tern *(Sterna bergii)*

This large tern has long been known to be common about Fijian coasts but as late as 1967 King (1967: 103) still listed it only as a possible breeder. In May 1975 the combined museums expedition confirmed it as a breeding species for Fiji by finding a young bird, not yet capable of flight, being fed by its parents on a small rocky island in the Astrolabe Lagoon.

*Eastern Little Tern *(Sterna albifrons sinensis)*

An immature female was collected from a flock of twenty Little Terns resting on broad sandflats near Yakano village on Lakeba, the largest island of the Lau Group, on 21 November 1974. The birds had been watched for two days previously resting on the sandflats at low tide near a flock of Crested Terns. At high tide they retired with the Crested Terns to a coastal sand bar where there was a large mixed flock of waders; mainly Pacific Golden Plover *(Pluvialis dominica fulva)*, Wandering Tattler *(Tringa incana)*, some very nervous Whimbrel *(Numenius phaeopus)* and Eastern Bar-tailed Godwit *(Limosa lapponica)*. Several dozen Grey Ducks *(Anas superciliosa)* were resting on the same sandbank. Grey Ducks commonly feed on tidal flats and reefs in Fiji, even swimming and diving for food just within the line of breakers on the reef at low tide.

None of the Little Terns was in breeding plumage. The species is regarded as a regular migrant in the tropical western Pacific where it has been recorded from the Mariana, Bonin, Bismarck and Solomon Islands (King 1967: 78). This is the first record of the species for Fiji. The specimen collected is now in the Fiji Museum (FM 112).

ORDER COLUMBIFORMES

Feral Pigeon *(Columba livia)*

Although not listed by either Mayr (1945) or Mercer (1966), feral pigeons were mentioned by du Pont (1976: 66) as occurring in Fiji. They are present on Viti Levu, Vanua Levu, Taveuni, and Ovalau and probably elsewhere. They were only observed in or in the vicinity of towns and villages, and cliff nesting or roosting away from human habitation has apparently not yet occurred in Fiji. Pigeons were probably introduced to Fiji by Methodist missionaries in the early 1840s. Williams (unpublished) shows dove-cotes in his drawings of early mission stations in Fiji, and mentions a Fijian chief asking him to repair his dove-cote for him.

ORDER APODIFORMES

Spine-tailed Swift *(Chaetura caudacuta)*

Recorded by Brown & Child (1975: 19) from Vatulele Island on 8 September 1972, and subsequently listed by du Pont (1976: 107).

ORDER PASSERIFORMES

Long-legged Warbler *(Trichocichla rufa cluniei)*

This new Vanua Levu subspecies of the rare Long-legged Warbler was discovered in the western central part of the island during a combined National Museum of New Zealand and Fiji Museum expedition on 10 June 1974 and was described by Kinsky (1975). The species was previously known only from Viti Levu, where it is often (possibly wrongly) considered extinct. The type specimen is held at the National Museum of New Zealand, Wellington (NMNZ 18520).

*House Sparrow *(Passer domesticus)*

A male House Sparrow, the first recorded in Fiji, was seen early on 20 May 1973 in Sukuna Park, Suva, Viti Levu. It was feeding and moving in association with a small flock of Redheaded Parrot Finches *(Erythrura cyanovirens)*. The sparrow roosted that night in a densely leafed sapling, and was seen at Sukuna Park, again with parrot finches, on 22 May 1973, but not thereafter. Sukuna Park is only a few hundred metres from the Suva wharves, and the House Sparrow might have been accidentally transported to Fiji aboard a cargo ship.

*White-backed Magpie *(Gymnorhina tibicen hypoleuca)*

The presence of the Black-backed Magpie *(G. t. tibicen)* on Taveuni Island has been known for a long time. Although that species is not listed by Mayr (1945), Mercer (1966: 14) and du Pont (1976: 182) both included it in their lists. However, a combined National Museum of New Zealand/Fiji Museum expedition to Taveuni in September and October 1972 found that the White-backed Magpie is also present on the island.

The exact details of the introduction of Australian Magpies to Taveuni Island have not been satisfactorily traced. In 1923 Rollo H. Beck (unpublished) of the Whitney South Sea Expedition was told that Magpies began nesting on Taveuni in 1894. This is in general agreement with claim of Ernie Douglas (B. D. Heather pers. comm.), a local planter, that his grandmother, Mrs James McConnell, imported magpies from Australia in about 1883, and that the Tart family brought in more magpies in about 1902. However, Adrian Tart, another local planter, told us that his grandfather introduced the first magpies from Australia in about 1915, and that a second lot, " to improve the original stock " was imported from Australia in the 1930s.

The main reason for introducing magpies to Taveuni was the hope that these " insectivorous " birds would, by feeding on stick insects, help to reduce the damage done by the insect to the extensive coconut plantations on the island. If Adrian Tart's information is correct, Black-backed Magpies, recorded by Beck in 1923 were introduced first and White-backed Magpies, recorded here for the first time,

were introduced later. Both subspecies are now well established on Taveuni, considerable hybridisation between the two subspecies occurs and hybrids can be observed throughout the low-lying areas of the island.

Although generally restricted to Taveuni, Magpies are occasionally reported from nearby Vanua Levu. It is, therefore, probably only a matter of time before Vanua Levu also is successfully colonised by these birds.

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TOHEROA PREDATION BY BLACK-BACKED GULLS ON DARGAVILLE BEACH, NORTH AUCKLAND, NEW ZEALAND

By P. M. BRUNTON

Factors causing predation of the clam *Paphies (Mesodesma) ventricosa,* the well-known " toheroa," by Black-backed Gulls are described. Counts of Black-backed Gulls made at approximately monthly intervals along a 23 kilometre stretch of beach between January 1970 and January 1971 and in December 1972, together with further observations between 1968 and 1975 show that Black-backed Gulls are important predators of toheroa.

INTRODUCTION

The toheroa, *Paphies (Mesodesma) ventricosa,* is the largest of a group of New Zealand beach clams and provides the basis for an important amateur fishery. Gulls and other seabirds have been known for many years to be predators of these clams, (e.g. Mestayer 1921) but there is uncertainty of the importance of various species of birds and the stage of the life cycle of toheroa at which they are vulnerable to such predation.

Both Black-billed and Red-billed Gulls (*Larus bulleri* and *L. novaehollandiae scopulinus*) were often seen by Dawson (1954) feeding on small or broken tuatua *(Paphies subtriangulatum)* along the shore of Pegasus Bay. Red-billed Gulls were noted by Rapson (1954) to paddle in streams on Northland beaches for young toheroa which came to the surface, and they were found also by Street (1971) to take young toheroa washed from the sand by wave action.

Oystercatchers (*Haemotopus* spp.) have been observed feeding on tuatua (Falla 1939), and Pied Oystercatchers *(H. ostralegus finchi)* are important predators of young toheroa at Te Waewae Bay, eating both animals removed from the sand and those exposed by wave action (Street 1971).

Rapson (1954) observed that Black-backed Gulls were less common than the Red-billed Gulls and ate only toheroa left stranded on the surface or those incompletely covered. Greenway (1969) recorded a comment by E. K. Saul that at Muriwai before 1966 Black-backed Gulls *(L. dominicanus)* took only toheroa that had been left by diggers. By 1966 the whole population had learned to dig small toheroas from undisturbed beds. In 1962 Greenway saw " gulls " taking toheroa from shallow water on Ninety Mile Beach.

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Although all these birds are predators of toheroa, their effect seems limited by the small size of the bird population. Only Street (1971) considered one species (the Pied Oystercatcher, which was always present in large numbers when toheroa were on the beach) as an important predator.

During observations on the biology and distribution of toheroa on Dargaville Beach between 1970 and 1972 (Redfearn 1974), it became apparent that Black-backed Gulls were considerably more adept at eating toheroa than had previously been realised and even though their numbers were not great, gull predation was a significant cause of both juvenile and adult mortality. Systematic observations on these gulls and their feeding behaviour were therefore carried out until 1975.

Dargaville Beach is an exposed sandy beach often pounded by heavy surf, lying on a north-west - south-east axis (Fig. 1). It was visited between 1968 and 1975. Counts of gulls between January 1970 and January 1971 and in December 1972 were carried out from a stationary or slow moving vehicle, using 7 x 35 binoculars when necessary.

FACTORS CAUSING TOHEROA TO BE VULNERABLE TO PREDATION

On first settling at about 2 mm., toheroa are distributed randomly over the littoral zone. They are soon collected by the surf and carried up the beach to form a band just below the high tide mark. As the juveniles grow, they gradually move down the beach to settle near the mid-tide level. Toheroa are scattered along the beach, but often form dense aggregations known as beds. Greatest densities are found in small bays (Redfearn 1974). The largest of these bays has probably been formed by streams which flow through them. Although sorted into these bays by coastal water movement, such placement around streams probably provides the moisture necessary for toheroa to withstand adverse environmental factors which often cause high mortalities on other sections of the beach.

Toheroa change levels on the beach by using wave movement, and sometimes whole beds of toheroa emerge in advance of a wave to be carried up the beach. Such migration seems to be confined to night time when bird predators are generally absent. The frequency of the behaviour is so far unknown. Many toheroa, however, are exposed during daylight hours, for their requirement to remain superficially placed in the sand while feeding can cause them to be partly exposed or dislodged through wave action. Some with their shell margins showing on the sand surface (Fig. 2) probably float out even under small waves.

Redfearn (1974) noted that heavy vehicular traffic semi-liquifies the sand, and toheroa are floated upwards towards the sand surface,

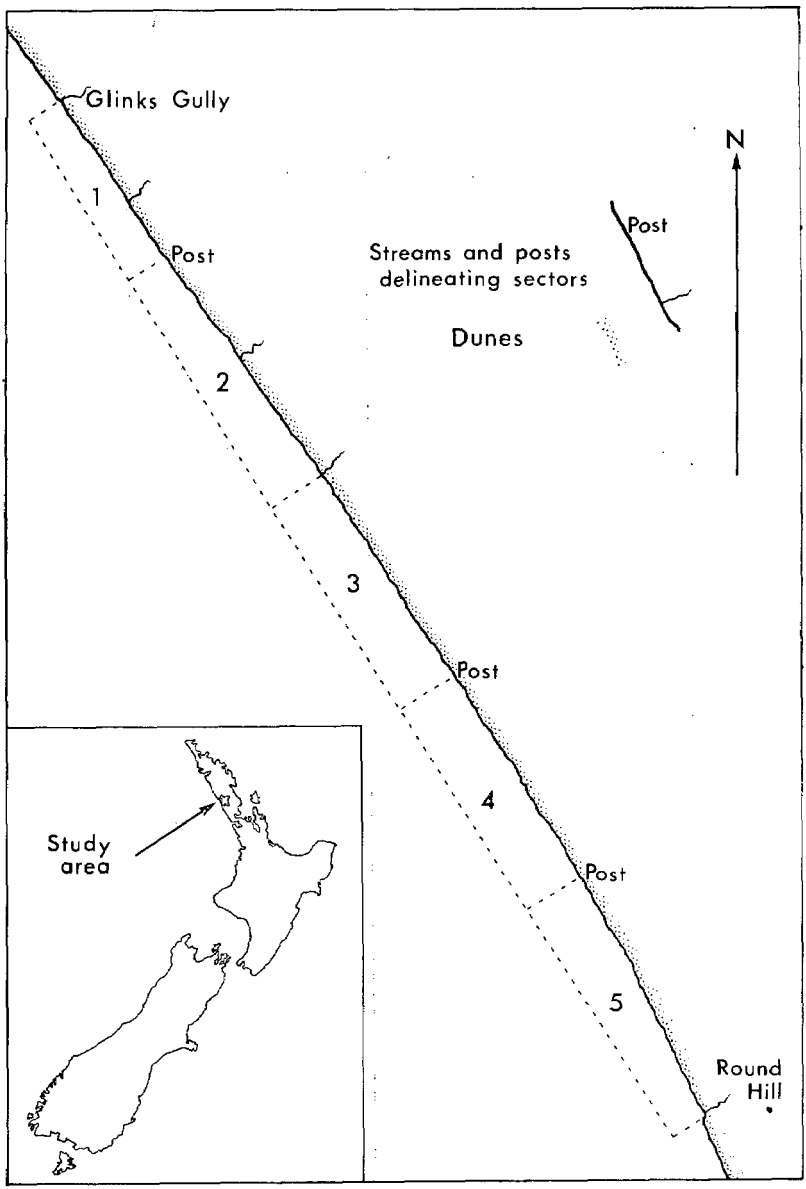

FIGURE 1 — Study area Dargaville Beach, North Island, New Zealand, showing beach sectors.

