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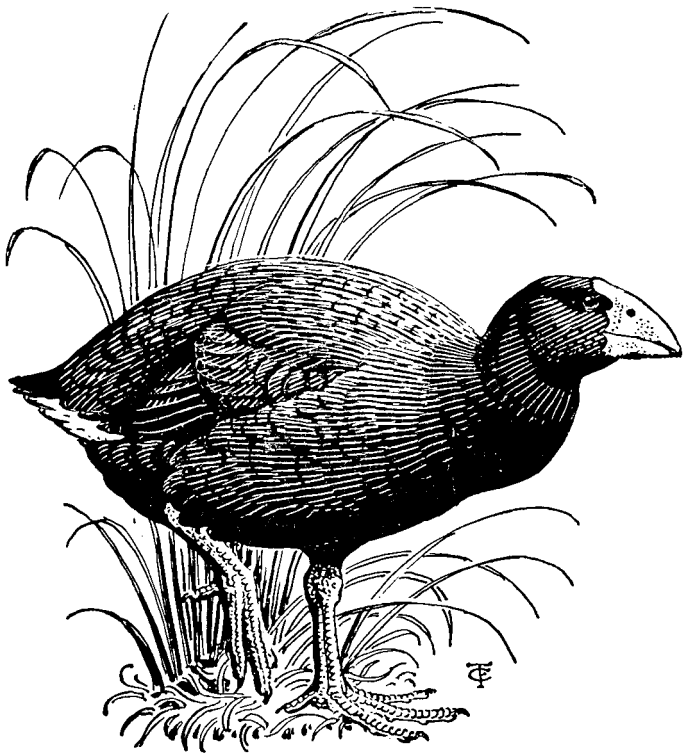
NOTORNIS



BULLETIN OF THE ORNITHOLOGICAL SOCIETY
OF NEW ZEALAND.

PUBLISHED QUARTERLY.

NOTORNIS

In continuation of New Zealand Bird Notes.

Bulletin of the Ornithological Society of New Zealand.

(Incorporated.)

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CONTENTS.

BACK NUMBERS OF THE SOCIETY'S BULLETINS.—Members are reminded that most numbers are still available for sale to them. The society for its part is anxious to supplement its stocks by buying from anyone who has no further use for his back numbers. Would persons interested in buying or selling, please write to the secretary.

CLASSIFIED NOTES.—Members are reminded that classified notes will appear in the January issue. Those who have not yet sent in their notes to the regional organisers should do so immediately, as the editor requires all notes by October 15.

SHINING CUCKOO INQUIRY.—I have taken over this inquiry from Mr. J. M. Cunningham and would be grateful if members would report to me when they first hear or see the shining cuckoo and when it becomes established and resident in their areas. As Mr. Cunningham did, I would also ask members to assure themselves of the reliability of reports received from other people.—W. A. Williamson, 14 Eagle St., Burkes, West Harbour, Dunedin.

GODWIT ALIGHTING AT A HIGH TIDE ROOST AT KARAKA, FEBRUARY 28, 1952. The small bird in the foreground is a knot. D. A. Urquhart photo.

STATUS OF GODWIT IN NEW ZEALAND.

By R. H. D. Stidolph, Masterton.

Regarded as the most numerous of the migrant waders that visit New Zealand, the eastern bar-tailed godwit (**Limosa lapponica baueri**) has aroused considerable interest in the popular fancy of the general public by reason of its remarkable journey between New Zealand and the sub-arctic regions of the Northern Hemisphere. It arrives in this country in the spring and departs in the autumn. Formerly it was on the shooting list and for that reason it was the best known of the waders that inhabit our shores. It became totally protected in 1941.

The first record of the godwit in New Zealand is almost without doubt that of the renowned explorer, Captain James Cook, who stated in his journal of the first voyage, on Saturday, November 11, 1769, when he was at Mercury Bay, that there were "pretty plenty of Wild Fowl, such as Shags, Ducks, Curlews and a Black bird, about as big as a Crow, with a long sharp bill of a colour between Red and Yellow." He saw these birds on the sand banks in that locality. The name "curlew" is one that is applied commonly (although erroneously) to the godwit, especially by sportsmen, and there is little doubt, taking into account the date of the observation and the habitat that it was the godwit that Captain Cook recorded. His reference to the black birds about as big as a crow is to oystercatchers. The first specimens of the godwit collected in New Zealand apparently were those obtained, about 1840, by Percy Earl, at Waikouaiti, north of Dunedin.

MIGRATION.

The evidence regarding the actual route taken by the godwit on its migration to and from New Zealand is far from satisfactory, though one point seems clear, that it follows a much more direct line than has been suggested in many of the references to its journey. According to Bent, it passes through the Commander Islands, Japan, China and the Philippines on its way from its breeding grounds in north-eastern Siberia and western Alaska. He includes the Malay Archipelago, Samoan and Fiji Islands, New Zealand and Australia and probably other islands of Oceania as its winter range. In the Malay Peninsula itself (as distinct from the Malay Archipelago), the bar-tailed godwit is a rare bird, in fact, no more than a straggler, as Robinson and Chasen (1936) have records of only two specimens, one obtained in November (year not given) and the other on September 24, 1912, when a single bird was secured from among large flocks of other waders. It is recorded as not uncommon (merely a winter visitor) in the Philippines, according to Delacour and Mayr (1946) and this information is repeated word for word by Delacour (1947) when dealing with the birds of Malaysia. Mayr, Birds of the South-West Pacific, (1945), states that it is the common godwit of the South-West Pacific, occurring throughout the area as far east as Tonga and Samoa.

Bull, writing of waders in the South-West Pacific, especially those in the Russell Islands (1948), shows that the small population of the godwit there is a changing one, and, discussing migration, expresses his belief that the New Zealand migrant waders move over a front well to the east of the Solomon Islands; the few godwits he saw in the area he classed as stragglers while the knot (**Calidris canutus**) another common migrant in New Zealand, was unrecorded. He found that the "Solomon Islands migratory wader avifauna bears a resemblance to that of Australia rather than New Zealand."