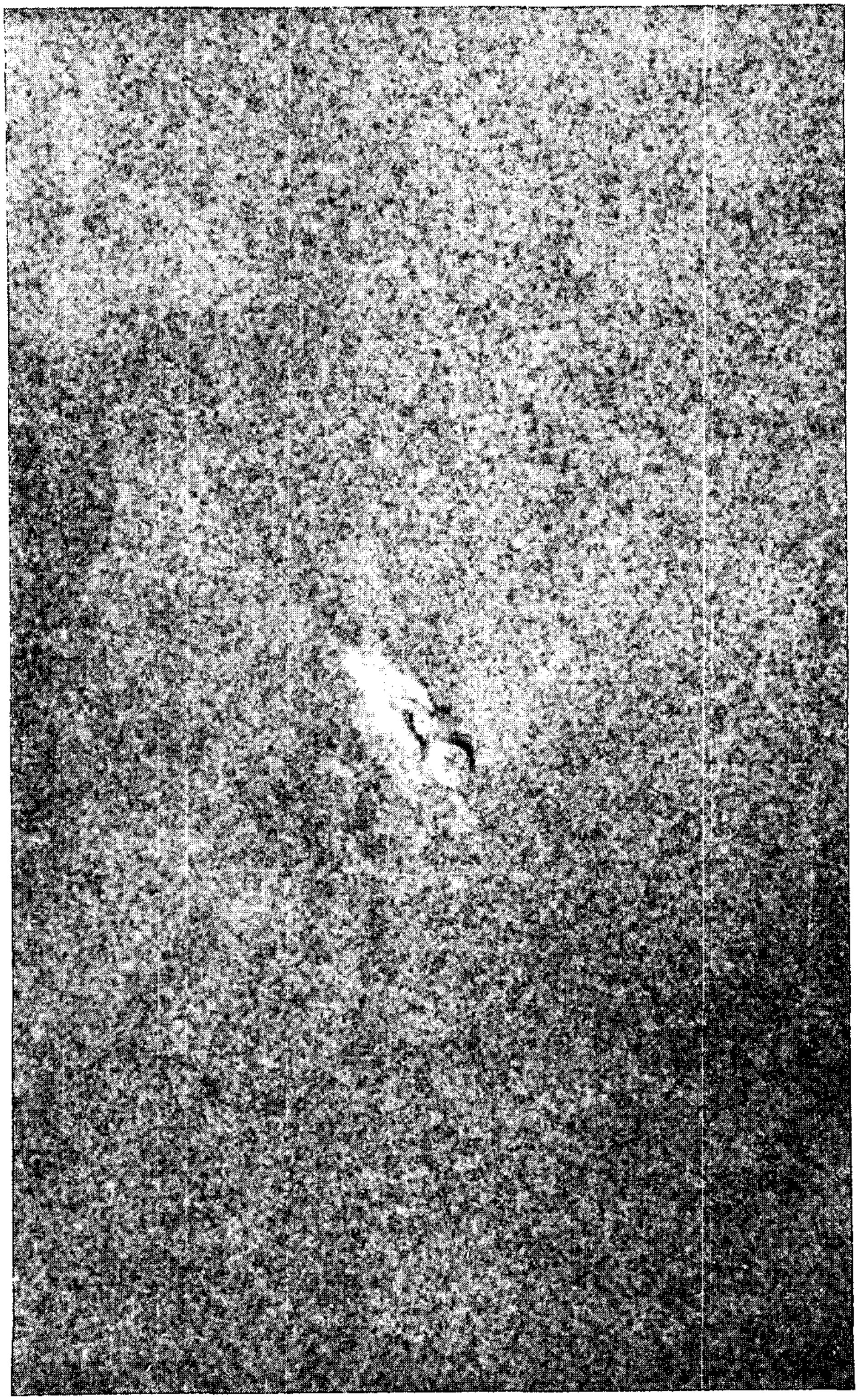

FIGURE 2 — A toheroa superficially placed in the sand and covered by water.

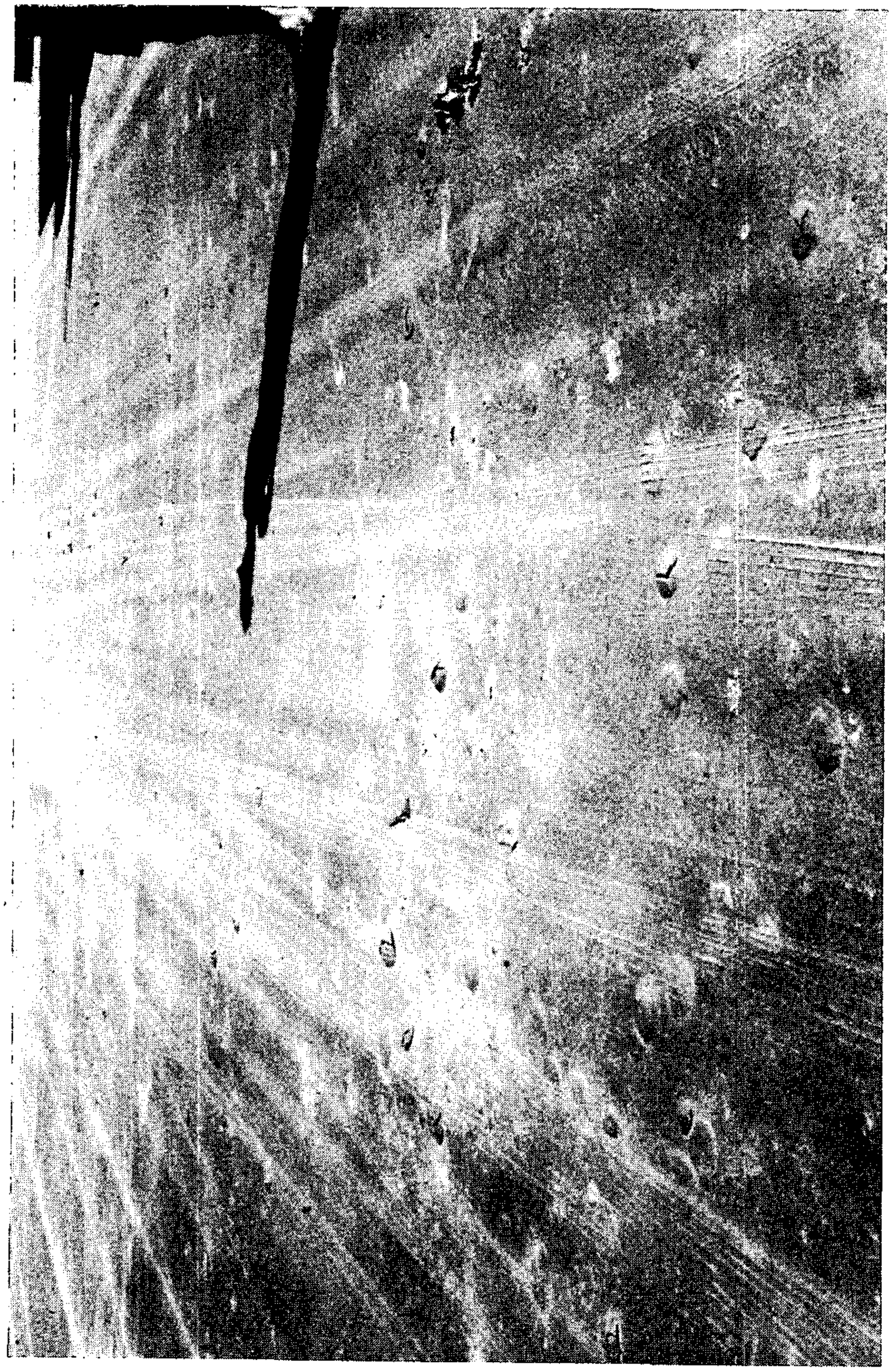

FIGURE 3 — The response that is sometimes observed when vehicular traffic passes over or near a toheroa bed.

forming a small hummock (Fig. 3). I have investigated this phenomenon further and believe that often a more complex mechanism is involved. Toheroa disturbed by the passage of a vehicle actively moved upwards. Some reached the surface quickly while others took several minutes. Toheroa could be heard moving in the sand for at least three minutes afterwards. It was noted that one pass was sufficient to cause a very notable response and that the elevation response occurred mainly during warmer months. Possibly, pressure (of the vehicle in this case, but waves normally) provides a cue which elicites the elevation response in toheroa prior to migration up the beach. Toheroa which have raised themselves in response to a stimulus (e.g. vehicular traffic, or to avoid burial during periods of rapid sand deposition) probably cannot rebury unless there is more than a certain minimum amount of water in the sand (usually when the tide again covers the bed) and so are highly vulnerable to predation.

NUMBERS AND DISTRIBUTION OF GULLS

The Black-backed Gull population was estimated at approximately monthly intervals along a 23 kilometre stretch of Dargaville Beach. To check on the distribution the beach was divided into sectors delineated by streams and permanent posts (Fig. 1). Total numbers are given for each count and the density calculated at numbers per kilometre (Table 1). Histograms of observed numbers per kilometre of each sector as against the mean value for all sectors are given in Fig. 4. It can be seen that above average values reflected a tendency for gulls to congregate near the stream draining the Glinks settlement, especially during the summer, and an increase in the numbers of gulls on the southern end of the beach during the breeding season. Black-backed Gulls were more numerous than Red-billed Gulls (compare Table 1 and Appendix Table).

METHODS USED BY GULLS TO CAPTURE AND OPEN TOHEROA

Observations showed that Black-backed Gulls obtained toheroa by:

1. Catching shellfish washed out of the sand by wave action before they could rebury.
2. Digging into and removing toheroa from hummocks after vehicles had passed over a bed.
3. Eating recently metamorphosed shellfish that had been carried up the beach by the wave front to be deposited along the high-tide line.
4. Consuming shellfish which through adverse environmental factors have been left stressed and dying, as well as those which have been excavated by people and not properly reburied.

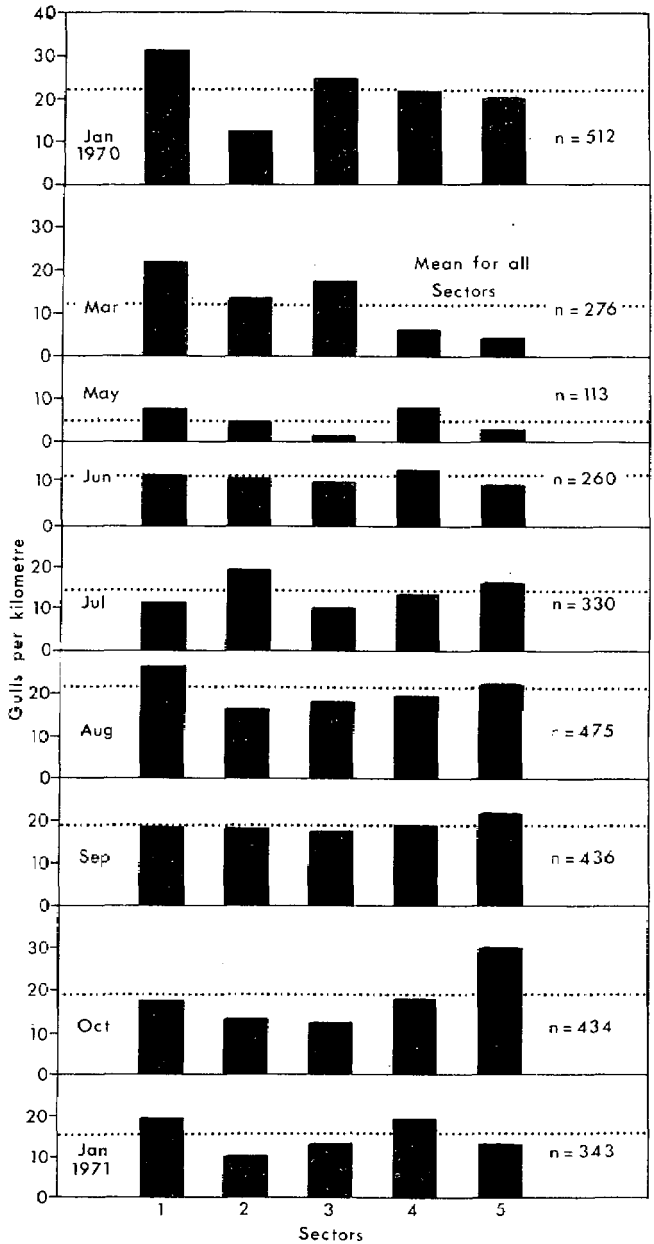

FIGURE 4 — Histograms showing the number of Gulls per kilometre for each section as compared with the mean number per kilometre for all sectors.

Month	Sector	1	2	3	4	5	Total	Mean
	Length	4.0 Km	4.0 Km	4.8 Km	4.8 Km	5.6 Km	No.	No/Km
Jan,1970		125(6)	50(2)	119(20)	105(15)	113(27)	512	
	Per Km	31	13	25	22	20		22
Mar		87(34)	54(6)	84(20)	31(2)	20(0)	276	
	Per Km	22	14	18	7	4		12
May		31(10)	19(1)	6(1)	38(11)	19(5)	113	
	Per Km	8	5	1	8	3		5
Jun		48(2)	46(1)	51(0)	63(0)	52(0)	260	
	Per Km	12	12	11	13	9		11
Jul		46(5)	78(6)	49(0)	65(2)	92(2)	330	
	Per Km	12	20	10	14	16		14
Aug		106(9)	66(2)	86(4)	94(0)	123(8)	475	
	Per Km	27	17	18	20	22		21
Sep *		74(4)	72(3)	85(0)	90(2)	115(4)	436	
	Per Km	19	18	18	19	21		19
Oct		70(10)	53(2)	60(0)	86(3)	165(6)	434	
	Per Km	18	13	13	18	30		19
Jan,1971		77(11)	41(1)	64(0)	91(0)	70(7)	343	
	Per Km	20	10	13	19	13		15
Dec,1972		-	-	-	-	-	600	

TABLE 1 — Counts and densities (No/Km) of Black-backed Gulls by sector and month on Dargaville Beach. Figures in parenthesis are numbers of immature gulls. * = mean of two counts.

5. Taking shellfish that are not visible at the surface. Twenty-four such toheroa were thus removed in 33 attempts by birds in December 1970 on a day during which no traffic had passed over the beach.
6. " Paddling " — a ' marking time ' action (Tinbergen 1953) — was sometimes observed when Black-backed or Red-billed Gulls were standing in streams, shallow seawater or the saturated zone of the beach (characterised by having a continuous water slick on its surface). On Dargaville Beach such an action causes recently settled toheroa to float out of the sand (cf. Rapson 1954).

Small toheroa were eaten whole (Fig. 5), whereas larger shellfish were carried high above the beach and dropped, two or three (up to six) times to break the shell. Once the shell was broken the gull would endeavour to shake the meat free. A snipping action (probably at the anterior and posterior adductor muscles) would finish off the meal.

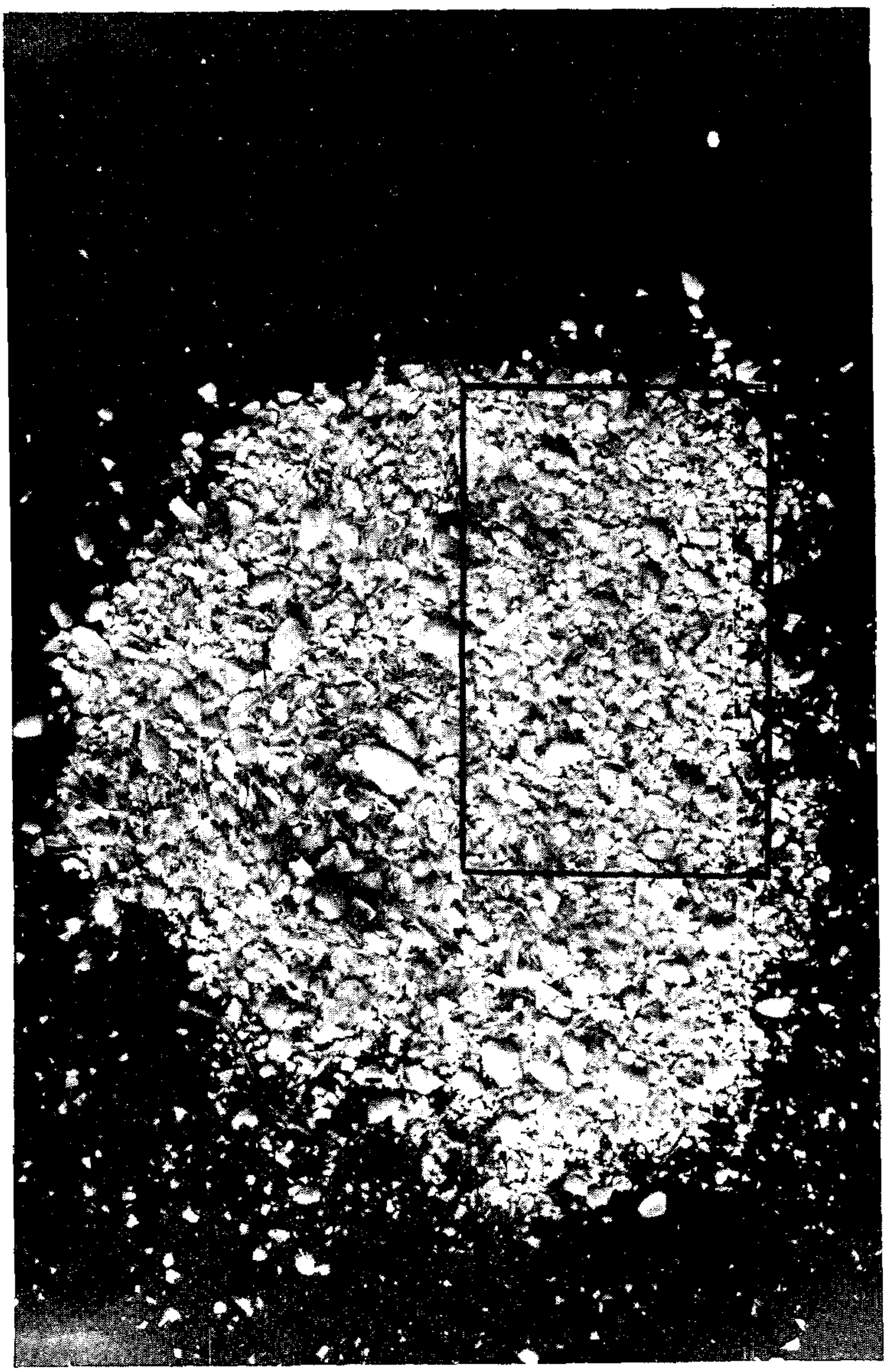

FIGURE 5 — A single Black-backed Gull regurgitation.

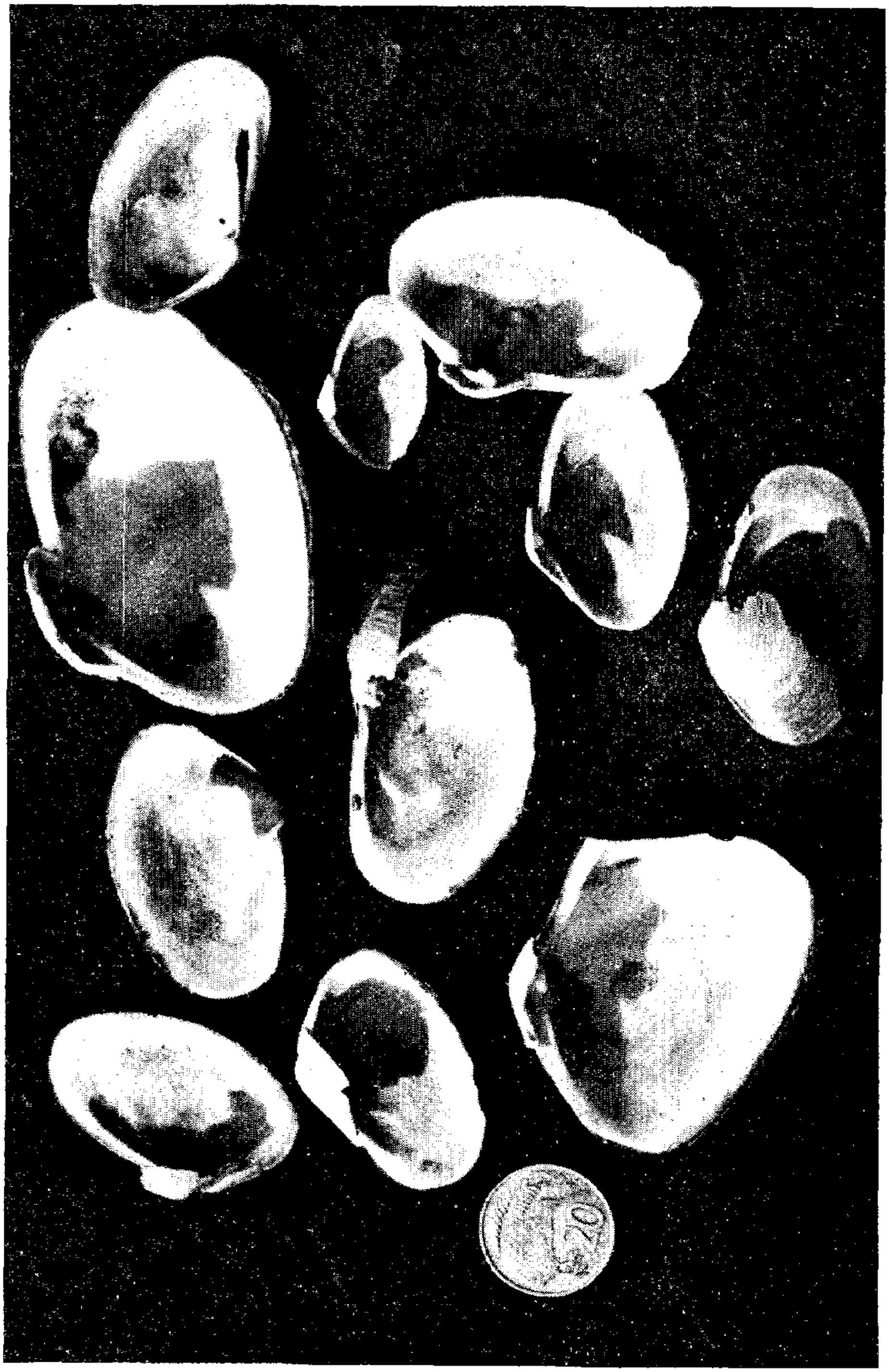

FIGURE 6 — Damage to shells resulting from predation by Black-backed Gulls.