Bull's contention is confirmed if the known facts are considered. The bar-tailed godwit in Australia, although regarded as a common bird, is not found, according to the authorities consulted, in flocks of thousands as it is in some parts of New Zealand, but in small flocks, often not even a hundred. It is likely that the birds that reach Australia and Tasmania are those that take a more westerly migratory route, possibly through the Malay Archipelago and New Guinea, thus accounting for the scarcity of this bird in the more tropical countries on this route, while the many

thousands which come to New Zealand obviously must take a more easterly direction, as Bull has indicated, probably passing through the Pacific Islands north of New Zealand.

A significant observation, mentioned by Bull, is that of Flying-Officer E. F. Dodson, who wrote: "Godwits appeared in large numbers on the mudflats round Suva on March 29th. They may have been there up to two days before that, and they were all gone the next day." At that time of the year, the godwit would be on passage from New Zealand. It seems reasonable to assume, on the available evidence, that the great mass of godwits and (knots) that visit New Zealand, take a more direct north-south route across the Pacific to and from the southern coast of Asia than has hitherto been supposed; observations by competent field workers in the Pacific Islands should throw light on this belief.

Turbott (1951) has disposed conclusively on his own observations and those of Watt, of the legend that has grown up in New Zealand of the supposed mass departure of the godwit from Spirits Bay, a fanciful story that captured the imagination of the public. He has shown on his own evidence and that of A. H. Watt, that the godwit probably departs from different points and not from one particular point; nor does it normally leave or arrive in very large flocks. A perusal of records by members of the Ornithological Society and others, shows that the godwit reaches New Zealand from the Northern Hemisphere about the end of September and during October, and leaves again in March and April; it departs from some South Island areas in February, making its way northward, as there is evidence of migratory movements passing through Auckland district estuaries in March. A considerable number fail to migrate and spend the austral winter in New Zealand. Falla (1936) has stated that he considered it likely that none of the birds of the year leave with the April migrants, as the flocks that remain for the southern winter seem to consist almost entirely of birds completing a post-juvenal moult.

HABITAT.

In New Zealand the godwit is found on mud and sand flats in tidal harbours and lagoons and along estuarine rivers; occasionally it may be seen on wet grasslands and salicornia bordering coastal lagoons and lakes. Very little information has been placed on record as to the actual food of the godwit in this country: Buller inferred that it consisted of aquatic insects, marine worms, small molluscs and crustaceans, adding "that the objects, however, which they select must be very minute, for on opening their stomachs it is usual to find only a mass of comminuted matter having the appearance of mud or slime." There appears to be no other record of the examination of stomach contents of this bird in New Zealand, but the Handbook of British Birds (1940), describing the food of the closely-related European bar-tailed godwit (**Limosa lapponica lapponica**) states that on winter quarters and on migration it comprises sandhoppers, shrimps, small crabs, Annelida, small Mollusca, small fish fry and insects, including Lepidoptera, Coleoptera and Diptera (mostly larvae). There is little reason to believe that the food of the godwit in New Zealand differs to any extent.

It is somewhat astonishing to find practically no reference to the godwit in the early literature of the birds of New Zealand, except of a most casual nature; the Transactions of the New Zealand Institute are almost a barren field and on that account there is a lack of information relating to the numbers of this species in this country at the beginning of European settlement and subsequently.

Mr. A. S. Wilkinson, who knew the Takaka district as a boy, can recall, towards the end of last century, that the mudflats there were alive with shore birds, there were thousands where there are hundreds today Mr. J. Henderson, a godwit shooter of many years' experience in Auckland district estuaries, states that in the heydey of shooting, as many as fifty guns operated in Manukau Harbour, many of them pot-hunters, some of whom sold godwits to hotels for the making of soup. These pot-hunters

shot into the packed flocks at high tide from 40 gallon oil drums sunk into shellbanks. He has known as many as 62 birds collected after one shot. The real sportsman, who confined his shooting to flying birds, was lucky if he bagged twelve birds in a day. Mr. G. J. Moffet, of Invercargill, writing with forty years' experience of Southland estuaries at the time the godwit was given total protection, 1941, states that it had decreased 75 per cent. as compared with the position forty years earlier. He blames intensive shooting and shortage of food on account of competition from the introduced black swan.

Amazing statements are often made about the presence of "millions" of godwits in New Zealand. There is not the slightest substance of fact in these assertions, as anyone who has seriously studied the numbers of godwit here soon realises. According to all the available information, it is doubtful at the present time if the summer population of the godwit in New Zealand exceeds 200,000 birds.

Notes on the principal haunts of the godwit in New Zealand are:—

PRINCIPAL HAUNTS.

Parengarenga Harbour: This vast area of 15,000 acres is one of the principal feeding grounds of the godwit and of other waders in the Far North. Fortunately, it has been well described by Mr. A. H. Watt, of Te Kao, who has personal experience of this district over a period of about forty years, and by Mr. E. G. Turbott, of Auckland, whose published observations should be referred to for full particulars. Mr. Watt, in reply to a personal inquiry, places the summer population of godwits in Parengarenga at about 10,000. "I have not noticed any great increase or diminution in numbers in any year since 1915. The winter population varies considerably from year to year. At present (July 9, 1953) there are several hundreds on the harbour. I have not been out much recently, but I have a reliable report of 'about 500' having been seen a few weeks ago. I am inclined to think there may be a considerable movement of wintering birds within New Zealand. I saw about 1000 godwit here on August 15. They certainly were not all birds that had spent the winter in Parengarenga and it seemed too early for birds from the Northern Hemisphere."

Kaipara Harbour: This huge area, stated to have a water frontage of more than 2000 miles, is practically unknown ornithologically. Mr. J. Henderson tells me that the godwit is present there in "countless thousands," stating, from his experience of the area, that it is impossible to estimate its numbers. The 1932 annual report of the Auckland Acclimatisation Society contained a paper entitled "Birds of the Kaipara Harbour," by G. G. Kelly, in which he stated that these birds are evidently (during Easter) "packing up" preparatory to their departure from New Zealand" as he saw them in immense clouds on the coast and near the heads." No recent information as to the numbers of godwits in this vast area is available, and the district is well worthy of more intensive investigation. The population must remain mere conjecture until a systematic assessment can be made.

Houhora Harbour: No information.

Rangaunu Harbour: A favourite locality about which little information is available regarding numbers of godwit. As many as 2,300 (estimate) were recorded 22/8/53 as wintering birds.

Whangape Harbour: No information.

Hokianga Harbour: No information.

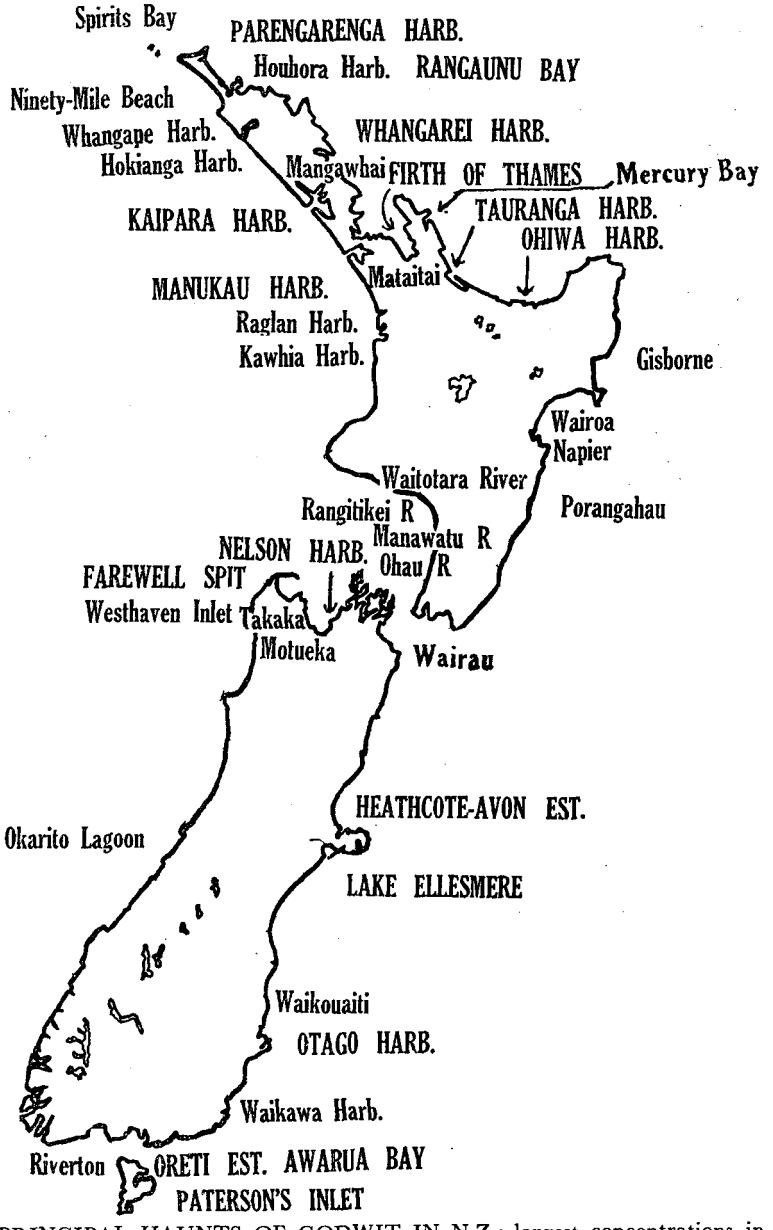
Whangarei Harbour: Mr. W. M. Fraser estimated, in collaboration with his son, that the summer population of godwits, 1952-53, was between 5,000 and 6,000, and that 200-300 remained for the winter. W. Sanderson recorded about 300 wintering godwits here in 1939.

Mangawhai: Between 500 and 700 were seen by Fleming on November 24, 1940, though it appears that the normal population here is much less.

Manukau Harbour: This extensive area is under observation by many members of the society, and it is possible to estimate the summer population

of godwit fairly accurately, about 10,000 would be a reasonable figure, judging from the published records. On 24/6/53 a count by members gave 4,830 as the number wintering there.

Mataitai, Clevedon: Thanks to the enterprise of H. R. McKenzie and others, this area is well documented and can claim a summer population of up to 1,500, with up to 80 wintering at times.



PRINCIPAL HAUNTS OF GODWIT IN N.Z.; largest concentrations in areas indicated by capital lettering.

Firth of Thames: This is a favoured godwit locality and Auckland and Clevedon workers have put in much field work here. Estimates of several thousands are given for summer and about 1,290 for a winter count from Kaiaua to Thames (June 24, 1951) and of c 1,900 on 2/8/53.

Tauranga Harbour: Information about this large tidal area is rather sparse; the bird occurs in large flocks but the numbers given by observers appear to be quite inadequate. Up to 450 have been recorded in winter for the northern area and up to 50 for the eastern.

Ohiwa Harbour: P. H. Batley had this area under observation for some years; he has given 2,000 (March, 1940) as his highest count, and 500 plus as a winter population (August, 1951).

Raglan Harbour: I saw a small flock of 16 here, 20/1/35, but this area should hold a larger number; no recent information is available.

Kawhia: The largest number for this extensive area is 200 plus, on 25/2/51, but that would be for a small portion only. No comprehensive information is forthcoming.

AUCKLAND DISTRICT.

	Summer.	Winter.
Parengarenga	10,000	300
Houhora	?	?
Rangaunu	?	2,300
Whangarei	6,000	300
Whangape	?	?
Hokianga	?	?
Kaipara	thousands	?
Manukau	10,000	4,830
Mataitai	1,500	80
Firth of Thames	sev. thous.	1900
Tauranga	?	?
Ohiwa	2,000	500
Kawhia	200	?
Raglan	?	?

On these figures and making liberal allowance for the areas from which no statistics are available, there could be 100,000 godwits in the Auckland district (including Northland) but that represents practically the total population of the North Island; south of the Auckland province, its numbers in the North Island are negligible.