Contrary to Rapson's observations, I found that gulls could readily carry large (120-130 mm) toheroa high enough to break them.

Most shells examined on the beach following predation revealed one fractured and one intact valve (Fig. 6). In an experiment, 20 toheroa of similar size to those being exposed by waves were removed from the substrate and thrown 3-6 m vertically. Examination of the specimens showed all had one broken valve, and in 19 the hinge piece remained attached to the undamaged valve.

To obtain further information on feeding, observations were made over a 3-day period in December 1972 at Glinks and Blackrock Streams, where large numbers of small toheroa occurred at that time.

At the Glinks Stream station, about 180 Black-backed Gulls were scattered along the beach for approximately 500 m north of the stream. Most were feeding just above the saturated zone and were lined-out parallel to the wave front. When a wave of sufficient strength to dislodge toheroa receded, they would fly out to look for shellfish exposed by the backwash. Toheroa not consumed immediately were either picked up while hovering or when the approach of another gull or a wave motivated them into doing so. Numbers of dislodged toheroa well exceeded the demands of the gulls, indicating that, at the time, a much smaller shellfish population would have been an adequate food source.

At the Blackrock Stream station, most of the gulls (of which about 80% were immature) occupied a position close to the stream enabling the whole flock of about 70 birds to be easily observed. Approximately 10% were engaged in feeding with an almost continuous procession of gulls leaving and joining the flock. From time to time, however, the entire flock flew down the beach to begin feeding or searching. During a one-hour period this was observed on four occasions, with virtually all the gulls appearing successful. One bird took 5 shellfish in 1¼ hours, and three others took 3-4 shellfish in 20-25 minutes. The gulls ate a minimum of 20 small (4-6 cm) toheroa on each day of the observations. Gulls fed on both in-coming and out-going tides but were relatively inactive when the tide was below the shellfish bed. Predation was observed throughout the study area, and over the three-day period, toheroa appeared to be the main source of food for the gulls.

Gulls feeding along the tide front may not take toheroa exclusively. In January and March 1975 they were found to be feeding primarily on tuatua. These visits coincided with very low tides when tuatua (which are found below the mean low tide mark) are more vulnerable. Toheroa (except those brought to the surface through vehicular traffic, and juveniles present in the top few millimetres of the saturated zone) were less vulnerable as the wave force was in-

sufficient to expose them. It has been suggested (Redfearn pers. comm.) that gulls on Dargaville Beach generally feed from the tide front. Changing beach and tide conditions brought about by climatic factors or traffic, along with natural changes in the toheroa population structure, would therefore present the gulls with different size groups of toheroa, or a different species altogether.

Occasionally Black-backed Gulls were seen eating other storm-cast molluscs such as *Dosinia* sp., *Mactra* sp. and *Spisula* sp.

DISCUSSION

Contrary to earlier reports, my observations show that Black-backed Gulls on Dargaville Beach have little difficulty taking all sizes of toheroa. Both immature and adult gulls were effective predators. Gull predation was evident on most visits to the beach between 1968 and 1975. During the 3-day visit in December 1972, the 600 gulls present could have consumed 36 000 4-6 cm toheroa (20 toheroa per gull per day). Surf-exposed toheroa provided the gulls with a regular source of shellfish. Meteorological records for Dargaville from 1961-70 show that winds conducive to surf conditions occurred on average about 203 days per year. Hence, in 1970 the gull population (mean number 353) could have eaten about 1.5×10^6 toheroa.

More important than the numbers eaten is the contribution to total mortality. No endemic diseases are known in toheroa, and on Dargaville Beach they are unlikely to die of old age. Specimens 7 years or older are rarely found whereas in a less exploited population in the South Island, New Zealand, 23 year old toheroa are not uncommon. Stock depletion (after human predation) is probably due to gull predation and adverse environmental conditions, the latter of which cause high summer mortalities. My observations suggest that these are not always catastrophic, but because they usually occur over short periods of time, the local effect is high. Gull predation, on the other hand, is continuous.

It seems that on Dargaville Beach, at least, predation by a moderate population of Black-backed Gulls has been found to be potentially a major cause of mortality. The seriousness of gull predation should, therefore, not be underestimated.

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Month	Sector Length	1 4 Km	2 4 Km	3 4.8 Km	4 4.8 Km	5 5.6 Km	Total No.	Mean No/Km
Jan,1970		121	84	103	79	59	446	19.8
Mar		133	136	190	73	80	612	27.2
May		48	39	38	37	1	163	7.2
Jun		34	23	19	25	5	106	4.7
Jul		27	50	36	55	10	178	7.9
Aug		30	51	33	45	6	165	7.3
Sep		* 3	*30	*22	*23	*22	*89	4.0
Oct		-	-	-	-	-	-	-
Jan,1971		20	7	20	19	28	94	4.2
Jan,1970		-	-	-	7	14	21	-
Mar		-	-	-	1	6	7	-
May		-	-	-	-	-	-	-
Jun		-	-	-	-	-	-	-
Jul		-	-	-	2	6	8	-
Aug		-	-	-	2	14	16	-
Sep		-	-	-	-	*13	13	-
Oct		-	-	-	2	2	4	-
Jan,1971		-	-	-	3	3	6	-

APPENDIX TABLE — Numbers of Red-billed Gulls and Oystercatchers, Dargaville Beach, January 1970 - January 1971.
* = mean of two counts; - = 0.

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SEABIRDS FOUND DEAD IN NEW ZEALAND IN 1976

By C. R. VEITCH

ABSTRACT

During 1976, 2 826 kilometres of coast were patrolled by 151 members of the Ornithological Society of New Zealand and their friends. 5 990 dead seabirds were found. There were no major wrecks. A number of minor wrecks involving Blue Penguins *(Eudyptula minor)*, White-headed Petrels *(Pterodroma lessoni)*, Sooty Shearwaters *(Puffinus griseus)* and Fairy Prions *(Pachyptila turtur)* are recorded. White-faced Storm Petrels *(Pelagodroma marina)* were found in higher numbers than ever before particularly on Canterbury South beaches. Patrols of Mason's Bay, Stewart Island, were the major factor contributing to the highest ever total of Mottled Petrels *(Pterodroma inexpectata)*. The Grey Ternlet *(Procelsterna cerulea)* found is a second record and the Black-fronted Tern *(Chlidonias hybrida)* a new record for beach patrolling. The Christmas Island Shearwater *(Puffinus nativitatis)* found is a new record for the New Zealand region.

INTRODUCTION

This paper records the results of the Ornithological Society of New Zealand's Beach Patrol Scheme for 1976. The coastline of New Zealand is divided into 15 sections (Imber & Boeson 1969) with an additional grouping " OI " for Outlying Islands which this year includes patrols from the Chatham Islands. This year patrols were carried out on all sections of coast except Fiordland. 536 Beach Patrol Cards and 21 Specimen Record Cards were filed.

Nomenclature follows the *Annotated Checklist* (OSNZ 1970), except that, to save space in the tables, some tri-nomials have not been used.

RESULTS AND DISCUSSION

The numbers of birds found and kilometres of beach travelled and covered per month and per coast are recorded in Table 1. The total distance travelled (3 284 kilometres) is close to average for the past 8 years (3 257 kilometres) and the total number of birds found (5 990) is normal for a year with no major wrecks. The average number of birds found per kilometre of coast covered monthly (2.12) is, therefore, also close to average. Kilometres travelled (Table 1) are the total lengths of coast patrolled; kilometres covered are the lengths of coast covered monthly. Hence, if a kilometre of beach is patrolled 3 times in one month, 3 kilometres have been travelled but only one kilometre covered per month.

TABLE I Numbers of Dead Seabirds Recorded and Kilometres of Coast Patrolled in 1976*

COAST	CODE		MONTHS JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTALS KM	TOTALS BIRDS	BIRDS/KM MONTH
AUCKLAND WEST	AW	Km	133	93	53	107	98	195	72	124	161	87	87	99	1309		
		Birds	535	197	11	77	180	259	71	148	1892	97	205	200		3872	2.2
TARANAKI	T	Km	17	12	7	13	15	14	8	40	26	-	-	5	157		
		Birds	36	7	3	4	4	0	1	17	5	-	-	2		79	0.5
WELLINGTON WEST	WW	Km	13	13	10	-	13	34	21	23	15	1	6	1	150		
		Birds	106	99	11	-	6	54	12	45	8	0	3	0		344	2.3
WESTLAND	WD	Km	-	-	-	-	-	-	-	-	4	-	4	1	9		
		Birds	-	-	-	-	-	-	-	-	1	-	1	1		3	0.3
AUCKLAND EAST	AE	Km	84	27	36	64	49	39	85	63	33	44	40	46	610		
		Birds	96	46	52	119	26	19	34	38	15	13	33	78		569	0.9
BAY OF PLENTY	BP	Km	6	10	2	2	3	4	11	14	3	8	1	-	64		
		Birds	26	3	1	2	1	4	5	2	3	0	4	-		51	0.8
EAST COAST NORTH ISLAND	EC	Km	-	-	-	-	-	4	-	-	2	-	-	-	6		
		Birds	-	-	-	-	-	11	-	-	1	-	-	-		12	0.5
WAIRARAPA	WA	Km	16	-	-	6	-	-	-	-	-	-	5	-	27		
		Birds	13	-	-	1	-	-	-	-	-	-	1	-		15	0.6
CANTERBURY NORTH	CN	Km	11	1	-	5	1	4	-	4	5	1	-	-	32		
		Birds	10	7	-	5	1	2	-	3	7	2	-	-		37	1.2
CANTERBURY SOUTH	CS	Km	7	5	6	7	6	5	3	7	8	9	8	7	78		
		Birds	10	11	28	68	11	5	9	7	12	9	22	18		210	2.7
OTAGO	O	Km	13	7	1	-	-	-	-	-	-	-	-	-	21		
		Birds	13	11	3	-	-	-	-	-	-	-	-	-		27	1.3
SOUTHLAND	S	Km	21	17	8	6	12	6	6	6	-	-	-	15	97		
		Birds	90	171	9	5	34	4	2	1	-	-	-	58		374	3.9
WELLINGTON SOUTH	WS	Km	19	15	6	3	9	19	31	1	18	9	19	4	153		
		Birds	11	31	1	3	24	22	46	1	41	10	18	3		211	1.4
NORTH COAST SOUTH ISLAND	NS	Km	8	2	-	4	-	4	2	3	4	2	-	8	37		
		Birds	91	10	-	8	-	10	10	2	1	0	-	18		150	4.1
OUTLYING ISLANDS	OI	Km	-	-	-	-	68	-	-	-	3	5	-	-	76		
		Birds	-	-	-	-	34	-	-	-	0	2	-	-		36	0.5
TOTAL KILOMETRES TRAVELLED			387	234	162	272	310	385	277	352	329	210	178	188	3284		
TOTAL KILOMETRES COVERED			348	202	129	217	274	328	239	285	282	166	170	186	2826		
TOTAL BIRDS RECORDED			1037	593	119	292	321	390	190	264	1986	133	287	378		5990	
BIRDS/KILOMETRE COVERED/MONTH			3.0	2.9	0.9	1.3	1.2	1.2	0.8	0.9	7.0	0.8	1.7	2.0			2.12

*There were no patrols on the Fiordland Coast

Although there were no major wrecks this year a number of minor wrecks have obscured any seasonal pattern of mortality. Monthly and coastal distribution of the more common birds is given in Tables 3 and 4 and of the less common birds in Table 2.