REST OF NORTH ISLAND.

(Taranaki, Hawke's Bay and Wellington.)

In the North Island, south of Kawhia Harbour on the west coast, and the Bay of Plenty on the east coast, there are few areas suitable for godwits and the few there are are of very restricted size. Not many birds are found at the mouth of the larger rivers, the numbers on the whole are negligible. I have personally visited almost every known area and probably no more than 1,000 birds are found along the length of coast, and certainly not more than 2,000. Actual counts of birds are (my own counts, maximum, except where stated):—

Arapuni Lagoon (Gisborne), 17 Nov., 1952	c150
Muriwai Beach (Gisborne), 18 Nov., 1952	5
Orakai Lagoon (Mahia), 19 Nov., 1952	18
Wairoa Lagoon (Wairoa), 21 Nov., 1952	c 100
Westshore Lagoon (Napier), 23 Nov., 1952	c 135
Coastal Lagoons (Napier), 8 Nov., 1952	126
Porangahau, 1 Jan., 1952	c 65
Lake Onoke (Wairarapa), 30 Oct., 1938	40-50
Waitotara River, 10 Oct., 1946 (W.P.M.)	c 30
Wanganui River, 27 Oct., 1952 (J.M.C.)	25
Rangitikei River, 12 Nov., 1948	107
Manawatu River, 26 Nov., 1952	c 150
Ohau River, 4 Nov., 1948	21

The godwit is of casual occurrence only at Lake Onoke.

Wairau Bar, Marlborough: Up to 500 is the maximum number given for this locality by J. Eyles. My own observations here, 3/11/53, in company with Mr. Brian Bell, would confirm this figure.

Nelson Harbour: There are fairly large tidal areas around Nelson; E. F. Dodson has recorded 2,000 to 3,000 appearing in mid-January after a cold spell. Mr. L. Gurr records c 4,000 in summer (1/12/51) on the Wakapuaka mud flats, and "similar numbers" in December and early January, 1952-53. No winter counts are available.

Motueka: No information.

Takaka-Collingwood: I counted c 400 birds in this area October 10-12,, 1946.

Farewell Spit: This vast area probably has the biggest concentration of godwits in the South Island; but unfortunately, there is a sad lack of observers in this part of New Zealand, and definite information as to numbers is lacking. When I visited the end of the Spit on October 16, 1946, I saw a flock of about 750, with equally as many knots, though this was probably an under-estimate. In January, 1953, Mr. M. Small of the Wildlife Service, Department of Internal Affairs, recorded several thousands. The population here must be a considerable one, but in the absence of reliable counts or estimates, it is impossible to give it with any accuracy.

Westhaven Inlet: The only count in this area is that of Mr. Small, in January, 1953, of several hundred.

Okarito Lagoon: Some hundreds was the total given by Sibson (Dec.-Jan., 1939-40). My own figure (Oct. 11, 1949) was about 120.

Heathcote-Avon Estuary: Mr. G. Guy's residence overlooks this estuary and Mr. Guy has unrivalled opportunities of keeping a watch on the godwit population there, which ranges between 2,000 to 3,000 in summer. Up to 500 to 600 have been recorded in winter, 18/5/52 (Sibson).

Lake Ellesmere: This vast expanse is another rather neglected one, ornithologically, apart from the interesting series of wader records obtained there by the late Mr. E. F. Stead. In the Natural History of Canterbury, Stead said godwit and knot "seem to be forsaking Lake Ellesmere to some extent," due in part, he thought, to the "great increase in the numbers of stilts on the lake during the past twenty years." He stated that the stilts "'must be serious competitors with the godwit for the available supply of worms, larvae, etc., which form the food of both species." He records godwit as wintering there. Annual reports of the North Canterbury Acclimatisation Society from 1922 onwards refer with monotonous regularity to the fact that the godwit shooting was very disappointing, the birds, much less in numbers than formerly, having disappeared before the opening of the season. No figures are available as to the numbers now inhabiting the district, the reports mentioned above sometimes recording "fair numbers" before the season. The 1939 report stated: "Large numbers of this migrant were observed during December and January, but by the time the season opened on February 1, the local population had apparently moved northwards, preparatory to leaving these shores. During the two weeks' season, one well-known sportsman failed to locate any birds whatever, but towards the end of February, and in March, birds from the south had reached these parts, too late for the shooting season, which closed on February 14."

Blueskin Bay-Otago Harbour: I saw a flock of c 1400 on Blueskin Bay on Nov. 12, 1951; two days earlier I saw about 1,000 on Otago Harbour: assuming that the birds were different flocks, this gives a population of about 2,500 or 3,000.

Waikawa Harbour: On November 8, 1951, I counted 145 godwits on this harbour, but Mr. Moffet has recorded a larger population (see below).

When I visited Southland estuaries on November 5, 6, 7, 1951, I was much impressed with these areas by reason of their great expanse and

rich feeding grounds for waders. On November 6, on the Oreti estuary, I saw about 1,750 godwits, but that would not be a complete count, as other areas were not visited. In the time available I was able to make only a fleeting visit to the area; much of it, and of the adjoining Awarua Bay, I did not investigate. Fortunately, Mr. G. J. Moffet has placed at my disposal his notes of forty years' experience of these estuaries, gained during the former godwit shooting seasons and also during the duck shooting season in winter. Mr. Rex M. Roys, of Invercargill, also gave much valuable information and assistance. I give Mr. Moffet's notes in full:—

"Head of Awarua Bay: The principal home, 3,000 to 4,000 godwits, extensive feeding grounds, sandy mudflats, also to the east and south of head of bay, in vicinity of Cow Island, where there are further sandy mudflats and lagoons. Resting place at high water for these godwits, extreme south end of Oreti Beach, flight about 4 to 5 miles.

"Stewart Island, head of Paterson's Inlet: Population 1500 to 2000 godwits, about 7,000 acres feeding grounds, mud and sand flats; resting place at high water, the Old Neck Peninsular east of head, flight 12 to 13 miles.

"New River Estuary, also called Oreti Estuary: Population 1,000 to 1,500, extensive mud and sand flats, feeding grounds; high water resting place, extreme south end of Oreti Beach at mouth of estuary, flight from one to ten miles. This estuary is in the vicinity of Invercargill.

"Waikawa Estuary: Population, 10 years ago (1940), 1,000 birds or more, fairly extensive mud-sand feeding ground; high water resting ground, Waikawa sea beach, flight about one mile.

"Aparima Estuary, vicinity of Riverton: Population, 300 to 400 birds, comparatively small mud-sand feeding ground; high water resting place, Riverton beach (sea), flight one mile.

"Godwit arrive in Southland generally about mid-October. After their long flight they are in poor condition. I have seen many of them for the first week or two tumble over on landing through sheer weakness. A month or so later they are in good condition, and towards the end of March are in fat condition, and when shot some often split up the breast on falling on to a hard sandy surface. Twenty-five years ago the open season for shooting godwit was changed from 1 January to 1 February each year. This gave the birds a better chance to survive the many guns as they were then much stronger and better conditioned. Anything up to 20 guns, at weekend shooting at the head of Awarua Bay and the vicinity was fairly common; bags up to 40 and 60 birds were often secured. Up to 20 years ago, in the early part of the shooting season, birds used to mob up and hover over decoys, providing an easy target, and after being shot up the survivors would fly around and repeat this manoeuvre as many as two or three times until the pot-hunter had his fill! Later they appeared to give up this suicidal habit. In rough, windy weather they provided excellent shooting to the good sportsman. I would say that the population of godwit, up to the time they were protected, had decreased by 75% compared with 40 years ago, due to intensive shooting, and shortage of food through the black swan; this introduced bird has increased tremendously in Southland, especially in Awarua Bay and New River (Oreti) Estuary and has apparently upset the balance of nature. They are still protected and are a curse to the many shore birds, viz., godwit, oyster-catchers, plover, turnstones, stilts, etc., that depend on the mud-sand flats for their food supply. viz., worms, crustacea and vegetable matter. Swans do not feed entirely on water plants, they have just about denuded Awarua Bay from end to end of the very young flounders on the breeding grounds. This applies also the New River Estuary (Oreti).

"Despite the opinion that the godwit population has decreased so markedly, it is interesting to note that nowadays many more remain behind during the winter months and consequently miss their long migration flight to their breeding grounds. The general impression was that only the weak or wounded birds stayed behind: this is not borne out by close observation

of the many birds that winter here. Without exception, they appeared to be quite well-conditioned and strong on the wing. The last observation made was only in May 1950 at Sandy Point, about 10 miles from Invercargill (New River Estuary location). Two separate mobs were counted: in one there was 77 and the other 33 birds. In the larger area and more intensive population, at the head of Awarua Bay, one can safely surmise that many more than the numbers mentioned wintered there. Godwit shot about the end of March, partly in their chestnut brown summer plumage, were always in the pink of condition. The white-breasted, winter-plumaged birds varied in this respect. Curlew and knot, invariably associated with the godwit, are now rarely seen.

"About 35 years ago, on the New River (Oreti) Estuary, I observed when godwit were very numerous, a huge assembly preparatory to migrating north. It was high water at the time, we were in a launch and ran in amongst them and anchored. They appeared to take little notice of us and were making a great noise and performed all manner of evolutions, flying in battalions in line, corkscrewing and spiralling, in huge V formation, in long lines, suddenly ascending almost vertically and descending somewhat in the same manner! The whole performance was a strenuous one and it appeared as if they were having a try-out of physical fitness for the long migratory flight to the north! It was quite obvious that the stronger and bigger birds were in the van and the whole performance lasted for a good hour or more without rest. They then made for Oreti Beach, near the mouth of the Estuary. Next day again, for a good two hours, at high water, they repeated the previous day's performance. The following day there appeared to be none left. Previous to the two days' activities we were not on the scene and could not say if more of these performances had been carried out. It was a sight to be remembered, as there was possibly 4,000 to 5,000 godwit constantly on the wing during the time they were seen."

Mr. Royes, who also has an inmate knowledge of Southland estuaries, considered that in the winter of 1952 an unusually large number of godwits wintered there. The winter, incidentally, he regarded as the mildest one he could remember. On July 6, at Awarua, he saw one flock of over 200 and another of 53, the latter feeding in a pool of surface water in a pasture. On July 13, he walked from the road entrance at Awarua Bay to Joey's Island, a distance of about four miles, and found the godwit to be as numerous as he had seen it in February. Altogether, he saw 400 to 500 birds.

	Summer.	Winter.
Nelson	4,000	?
Motueka	?	?
Takaka-Collingwood	400	?
Farewell Spit	thousands	?
Westhaven Inlet	sev. hundreds	?
Okarito Lagoon	some hunds.	?
Wairau	500	?
Heathcote-Avon Estuary	3,000	600
Lake Ellesmere	?	?
Blueskin Bay-Otago har.	3,000	?
Waikawa Harbour	1,000	?
Awarua Bay	4,000	500
Oreti Estuary	1,500	?
Aparima Estuary	400	?
Paterson Inlet	2,000	?

The unknown populations of Farewell Spit and Lake Ellesmere would substantially increase the figures indicated above as the total South Island population, though, again making liberal allowance, it is difficult to see how that total could exceed 100,000; probably it is much less.

CONCLUSIONS.

The result of this inquiry is so incomplete—considerably more information could reasonably have been expected to be available—that it is a great disappointment to the writer. However, as a preliminary investigation of the status of the godwit in New Zealand, it emphasises perhaps more than anything else the scope for field investigations of this wader's haunts. Personal investigation of all districts is the most satisfactory way to ascertain the facts but this entails much travelling and time. As it is, I have visited at one time or another, almost all the principal godwit haunts in New Zealand, though many were seen before I had this inquiry in view.