In January, following two periods of strong south-west winds, numbers of Blue Penguins *(Eudyptula minor)* and White-headed Petrels *(Pterodroma lessoni)* were higher than usual on Auckland West beaches. Sooty Shearwaters *(Puffinus griseus)* were more abundant on both Auckland West and Taranaki beaches. Fairy Prions *(Pachyptila turtur)* were found in higher numbers than usual on Wellington West beaches.

In February there was a continuation of the high numbers of White-headed Petrels and Sooty Shearwaters on Auckland West beaches. Additional numbers of Fairy Prions were recovered from both Auckland West and Wellington West beaches.

In April, for no apparent reason, there was an increase in numbers of Blue Penguins found on Auckland East beaches.

In September, following a deep depression west of Hokitika and a period of strong south-west winds, 1 530 Fairy Prions were found on Auckland West beaches north of the Kaipara Harbour. Patrols were carried out south of this point in both Auckland West and Wellington West areas but normal numbers of Fairy Prions were found there.

Gulls, both Black-backed *(Larus dominicanus)* and Red-billed *(L. novaehollandiae)* are a feature of North Coast S.I. results as many patrols there were along the Nelson Boulder Bank where many gulls are reported to be shot.

Canterbury South patrols recorded the usual high number of Spotted Shags *(Stictocarbo punctatus)* and this year there were also more White-faced Storm Petrels *(Pelagodroma marina)* than in past years. More east and south-east winds than usual in March and April increased the numbers of all species found on Canterbury South beaches during those months.

Southland totals were markedly affected by three patrols on Mason's Bay, Stewart Island, in January, February and December. These recorded high numbers of Sooty Shearwaters and were the major factor contributing to the highest ever total of Mottled Petrels *(Pterodroma inexpectata)* (48 birds; previous highest 29 birds in 1975).

More Grey-headed Mollymawks *(Diomedea chrysostoma)* were found this year (75 birds; being twice the previous average), particularly on Auckland West beaches in August and September.

The Grey Ternlet *(Procelsterna cerulea albivitta)* found in Auckland West in April is the second time this species has been recorded in the Beach Patrol Scheme (previous record: one bird in 1974).

TABLE 2: Seabirds of which 1 to 5 specimens were found dead in 1976. Coast and month of discovery given.

SPECIES OR SUBSPECIES	NUMBER FOUND	COAST(S)	MONTH(S)
Megadyptes antipodes	4	CS(3), O	JAN, APR (3)
Eudyptes p. pachyrhynchus	4	WD(2), S	FEB(2), SEP, NOV
atratus	1	S	FEB
sclateri	1	CS	APR
Diomedea epomophora	4	WS(4)	JAN, JUN, JUL, NOV
cauta salvini	4	AW(4)	FEB, SEP(3)
Pterodroma spp*	3	AE(2), NS	JAN(3)
h. nigripennis	2	AE,OI	MAR, MAY
Procellaria cinerea	4	AW(3), OI	MAY(3), DEC
aequinoctialis	5	AW(4), S	JAN, FEB, MAY, DEC(2)
Garrodia nereis	1	WS	JUL
Phalacrocorax carbo	5	AW,AE,BP,CN,WS	FEB(3), APR, DEC
melanoleucos	3	AE,WS(2)	APR, JUL, SEP
Leucocarbo carunculatus onslowi	5	OI(5)	MAY(5)
Stercorarius skua lonnbergi	2	AW(2)	FEB, SEP
parasiticus	1	AW	FEB
Chlidonias hybrida	1	WS	JUN
Sterna spp	2	AW,BP	JAN, FEB
Procelsterna cerulea	1	AW	APR
TOTAL	53		

Species could not be identified by patroller

The Black-fronted Tern *(Chlidonias hybrida)* found in Wellington South in June, is a new record for beach patrolling. It is included as a seabird on the strength of Sibson's (1970) statement that this species in winter commonly feeds offshore.

The Christmas Island Shearwater *(Puffinus nativitatis)* found near Dargaville in February (Crockett 1977) is the first time this species has been found in the New Zealand region. This find has been inadvertently excluded from the tables in this paper.

Miscellaneous birds recorded, but not considered to be seabirds, totalled 112. There were:—

18 Rock Pigeons, 11 Magpies, 10 Blackbirds, 9 South Island Pied Oystercatchers, 9 Black Swans, 5 Grey Ducks, 3 each of Mallard and Paradise Ducks, unidentified ducks, Harriers, California Quail, Godwits, Kingfishers, Song Thrushes and Starlings, two each of Variable Oystercatchers, Pheasants, Mynas and Pipits, and one each of Stewart Island Kiwi, White-faced Heron, Reef Heron, Goose, Western Weka, Buff Weka, Pukeko, Golden Plover, Pied Stilt, Wood Pigeon, Morepork, Skylark, Greenfinch, Redpoll and unidentified passerine.

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TABLE 3 - Coastal Distribution of the More Common Seabirds Found Dead in 1976

SPECIES OR SUBSPECIES	AW	T	WW	WD	AE	COAST BP	EC	WA	CN	CS	O	S	WS	NS	OI	TOTAL BIRDS
Eudyptula minor	317	9	17	-	176	8	-	1	1	10	7	15	9	6	1	577
albosignata	-	-	-	-	-	-	-	-	4	21	1	-	-	-	-	26
Diomedea spp*	14	1	1	-	1	-	-	1	-	-	-	9	6	2	-	35
exulans	14	1	1	-	-	-	-	-	-	2	-	1	1	-	-	20
melanophris	2	-	1	-	1	-	-	-	-	-	-	1	1	-	-	6
chrysostoma	70	-	3	-	-	1	-	-	-	-	-	-	1	-	-	75
bulleri	5	-	1	-	-	-	1	-	-	-	-	1	1	-	-	9
cauta subspp*	26	-	-	-	-	-	-	-	-	-	-	1	-	-	-	27
cauta	4	-	1	-	-	-	-	-	-	-	-	2	1	-	-	8
Phoebetria palpebrata	8	1	-	-	-	1	-	-	-	-	-	-	-	-	-	10
Macronectes giganteus	22	-	2	-	1	-	-	-	-	3	-	3	3	-	1	35
Fulmarus glacialoides	7	-	2	-	-	-	-	-	-	-	-	1	-	-	-	10
Daption capensis	24	-	-	-	6	-	-	1	1	4	-	2	16	-	-	54
Pterodroma macroptera	48	-	-	-	9	-	-	-	-	-	-	-	-	-	-	57
lessoni	101	1	3	-	-	-	-	-	-	-	-	1	-	1	-	107
inexpectata	15	1	-	-	-	-	-	-	-	-	-	32	-	-	-	48
brevirostris	31	-	1	-	-	-	-	-	-	-	-	-	-	-	-	32
cooki	4	-	-	-	17	4	-	-	-	-	-	2	-	-	-	27
Halobaena caerulea	6	1	-	-	1	-	-	-	-	-	-	-	-	-	-	8
Pachyptila spp*	114	2	68	-	11	-	-	-	2	-	-	30	16	-	-	243
vittata	30	-	3	-	5	-	-	3	-	1	1	8	1	-	-	52
salvini	31	-	2	-	1	-	-	-	-	-	-	-	-	-	-	34
desolata	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20
belcheri	21	2	2	-	9	-	-	-	-	-	-	-	-	-	-	34
turtur	1722	3	141	-	20	2	10	-	1	4	-	2	34	8	3	1950
Procellaria westlandica	1	-	-	-	-	-	-	-	-	2	-	-	3	1	-	7
Puffinus spp*	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	6
carneipes	14	1	-	-	52	-	-	-	-	-	-	-	1	2	-	70
bulleri	47	2	6	-	16	2	-	2	-	1	-	-	6	-	5	87
griseus	478	20	19	1	39	8	-	-	4	18	2	214	25	3	17	848
tenuirostris	120	-	2	-	33	1	-	1	-	6	-	3	1	-	-	167
gavia	211	7	15	-	48	5	-	1	2	4	-	3	9	3	-	308
huttoni	23	-	1	-	-	-	-	-	-	-	-	-	-	-	-	24
assimilis	10	1	-	-	2	-	-	-	-	-	-	-	-	-	1	14
Pelagodroma marina	6	-	-	-	1	-	-	-	-	17	-	1	-	-	-	25
Pelecanoides urinatrix	71	1	9	-	28	6	-	-	-	-	-	10	18	-	-	143
Sula bassana	89	4	5	-	34	3	1	1	-	-	-	-	6	-	-	143
Phalacrocorax varius	3	-	-	-	1	1	-	-	-	-	-	-	-	2	-	7
Leucocarbo c. chalconotus	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	6
Stictocarbo punctatus	11	-	-	-	-	-	-	-	5	65	9	2	-	6	-	98
Larus dominicanus	62	8	30	-	17	1	-	2	11	27	1	12	34	80	1	286
novaehollandiae	7	9	6	-	30	5	-	-	4	14	-	6	7	29	-	117
bulleri	-	-	-	-	-	-	-	-	-	-	5	2	1	-	-	8
Hydroprogne caspia	6	1	-	-	-	-	-	-	-	-	-	-	1	-	-	8
Sterna striata	38	1	-	-	5	1	-	2	1	7	-	-	-	6	-	61
TOTALS	3855	79	344	1	564	49	12	15	36	206	26	370	202	149	29	5937

* Species or subspecies could not be identified by patroller

TABLE 4 - Monthly Distribution of the More Common Seabirds Found Dead in 1976.