To those who placed information at my disposal, I wish to express my thanks, especially to Mr. Frank Newcombe, of the Wildlife Division, Department of Internal Affairs, for his valuable assistance in many ways, and to Messrs. Moffet and Royes, of Invercargill, for their information regarding the Southland estuaries. I am grateful, also, to the members of the Ornithological Society, from whose published notes I have gathered much data, and to Mr. D. Urquhart for kindly making available one of his excellent photographs of godwits.

SUMMARY.

A preliminary investigation of the status of the godwit in New Zealand suggests that its summer population here does not exceed 200,000.

The indications are that its migratory route to and from Siberia and New Zealand are in a much more direct, north to south, movement than hasb een usually accepted and is not by way of the Malay Peninsula.

Considerably more field work is required to make a more accurate assessment of the numbers of godwit in New Zealand.

REFERENCES.

Bent, A. C.—Life Histories of North American Shore Birds Order Limicolae (part 1), pp. 289-295.

Bull, P. C. (1948)—Field Notes on Waders in the South-west Pacific with special reference to the Russell Islands. Emu, vol. 47, pp. 165-176.

Buller, Sir Walter (1888)—History of the Birds of New Zealand, vol. II.,

Delacour, Jean (1947)—Birds of Malaysia.

Delacour, Jean and Mayr, Ernst (1946)—Birds of the Philippines, p. 72.

Dodson, E. F. (1944)—Summarised Classified Notes, N.Z. Bird Notes, vol. 1, No. 7, p. 73.

Falla, R. A. (1936)—Arctic Birds as Migrants in New Zealand. Rec. Auck. Mus., Vol 2, No. 1, pp. 3-14.

Oliver, W. R. B. (1930)—New Zealand Birds.

Philosophical Institute of Canterbury (Stead, E. F., on The Native and Introduced Birds of Canterbury), pp. 204-225.

Mayr, Ernst (1945)—Birds of the South-West Pacific, pp. 41-42.

Reed, A. H. & A. W. (editors) (1951)—Captain Cook in New Zealand, p. 60.

Robinson, late H. C. and Chasen, Frederick N. (1936)—The Birds of the Malay Peninsula; Vol. III., Sporting Birds; Birds of the Shore and Estuaries; pp. 142-143.

Turbott, E. G. (1951)—Notes on Parengareaga Harbour Waders, Notornis 4, pp. 122-134.

Watt, A. H. (1947)—Birds of Parengarenga Harbour and Farthest North, New Zealand Bird Notes, Vol. 2, pp. 115-120.

THE BIRDS OF THE MOTUNAU RIVER MOUTH.

By D. E. Crockett, Christchurch.

The Motunau River enters the sea at the northern extremity of Pegasus Bay after flowing through a gorge a hundred feet deep in places. At the mouth a small alluvial marine plain has been formed, part of this being covered at high tide. The vegetative covering of the district is predominantly tussock grassland, with clumps of exotic conifers, in the form of windbreaks and shelter belts, spread sporadically across the plateau. Native bush occurs in ravines in the cliffs north and south of the river mouth.

During January, 1953, I spent two weeks at the river mouth with Mr. W. V. Jacobs, of Christchurch. Again, in January, 1954, I spent two weeks at the mouth, this time in the company of Mr. Sydney J. Wright, of Crossgates, Yorkshire, England, and Messrs. L. Jago and Chris Holmes, of Christchurch. These persons, I would like tc thank for their help and co-operation in the field.

EUDYPTULA sp.—An abandoned nest containing the skeletons of two **Eudyptula** penguins was discovered under a large beach boulder on the north side of the river mouth. No other signs of breeding were noted.

BROAD-BILLED PRION (**Pachyptila vittata vittata**).—One corpse of this species was brought to me for identification by Michael Grooms on January 16, 1953.

PIED SHAG (**Phalacrocorax varius varius**).—When I first visited the Motunau River mouth in January, 1952, I observed no pied shags about the mouth, but in January 1953 five birds were present roosting in the trees on the northern bank of the river. However, when the roost was re-visited on January 20 1954 it was found that it contained two nests each with two fully-fledged young. Twenty unemployed birds also used this clump of pines as a roost during the night and also when the sea was too rough for them to feed. During the day these birds could be observed drying themselves on beaches north and south of the mouth, or fishing at sea singly or in a flock with white-fronted terns. E. F. Stead, in his "Life Histories of New Zealand Birds," states, on page 14, "That there were two large colonies of pied shags at Motunau that have since been destroyed." Apparently the birds are re-establishing themselves here and we hope with the presence of sympathetic residents at the mouth, the colony will grow to its old status.

SPOTTED SHAG (**Phalacrocorax (Stictocarbo) punctatus punctatus**). Ten observed roosting on a rock in the sea on the northern side of the river mouth in January 1953. Only two juveniles were seen on this rock during January 1954. One juvenile found dead on the 22/1/54 by Peter Groomes was sent to the Canterbury Museum.

BLUE HERON (**Egretta sacra sacra**).—A pair was observed in a dead tree half a mile up the river on numerous occasions during our stay in January 1954. The local residents say that the birds nest in the district but we were unable to locate any nests. Solitary birds were observed practically every day north and south of the river mouth.

PARADISE DUCK (**Tadorna variegata**).—One female, in the company of an adult black-backed gull, was noted half a mile up the river on January 21 1954.

GREY DUCK (**Anas superciliosa superciliosa**).—Four noted on a tarn two miles from river mouth on January 21 1953.

BLACK SWAN (**Cygnus atratus**).—Seven flew northwards over the river mouth on the morning of January 16 1953. On the evening of January 14 1954 six were observed flying southwards. While walking along a beach one and a half miles south of the Motunau River mouth in January 1954, one was observed half a mile offshore.

AUSTRALASIAN HARRIER (**Circus approximans gouldi**).—A pair observed on numerous occasions soaring above the plateau. On 18/1/54 these birds were observed tearing a rabbit to pieces in a swamp on the

northern bank of the river. On January 17 1954 we observed one flying towards Motunau Island, where it later landed. One was seen returning to the mainland on January 19 1954.