SPECIES OR SUBSPECIES	MONTHS JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL BIRDS
Eudyptula minor	91	47	21	110	108	45	56	14	52	8	10	15	577
albosignata	-	1	7	17	-	-	-	-	1	-	-	-	26
Diomedea spp*	6	8	-	3	-	2	1	2	7	-	1	5	35
exulans	4	1	-	1	-	8	-	-	1	-	2	3	20
melanophris	-	1	-	1	-	2	-	-	2	-	-	-	6
chrysostoma	-	2	1	-	-	7	2	15	43	5	-	-	75
bulleri	-	-	-	-	2	5	1	-	1	1	-	-	9
cauta subspp*	4	2	-	-	-	10	4	3	-	-	3	1	27
cauta	-	-	-	-	1	2	3	-	-	-	-	2	8
Phoebetria palpebrata	1	-	-	-	-	4	-	-	4	-	-	1	10
Macronectes giganteus	3	-	1	1	1	8	5	2	6	3	1	4	35
Dulmarus glacialoides	-	5	-	-	-	-	-	-	4	-	-	1	10
Daption capensis	8	-	-	2	2	-	2	5	23	7	2	3	54
Pterodroma macroptera	9	4	1	5	3	9	-	10	3	1	7	5	57
lessoni	42	14	-	2	5	18	1	3	9	6	5	2	107
inexpectata	2	20	2	-	2	-	-	-	-	-	3	19	48
brevirostris	-	-	-	-	-	1	-	-	27	4	-	-	32
cooki	6	1	2	3	-	-	-	-	-	1	2	12	27
Halobaena caerulea	-	-	-	-	-	-	-	4	3	-	1	-	8
Pachyptila spp*	35	60	7	-	2	26	7	43	37	7	12	7	243
vittata	11	3	2	1	-	2	-	3	16	1	8	5	52
salvini	-	-	-	-	-	17	-	-	13	1	2	1	34
desolata	-	-	-	-	2	9	-	4	4	-	1	-	20
belcheri	-	-	-	-	-	5	1	20	-	1	2	5	34
turtur	94	70	1	3	7	68	21	47	1564	17	47	11	1950
Procellaria westlandica	1	-	-	-	-	-	2	-	1	-	3	-	7
Puffinus spp*	-	3	-	-	1	1	1	-	-	-	-	-	6
carneipes	4	17	17	7	1	-	-	1	-	1	3	19	70
bulleri	31	16	5	7	7	1	-	-	1	2	10	7	87
griseus	336	158	7	31	82	20	5	2	2	36	84	85	848
tenuirostris	51	7	-	-	22	6	1	-	1	4	12	63	167
gavia	83	34	10	14	4	9	9	15	84	3	11	32	308
huttoni	1	-	-	-	-	-	-	-	17	-	6	-	24
assimilis	3	-	-	-	2	2	-	2	-	-	3	2	14
Pelagodroma marina	1	3	2	3	1	1	1	2	4	1	3	3	25
Pelecanoides urinatrix	26	11	3	2	21	30	20	9	7	1	4	9	143
Sula bassana	29	18	2	5	4	9	11	18	13	5	11	18	143
Phalacrocorax varius	3	1	-	1	-	-	1	1	-	-	-	-	7
Leucocarbo c. chalconotus	2	1	1	-	-	-	1	-	-	-	-	1	6
Stictocarbo punctatus	13	9	12	22	8	6	3	6	9	3	4	3	95
Larus dominicanus	78	33	5	22	13	45	19	16	12	11	11	21	286
novaehollandiae	35	15	5	6	5	10	9	9	8	2	9	4	117
bulleri	1	5	1	-	1	-	-	-	-	-	-	-	8
Hydroprogne caspia	-	1	-	-	1	-	-	4	1	1	-	-	8
Sterna striata	16	11	3	16	3	-	-	4	1	-	2	5	61
TOTALS	1030	582	118	285	311	388	187	264	1980	133	285	374	5937

*Species or subspecies could not be identified by patroller

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A CORRECTION

In PCB's appreciation of Sir Charles and Lady Fleming (*Notornis* 24: 290; December 1977), reference was made, by way of a proof-reading lapse, to Lady Fleming's talents as a " home baker." Whereas this may be true in fact, what the writer intended was " home maker." We apologise for the confusion.

SHORT NOTES

THE UNSEXING OF THE CAPE PIGEON

On p. 206 of *Notornis* 24 (1977) I observe that the Cape Pigeon of the Snares Islands has been neutered(1). As explained on p. 177 of Helen Oliver's *'Annotated Index of N.Z. Bird Literature,' Daption* is an anagram of Pintado.

Admittedly *-on* is the neuter ending of hundreds of common Greek adjectives; and also there are numerous neuter nouns ending in *-ion,* denoting diminutiveness or endearment, e.g. *-paidion,* little child; *therion,* small animal; *xiphidion,* little sword, etc. But there is also no shortage of strong masculine nouns ending in *-ion* e.g. *Arion,* the illustrious musician, who escaped villainy at sea by hitching a lift on the back of a friendly dolphin, possibly a progenitor of Opo; *Bion,* a poet; *Hyperion,* the sun or the sun's father. *Pandion,* once a king of Athens and now the Osprey, has not been emasculated, for his American and Australian subspecies are known respectively as *carolinensis* and *cristatus.*

Why, then, should such insulting treatment have been meted out to birds as hardy and virile as *Daption?* Condon's *Checklist of the Birds of Australia* (1975) makes confusion(2) more confounded (p. 19) by listing *Daption capense australis.*

Surely such tampering with an established and logical nomenclature is unnecessary and muddle-headed. May we please follow Alexander(3), Oliver, Serventy, and our own Checklists, the authors of which examined this question of genders very carefully. Incidentally, from the taxonomic standpoint, *Daption capense* would appear to be the only sexless bird on the New Zealand list.

(1) In an age obsessed with Abortion, Contraception and Sterilisation this perhaps is not surprising. Have Pintados been added to the list of threatened species?

(2) In the modern vernacular, he seems to have got his knickers properly in a twist. Consequently, the Cape Pigeons of the Snares have become in Australia either neutroherms or neutraphrodites.

(3) *Capense* of first edition *Birds of the Ocean* (1928) becomes *capensis* of second edition (1955).

R. B. SIBSON, *26 Entrican Avenue, Auckland 5*

DEFORMED FEET OF SPUR-WINGED PLOVERS AND PIED STILT IN SOUTHLAND SHEEP COUNTRY

In August/September 1977 I spent some time nest-trapping breeding Spur-winged Plovers *(Vanellus miles novaehollandiae)* to obtain measurements.

On 3 September I had a real field day, thanks in part to Roger Sutton who had told me the whereabouts of four nests in the Lorneville area. Altogether that day I trapped ten birds at ten different sites, all in the Lorneville/Makarewa area. Four of these birds had one or more toes missing. Two birds (one deformed, the other not) had wool fibres wound round toes (one bird on one toe, the other on two toes). The most badly deformed bird had been banded as a chick by Roger Sutton on 8 October 1968, approximately half a mile away from its 1977 nest-site. This bird's left foot was missing altogether. At the tarso-metatarsal joint was a callus approximately 10 mm in diameter on which the bird walked. The bird had originally held two bands on each leg. The lower left leg-band was missing but the other was present, retained by the callus. Both right leg bands were present. Two right toes were deformed, broken and hanging, and one had wool fibres wound tightly around it.

One wonders how much the bands contributed to the retention of wool on this bird. But a further factor may be the area where this bird has presumably spent its nine years of life. It consists mainly of holding paddocks for a nearby freezing works, and is consistently fairly heavily stocked with sheep. Indeed the general Lorneville/Makarewa area has a high sheep population.

On 14 August 1977 Mr A. J. N. Campbell rang me about an unusual bird on his farm at Woodlands. This proved to be a Pied Stilt *(Himantopus himantopus)*, both of whose legs terminated at the tibio-tarsal joint. The bird was walking on its stumps without difficulty, feeding in a damp area. This bird remained about the same area and a nearby pond for approximately two weeks, when it was found dead. Its calloused stumps had wool fibres caught within the callus. The Woodlands area is highly productive farmland with a high sheep carrying capacity.

MAIDA BARLOW, *38 Filleul Street, Invercargill.*

★

BIOLOGICAL OBSERVATIONS FROM BLACK ISLAND, ANTARCTICA

Members of the 1975-76 Victoria University expedition to Antarctica (VUWAE 20) spent two weeks undertaking geological investigations on Black Island and Brown Peninsula, Ross Ice Shelf.

The remains of an Adelie Penguin and several Crabeater Seals were found on Black Island (Fig. 1). While mummified remains of penguins and seals are widespread in the Dry Valleys to the west of McMurdo Sound (for example, Barwick & Balham 1967, *Tuatara* 15 (3): 165-180 and Kohn *et al.* 1971, *Notornis* 18 (1): 52-54), they have not previously been described from Black Island (Pewe *et al.* 1959, *Science, N.Y.* 130: 716). Despite careful search, no mummified remains were found on Brown Peninsula.

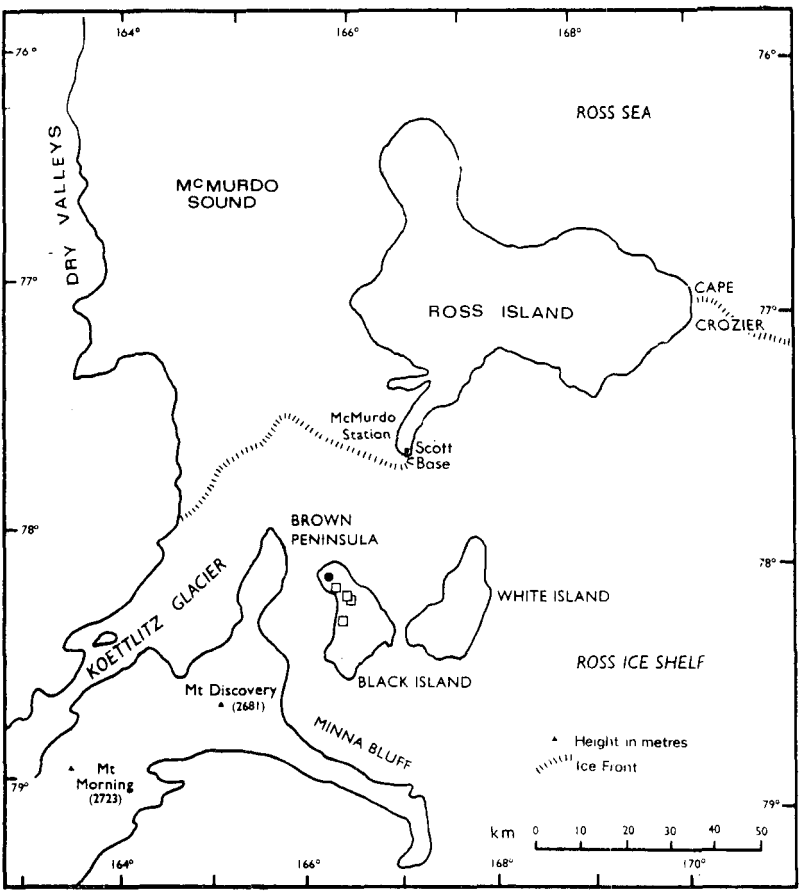

FIGURE 1 — Locality map. On Black Island, solid circle shows position of Adelie Penguin carcase; open squares show seal carcases.

The almost complete carcase of a single Adelie Penguin *(Pygoscelis adeliae)* was found in a north-trending valley at the north-western end of Black Island (Fig. 2). The shortest distance from this point to the edge of the Ross Ice Shelf is some 30 km. The age of the carcase is not known, but the good preservation in an area exposed to strong winds during winter and where active erosion occurs during the mid-summer thaw indicates that it is probably quite recent. Members of VUWAE 19 found fresh penguin tracks in a nearby valley in December 1974.

FIGURE 2 — Almost complete carcase of Adelie Penguin from northern Black Island. Feathers are coated with mud.

The remains of four seals were also found (Fig. 1). Three are complete or nearly complete mummified Crabeater Seals *(Lobodon carcinophagus)*, and one occurs as a small group of disarticulated bones. The southernmost, and most complete carcase, is some 40 km from the edge of the ice shelf. It lies in a narrow gulley, which must protect it from the abrasive effects of wind-blown sand, and is complete except for the fur which is only preserved in a groove on the back (Fig. 3). All of the seal carcases lie either in or close to north-south trending valleys, and the animals appear to have travelled south along these from the Ross Ice Shelf. The two largest specimens measure 1800 and 1870 mms respectively, and thus represent immature individuals less than one year old (Lindsey 1938, *J. Mammal* 19 (4): 456-461).

None of the carcases appear to have been attacked by Skua Gulls, which Barwick & Balham (1967) and Kohn *et al.* (1971) reported occasionally happened in the Dry Valleys. Skua do frequent Black

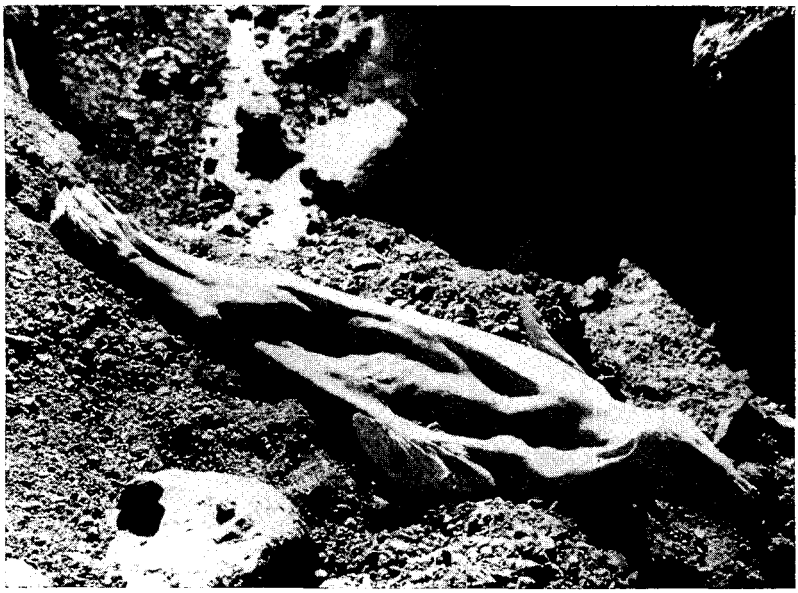

FIGURE 3 — Mummified carcase of Crabeater Seal from southernmost Black Island locality. Carcase measures 1870 mm, and is complete except for fur.

Island, and on 3 December 1977 seven were observed flying north along the west coast.

I thank VXE-6 squadron for transport in the field. This study was supported by the University Grants Committee.

Dr J. D. COLLEN, *Dept. of Geology, Victoria University of Wellington, Private Bag, Wellington.*

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NEW NESTING SITE FOR LITTLE BLACK SHAG

On 15 April 1977 I noted three nests of Little Black Shag *(Phalacrocorax sulcirostris)*, two containing chicks, on an old Macrocarpa tree overhanging the junction of Orakei Creek and Orakei Basin, in an estuary of the Waitemata Harbour. In the same tree is an established nesting colony of Pied Shag *(Phalacrocorax varius)*.

I had been absent for twelve weeks prior to finding these nests and was very surprised when I took up my binoculars to bring my shag records up to date.

The three nests, constructed of locally available weeping willow and sedge were close together, forming a platform on a defoliated low branch with a westerly aspect, 14m above the water. This is a section of the tree not favoured by Pied Shags, possibly because of prevailing westerly winds. Two of the nests of *P. sulcirostris* contained chicks, three rather active black in one, two younger brown in the other. All chicks had prominent pale yellow bills. The third nest was empty.

The parent Little Black Shags soon arrived to feed the chicks, thus confirming identification, later corroborated by Sylvia Reed using 30x telescope. Each chick, immediately after feeding, projected a stream of excreta over the rim of the nest into the water below.

The three older chicks appeared ready to fly on 28 April but did not actually do so until 2 May 1977, presumably because on 28 April Orakei Basin was drained and remained empty until 2 May. The other two chicks flew on 9 May.

Little Black Shags occur in this area all the year round, often roosting in the same tree as the Pied Shags, but their numbers fluctuate according to season. In April-May-June flocks of 200-300 are seen fishing in Purewa Creek, Orakei Basin and Orakei Creek, when Yellow-eyed Mullet are shoaling. Some Pied Shags often join these flocks in fishing. For the rest of the year small numbers of Little Black Shags occur sporadically. Flocks in flight, or when fishing, make no audible calls, but on alighting in the roosting tree, very quiet, low-key, duck-like quacking sounds are heard.

There are no previous records in literature of *P. sulcirostris* breeding in the Orakei area which has been under observation from my window since mid-1970. It will be interesting to see whether they nest here again next autumn.

MARIE P. BUCHLER, *131A Ngapuhi Road, Remuera, Auckland 5.*

★

FIJI SCARLET ROBIN EATING WORMS ON THE GROUND

The Scarlet Robins, *Petroica multicolor,* of Fiji comprise two (or possibly three, if Taveuni has a distinct race) of the 13 or 14 subspecies which are distributed from Australia to Samoa (Mayr 1934).

So far as we know nothing has been published concerning the diet of the Scarlet Robin in Fiji.

In Australia, Macdonald (1973) described Scarlet Robins as "arboreal and terrestrial," but listed only "insects" as their food. Hill (1967) stated that they "frequently dart down to pick up insects and other small fry from the ground." Officer (1969) stated, with some redundancy, that their diet includes "larvae, beetles, moths and insects."

In Fiji, Bahr (1912) noted a pair of Scarlet Robins "on the tops of the highest trees." He added: "Only once did I see one on the ground."

On Viti Levu, on the few occasions when we have actually recorded observations of the Scarlet Robin with an item of food in its bill, it has been at some height above the ground in the forest understorey. For example, on the forested slopes of Joske's Thumb near Suva, one of us (BB) caught sight of a female about 4 m above the ground with what appeared to be a stick insect about 80 mm long (almost as long as the bird herself) in her mouth. On another occasion in the Savura Creek catchment area near Suva, BB saw a male about 10 m above the ground feed a moth or small butterfly to a juvenile.

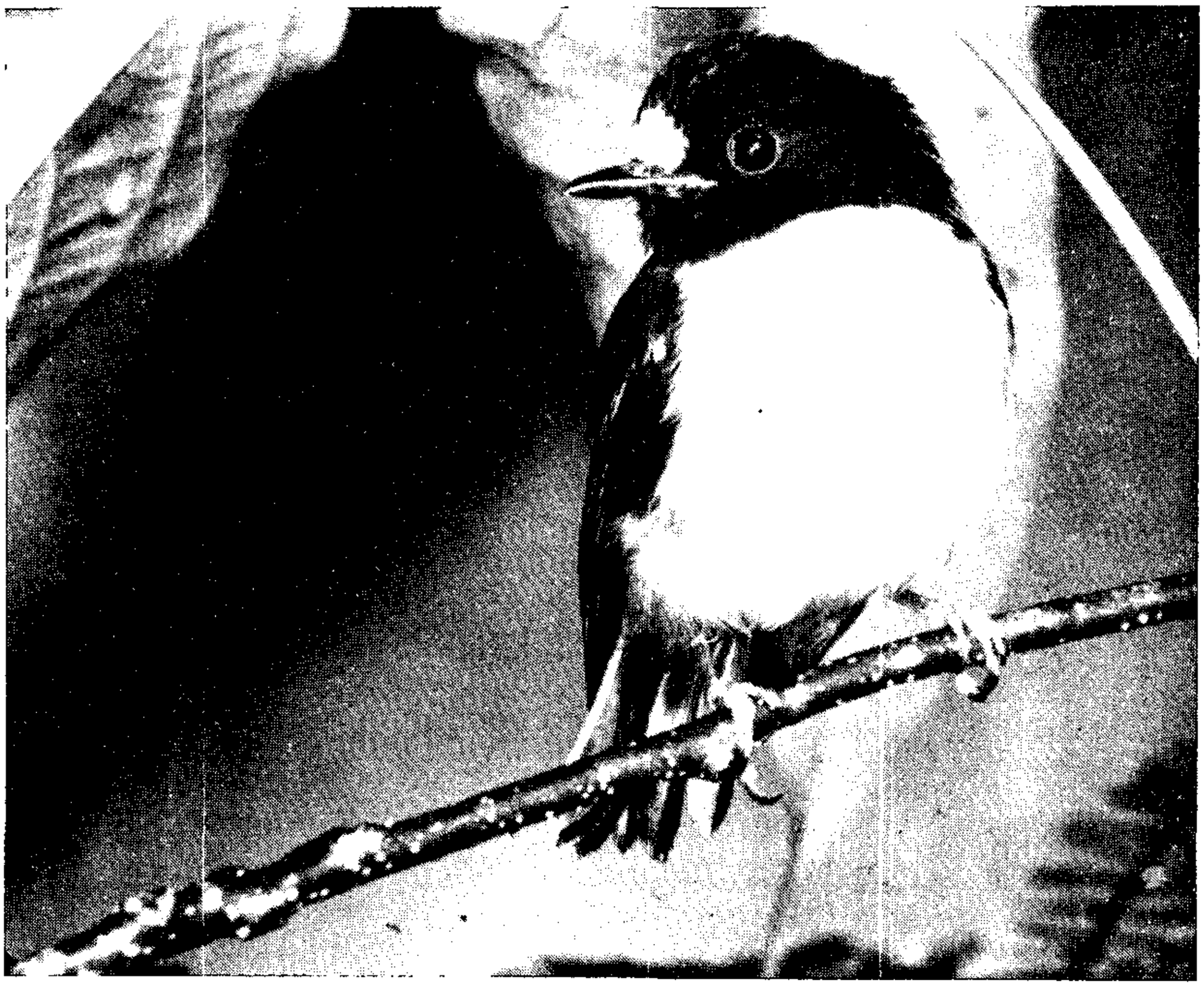

FIGURE 1 — A male Scarlet Robin photographed in the enclosure where we saw it eating worms on the ground. This black and white photograph was copied from the original 35mm Kodachrome slide.

However, we had an excellent opportunity to closely observe a male Scarlet Robin feeding on the ground, albeit in conditions of captivity, on the morning of 2 August 1976, about 8 km south of Navai on the Nadrau Plateau, about 750 m above sea level, in Viti Levu. The bird was confined for photographic purposes for about 3 hours

in an enclosure of mosquito netting about 3.1 m long, 1.8 m wide and 1.5 - 2.0 m high. Ferns and other plants up to the height of the enclosure were included within it, but the Scarlet Robin spent much of the time either on the ground or within about 300 mm of the ground. He would perch briefly on small dead twigs or roots, then hop rapidly down and along the ground to snap up tiny insects. Twice RB saw him eat worms — a yellowish one about 20 mm long and about 1.5 mm in diameter, and a greyish one about 40 mm long and 20 mm in diameter. In both cases he picked up the worm from amid surface debris, dropped it wriggling on the ground, then picked it up again and swallowed it. For the larger worm he had to swallow several times before the last of the worm disappeared. BB later saw the bird swallow a third small worm. The robin also made a few flycatching flights, and once he flew up from a perch on a low branch to pluck something from the underside of a leaf.

Fergus Clunie (pers. comm.) has confirmed that the foraging behaviour on and near the ground which we observed within the enclosure is " typical of what I've often seen among wild birds. The occasional short flycatching flights and gleaning underside of the leaf is also typical of this sort of activity — they are almost constantly on the go and if in dense undergrowth keep disappearing and reappearing as they go to the ground then return to another perch." It thus appears that Bahr's comment is misleading, and probably reflects limited observation.

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BILL BECKON & RUTH BECKON, *P.O. Box 1094, Suva, Fiji.*

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SHAGS IN MID-TASMAN

In between voyages John Jenkins received from John Lampitt, Radio Officer on *Union Rotorua* two letters which describe the occurrence of shags far out of sight of land in the Tasman Sea. The letters were passed to me and I was invited to extract the relevant passages.

(1) *Union Rotorua* towards Melbourne 2 October 1977

I thought you might be interested to hear that we were visited by a squadron of shags in mid-Tasman yesterday. We were in position 37°16'S 157°17'E at 1645 hrs when ten large shags arrived and circled the ship several times, before joining the usual albatrosses and tubenoses

flying over the wake. They appeared to be looking for somewhere to roost, but flew off astern (i.e. eastwards) after about 45 minutes. At about 1600 hrs a lone specimen appeared, flew around astern and up alongside for ten minutes and finally alighted on the water. None has appeared since.

Max Rawlins, the electrician, reckoned that they were a bit bigger than the usual New Zealand shags; and I thought some had a brown tinge. The lone bird, the only one I watched through binoculars, seemed to be of normal size and black.

The wind had been a strong sou'-westerly for several days, with highs over the Tasman and New Zealand; the cold fronts going through well south.