SOUTH ISLAND PIED OYSTERCATCHER (**Haematopus ostralegus finschi**).—During our stay in January 1953 and 1954 groups of oystercatchers were observed flying northwards every night. The largest numbers observed at one time were two flocks of thirteen each, but usually they were in sixes or singly. The river mouth appears to be on a "flight line" of these oystercatchers.

BLACK-BACKED GULL (**Larus dominicanus**)—Two pairs, each with two juveniles, in the first year plumage, were resident at the river mouth. Every evening numbers were noted flying across the river mouth en route to Motunau Island where they roost. When the local fishermen return from a fishing trip a flock of up to a hundred birds congregate to feed on the refuse, 50% of these birds were usually immature in various stages of plumage.

SMALL GULLS (**Larus novaehollandiae scopulinus** and **Larus bulleri**). A mixed flock of thirty birds frequented the river mouth, feeding on refuse and kitchen scraps. They were very tame and cheeky.

BLACK-FRONTED TERN (**Chlidonias hybrida albostriatus**). — Two noted fishing one mile up the river on January 17 1954.

WHITE-FRONTED TERN (**Sterna striata**).—A flock was present on the shingle spit at the river mouth, the numbers varying from 100 to 350, depending upon the weather and state of sea. This flock included 20 juveniles. On January 13 and 15 1954 large numbers of terns, gulls, petrels and shags were noted feeding offshore.

ROCK PIGEON (**Columba livia**).—Eight birds noted during our stay in January 1954. These birds roosted in a cliff on the northern side of the river mouth.

NEW ZEALAND KINGFISHER (**Halcyon sancta vagans**)—Two pairs present at the river mouth January 1954.

SKYLARK (**Alauda arvensis**).—Approximately ten birds present on the tussock grassland plateau during our stay in 1954.

SOUTH ISLAND FANTAIL (**Rhipidura fuliginosa fuliginosa**).—Two birds of the pied variety noted in a gully north of the Motunau River mouth on 17/1/54.

BLACKBIRD (**Turdus merula**).—Three or four pairs noticed in exotic conifers around the mouth on various occasions. On January 14 1954 one commenced singing at 4.32 a.m.

BELLBIRD (**Anthornis melanura melanura**).—Two birds seen and others heard in a gully north of the Motunau River mouth on January 17 1954.

WHITE-EYE (**Zosterops lateralis**).—Two seen in bush on cliffs south of the river mouth January 16 1954.

GREENFINCH (**Chloris chloris**).—Three observed in exotic conifers on the north bank of the river on January 14 1954.

GOLDFINCH (**Carduelis carduelis britannica**).—A flock of approximately 20 birds, including several juveniles, was noted at various points about the river mouth during January 1953 and 1954 feeding on thistles and other seeds.

CHAFFINCH (**Fringilla coelebs gengleri**).—Three birds noted in exotic conifers on the north bank of the river on January 16 1954.

YELLOWHAMMER (**Emberiza citrinella citrinella**).—Approximately twenty birds, either single or in small loose flocks, were noted on the tussock uplands during our stay in January 1954.

HOUSE SPARROW (**Passer domesticus**).—Twelve to fifteen birds may be seen at any time picking up scraps around the baches at the

Motunau River mouth. All day, house sparrows may be seen flying into holes in a cliff on the north bank of the river with food for young birds.

STARLING (**Sturnus vulgaris**).—A small flock of six birds was noticed about the river mouth in January 1953 and 1954. These birds roosted in the cliffs on the north bank of the river.

WHITE-BACKED MAGPIE (**Gymnorhina hypoleuca**).—Two pairs each with a single juvenile, frequented the river mouth during our stay in January 1954. In January 1953 three miles up the Motunau River a flock of three hundred white-backed magpies was noted in a paddock of gorse, in the evening they roosted in pine trees nearby. It is unusual to see such large flocks of magpies in Canterbury.

NESTING OF SOUTHERN BLACK-BACKED GULLS.

By A. R. Harris, Dunedin.

For several years I have watched a small group of southern black-backed gulls (**Larus dominicanus**) gradually building up a nesting colony on four small tidal islands or reefs at Te Anawaewae Peninsula, Portobello, Otago Harbour. The colony has grown since 1940 from one nest to six in 1952 and five in 1953. One nest is on a low-lying rock 40 yards from the shore and this frequently results in the loss of the nest when fresh winds at high tide drive the seas right over the top. Three "islands" are islands only half the time, i.e., approachable from land towards low tide twice daily.

The breeding place is 700 yards from a weekend dwelling, 1,000 yards from a biological station, and well off the beaten track except to occasional picnickers who frequently are Guides and Boy Scouts and of a non-destructive nature. The birds have become accustomed to my coming and going without causing them unnecessary molestation. An Otago Harbour Board by-law prohibits the discharge of firearms on the harbour; this unwittingly provides another protection.

During the non-breeding period pairs of birds have territorial ambitions over sections of the harbour and small bays and drive off intruders which they quickly recognise, but during periods of plentitude of food such as whalefeed or eyed ova, they tolerate large flocks of their own types. They also tolerate red-billed gulls, blue herons, shags, Caspian terns and grey ducks without demur.

During the breeding season they take up station and drive off all-comers. The nesting birds both contribute to the building and collection of nesting material for a short period before the female lays. Eggs are laid over a period of three to five days—the period of incubation is 28 days and eggs hatch at intervals over two days. The normal cluth for old birds is three eggs and for younger birds two eggs. I have never recorded an infertile egg and if there is no interference a full clutch is assured. The young leave the nest early and take shelter behind anything offering near the nest. They are fed regularly by both parents on disgorged food such as whalefeed, small fish, crabs or fragments of fish offal. If seriously disturbed, the young take to the water even at the age of two days and swim about 40 or 50 yards into the wind and are then shepherded by the adults and skilfully brought back to the nesting site and conceal themselves in rocky crevices until danger passes, and they resume their nesting or hatching areas. At three weeks they often accompany their parents swimming and at four or five weeks they are able to fly short distances, up to a chain at first. By this time they are as large as their parents and crake for food. At about five months the young are treated as "reared," but the batch keep together quite a deal.