(2) *Union Rotorua* towards Auckland 9 October 1977

We acquired some more shags on the return journey, Melbourne to Auckland. This time three or four joined us just east of Bass Strait. Two remained, or two more joined us, the second day out and stayed until we were nearing the New Zealand coast early this morning. In position about 34°S 155'E one bird alighted on the forepeak and slept there from mid-day 7 Oct until mid-afternoon of the next day. During the morning of 8 Oct, three or four shags were flying around astern and two alighted on the foredeck where they rested for several hours from noon onwards. From their colouring they appeared to be young birds and I made a rough sketch of one from the wheelhouse. The weather was unpleasant. The wind was blowing 30 kts and there was a depression west of the South Island. Our position at noon was 36°49'S 164°18'E.

It looks as if some Australian shags have been blown out into the Tasman lately. Presumably we are going to have a few more illegal immigrants. I hope these notes are of interest.

John Lampitt.

A long drought in central and southern Australia has caused the death of many waterfowl; and the survivors have been heading for the coast. It would appear that the overflow was already reaching New Zealand in the spring of 1977. There is little doubt that the species mentioned in these two letters was *Phalacrocorax carbo.*

On seeing this note Neil Cheshire added another instance. On 4 December 1977 when MV *Tasman Venture* was about 400 miles WSW of Cape Reinga in position 35°15'S 164°36'E, an adult *carbo* flew around the ship several times and came on board for a few minutes. On his many voyages in New Zealand waters he had never before seen a shag of any species come on board.

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BLACK-BILLED GULL IN NORTHERN WAIRARAPA

First definitely identified at the northeastern end of Wairarapa Lake on 2 March 1942, the Black-billed Gull *(Larus bulleri)* had been doubtfully sighted in the distance at Te Opai Lagoon, Kahutara, on 3 April 1938 when the tern-ilke flight of small gulls too far away to identify specifically suggested the Black-billed. Only one bird was seen at the lake on 2 March, though on 9 March three were recorded. The continued presence of this species, at least in late summer and autumn, in this area, is indicated by subsequent sightings in later years, up to a maximum of 19 on 2 March 1954. In the same area Barrie Heather, in Classified Summarised Notes recorded 51 on 29 January 1955 (*Notornis* 17 (3): 83).

On 1 February 1948 two Red-billed Gulls *(Larus novae-hollandiae scopulinus)* and on 8 February 1948 eleven Red-billed were seen in the same lake area with four Black-billed but these are the only records of the Red-billed Gull inland in the Wairarapa known to me.

Although constantly about the Wairarapa from 1920 onwards I never saw a Black-billed Gull north of the Wairarapa Lake until 5 December 1971 when a flock of 17 appeared on the newly-constructed Masterton Borough sewage ponds at Homebush, adjacent to the Ruamahanga River. On 7 April 1973 another flock of 23 was recorded.

In an excavation area close to Masterton at Te Ore Ore, where ponds have been created, on 18 October 1976 a flock of 20 Black-billed Gulls was seen calling in flight when circling the area for a few minutes before flying off to the south, evidently on passage. In a third man-made pond area, at Waingawa, south of Masterton, two Black-billed Gulls were seen on 28 March 1977, the first to be noted here in observations extending over many decades.

These records indicate the increasing frequency of this species in Northern Wairarapa in recent years.

R. H. D. STIDOLPH, *120 Cole Street, Masterton.*

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HOARY-HEADED GREBE IN NORTHLAND

On 30 January 1978 during the course of a survey of dune lakes, we saw two Hoary-headed Grebes *(Podiceps poliocephalus)* on Lake Wingy. The birds were in breeding plumage and easily distinguishable from the New Zealand Dabchick *(Podiceps rufopectus)* present on the same lake, by their upper parts being lightly defined in broad mottled stripes of greyish-brown, a black band from head down back of neck, tail end light grey, black band on front of neck and clearly striped side of head. Details of description tallied with that given by Maida Barlow (1976, *Notornis* 23: 184).

Watched for 1½-2 hours, sometimes as close as 15-20 metres, they swam and dived without bringing anything visible to the surface, sometimes isolated, sometimes among a mixed flock of some 200 Paradise and Mallard Duck. One rather striking feature not previously recorded was the different position in which each bird held its neck. In fact we christened them "Longneck" and "Shortneck." The former (male ?) carried its neck elongated and erect so that it appeared thin, whereas the other bird held its neck in the folded position, appearing thicker.

Lake Wingy is the northernmost of a group of three lakes situated on a Lands & Survey farm at the end of Ngataki Road, roughly halfway between Pukenui and Te Kao. It is not easy to find without local directions, in fact on our first day we missed it altogether. A local member, Mr Vic Hensley, who lives in Ngataki Road, had not seen these grebes himself but had heard reports of unusual grebes being seen on lakes further south early in 1977. Possibly the same pair have gradually moved northwards.

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SYLVIA REED, *4 Mamaku Street, Meadowbank, Auckland 5.*

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IMMATURE BLACK-FACED CUCKOO SHRIKE *(Coracina novaehollandiae)* NEAR INVERCARGILL

On 15 June 1976, I heard a strange call at Daffodil Bay, Invercargill Estuary. I then saw a bird fly across the bay from some pine trees. Its undulating flight and relatively long tail were noticeable. I found it perched in a Eucalyptus tree along a bough of which it ran in a manner reminiscent of the Kokako. I was able to obtain good views of the bird with 8 x 30 binoculars at distances of 30 to 60 metres.

The bird eventually flew off towards some Macrocarpa trees about half a kilometre distant. Despite later searches, the bird was not seen again.

After consultation with B. D. Bell and F. C. Kinsky, the bird was confirmed as an immature Black-faced Cuckoo Shrike. This species occurs in Australia, Tasmania, New Guinea and nearby islands. Throughout Australia it has a widespread distribution (Frith H. J. (ed.) 1969, *Birds in the Australian High Country,* Sydney: Reed).

Description:

Dark (black) patch extending from the bill through the eye to the ear coverts. This patch was contrasted above and below by pale silvery-grey plumage.

Bill — black, similar in shape and proportion to a Black-billed Gull.

Back — from crown to tip of tail was ashy-grey in colour. The whole under-surface of the bird appeared to be pale greyish-white — lighter in colour than the back.

Primaries: dark brown or black.

Voice: Only one type of call was heard — a loud "Chow Chow-ow." It called frequently — both when in flight and when perched.

The Black-faced Cuckoo Shrike has been recorded in New Zealand several times before: Motueka (1869); Invercargill (1870); Westport (c1895 and 1931); Lake Ellesmere (1904); Greymouth (1914 ?); Taranaki (1914); north Kaipara Heads (Jan.-Sept. 1953); Himatangi (Jan. 1955); Fielding (1965) and Okuru (Sept. 1966).

MALCOLM H. SMITH, *Wildlife Service, Dept. Internal Affairs, P.O. Box 501, Invercargill.*

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SPUR-WINGED PLOVER LONGEVITY RECORD

On 31 July 1966 a breeding adult Spur-winged Plover *(Vanellus miles novaehollandiae)* was banded by P. M. Muller in Otatara, Southland (Band E.61314). On 6 August 1977 this bird was found dead on the roadside by Mr J. L. Baker of Otatara with injuries consistent with its having been struck by a vehicle.

Some Spur-winged Plovers are capable of breeding at the end of their first year (Barlow *et al. Notornis* 19 (3): 212-249). Earliest recorded hatch-date is 2nd July. (op cit.) This bird's minimum age was therefore 12 years 1 month.

MAIDA BARLOW, *38 Filleul Street, Invercargill.*

★

TALON-GRAPPLING BY NEW ZEALAND FALCONS AND AUSTRALASIAN HARRIERS

Aerial talon-grappling has been recorded in a number of raptors. Brown & Amadon (1968: 99) mentioned it as part of courtship displays in some eagles of the genus *Haliaaetus* and some kites (*Haliastur* and *Milvus*). Hamerstrom *et al.* (1961), Carson (1962) and Clark (1975) recorded talon-grappling in Short-eared Owls *(Asio flammeus)* and considered it to be a form of courtship. Simms (1975) observed Merlins *(Falco columbarius)* talon-grappling and interpreted it as courtship, as did Chater (1975) who saw it in Common Buzzards *(Buteo buteo)*.

On the other hand, Parker (1975) interpreted talon-grappling by Red Kites *(Milvus milvus)* as territorial conflict. Hume (1975) who observed it in Snowy Owls *(Nyctea scandiaca)* thought the birds were fighting, and Clark (1975) saw some territorial conflicts between Short-eared Owls which involved talon-grappling.

On 20 November 1977 I was watching at a nest of an Australasian Harrier *(Circus approximans gouldi)* from about 300 m. At one point an adult female harrier from an adjacent territory flew over the nest. The resident adult male, who had been perched in a Cabbage Tree (*Cordyline* sp.) 100 m from the nest, chased the intruding female away by using a series of shallow swoops. Each time he swooped the female cartwheeled over and presented her talons. On one of these occasions the birds locked talons and tumbled together for about 5-6 m before disengaging about 10 m above the ground. Although I interpreted this as a territorial conflict the question of polygamy in this species has yet to be clarified. On 15 October 1977 I observed copulation by the harriers on this adjacent territory and throughout the proceedings a second adult male was perched only 200 m from the birds, in full view. This leads me to suspect that the pair bond may be a rather flexible feature in this species, especially as multiple courtship displays are common.

On 5 December 1977 I was watching a pair of New Zealand Falcons *(Falco novaeseelandiae)* in North Canterbury. A harrier (age unknown) approached within 500 m of the nest bluff and the adult male falcon sallied out to defend his territory. The harrier, taken by surprise, failed to cartwheel in time and the little falcon knocked out several feathers at this first stoop. A rapid chase ensued, the harrier successfully parrying every stoop. Unfortunately the harrier chose to fly right over the nest site and the female falcon joined in. Alternating their stoops the falcons gave the harrier little chance to make progress. During the dispute the female falcon twice locked talons with the harrier. On the first occasion the birds fell about 25 m before breaking free, on the second occasion about 30 m. Considering that the falcons had no eggs or chicks in the nest at this time, they were being particularly ferocious. Indeed, I was myself unable to approach within 400-500 m of the nest without being frequently hit and this defended area was unusually large (see Fox 1978).

Although these instances of talon-grappling were not courtship displays I have seen Australasian Harriers briefly touch during their "sky-dancing" courtship displays. Talon-grappling frequently occurs between courting or playing New Zealand Falcons when perched or on the ground, but despite extensive observations of courtship in this species I have not observed aerial talon-grappling between paired falcons.

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N. C. FOX, *Department of Zoology, University of Canterbury, Christchurch.*

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SPUR-WINGED PLOVER: BROADLANDS

On 25 March 1977 I sighted seven Spur-winged Plovers feeding in a temporary rainwater pond near the main Reporoa-Taupo highway just south of the Reporoa Lucerne Company's drying plant (map ref. NZMS 1: N94/551787).

While driving along the road I noticed these unusual birds and stopped my vehicle. When approached I could see their characteristic slightly humped posture, contrasting brown and white plumage and yellow wattles. When they finally flew, several called and all had the characteristic flight (round winged) of the Spur-winged Plover.

As far as I know, this is the first sighting of these birds in this half of the North Island and it would be interesting to have subsequent records for the vicinity.

P. J. QUIN, *Wildlife Branch, Dept. of Internal Affairs, P.O. Box 1146, Rotorua.*

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LITERATURE AVAILABLE

From all bookshops:

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

From B. D. Heather, 10 Jocelyn Crescent, Silverstream:

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

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

Field guide to the waders, by H. T. Condon & A. R. McGill. Post Free	$1.20

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