Although the plumage of both sexes is the same at maturity, the males can be recognised fairly surely by their thicker necks and the male usually calls "kaloo, kaloo," while the female calls "kla, kla, kla, kla," much the same as a hen. This year there were five nests, thirteen eggs laid and twelve chicks reared. Nesting cards are submitted accordingly.

WHITE-WINGED BLACK TERNS NEAR AUCKLAND.

By R. B. Sibson, Auckland.

In the late afternoon of 14/2/53, F. M. Brookfield, G. W. Gummer and I found an obvious marsh-tern of the genus Chlidonias, flitting tirelessly over the shallow man-made pools which lie a short distance back from the beach at Miranda. Although the black-fronted tern (**S. albostriatus**) has not yet been recorded in the Firth of Thames, we were at first inclined to assume that the bird which we had before us was an **albostriatus** in some sort of puzzling immature or transitional plumage; but the longer we watched the more we doubted this identification, and we began to wonder if this bird might not be a white-winged black tern in winter plumage. It was flying low over the water into the fresh wind, dipping lightly to pick food off the surface with a quick downward movement of the bill. Not once was it seen to plunge and break the surface with a splash. On reaching the windward shore of the pool it swung back to the other end and worked steadily upwind again. The local stilts disliked its low-flying tactics and darted at it.

Both F.M.B. and I have had some experience of **C. albostriatus** in the south. Our reasons for doubting if this bird was **albostriatus** were:—

(a) Its underparts from chin to tail were quite white and generally it was not dusky enough.

(b) The rump was not markedly white but was of the same pale grey as back and tail.

(c) The tail, though in fact slightly forked, usually looked almost square and was sometimes bluntly fanned.

(d) The dark markings on the fore edge, tips (primaries) and part of the rear edge (secondaries) of the wings made too great a contrast with the light grey of the rest of the wings and back. (v. Sketch A.)

(e) The shape of the wings and the bird's manner of flight and feeding did not accord with what we remembered of the black-fronted tern.

Further points noted on its first appearance were that the bill was small and dark; the face and forehead were white; there was a patch of black on the back of the crown and nape, extending down to a thin wedge behind each eye, but because of the bird's restlessness the exact shape of the black was difficult to determine; the lower neck was white, so that the observer gained the impression of a white collar; the legs were dark red; there were no brown mottlings to indicate that it was a juvenile; finally, as one of the watchers remarked, "the pattern of the wings was almost prionlike."

On the following morning the bird could not be found, but in the afternoon it revisited the pools and was watched for some time by H. R. McKenzie and Miss N. Macdonald. Neither had ever seen a tern like it.

What had made me hesitate to identify it as a white-winged black tern was the uniform grey of the back, rump and tail. (v. Alexander, Birds of the Ocean, p. 189.) On this point, however, The Handbook of British Birds (vol. 5, p. 9) says: "In adults in winter rump tends to be rather paler than back, but this is very indefinite and quite worthless as a field character." Further observations in the next two months were to show that it was indeed a specimen of **C. leucopterus**, a species not previously reported from the North Island.

On 22/2/53 Mr. and Mrs. J. Prickett took me to Miranda. We were at the mouth of the creek when the "mystery" tern appeared suddenly and settled out of sight among godwits, stilts and gulls. Later it was watched over the pools, and I carefully noted that the rump was of much the same shade of grey as the back and tail. N.M. secured some photographs.

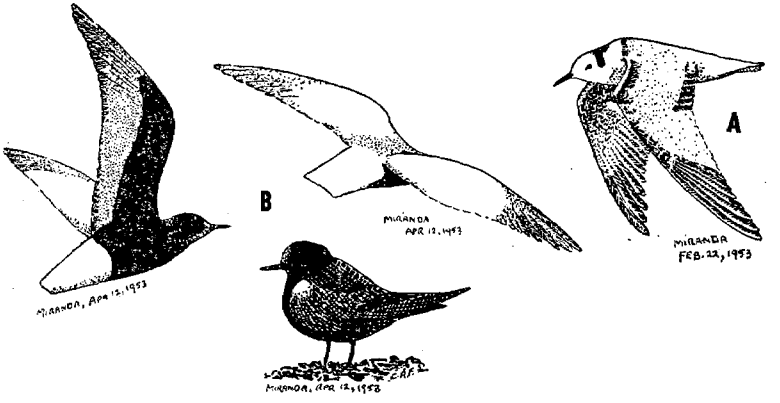
On 28/2/53, D. Brathwaite and D. A. Urquhart and I had the opportunity of watching it again. The pattern of the upper surface of the wing was, if anything, more striking than before, but as yet there was no

hint of the remarkable changes which were to alter the whole appearance of the bird. Away from its favourite pools it spent some time flying up and down Miranda Creek and over the mangroves, apparently hawking flies. We spent the night at Miranda. Next morning at 7 o'clock a sharp unknown call made me look up, and there were two of these terns. After they had spent some time hawking over the creek, one headed off for the pools and the other flew northwards up the coast. I did not see the two together again, but Mr. John Jonson, of Kaiaua, writing in May, reported that two birds "which seem to be a pair and are about the size of a pigeon, are flying about one of the water-holes this side of Miranda. They are catching flies or insects and are very interesting to watch."

The next report comes from H.R.McK., who, on 19/3/53, found the tern resting with stilts in a patch of salicornia. There was now no doubt that it was a white-winged black tern assuming breeding plumage. According to H.R.McK.'s notes, "the underwing was so heavily mottled with black as to be nearly all black; the sides of the body under the wing were also blackening; across the shoulders ran a thin dark line below the white of the neck; the upper surface of the wing was quite dark with a lighter panel over the shoulder as in the adult W.W.B.T.; the extent of the black on the head was much as before."

On 6/4/53, J. C. Davenport and I found the tern again. It was rapidly assuming nuptial dress. Back, flanks and belly were now wholly black. The black of the wings had deepened. Face, forehead, throat and neck were still white, but the black on crown and nape was increasing, so that the white-collared effect was more pronounced than ever. The tail was now conspicuously white. The bird was now on good terms with the local stilts. It was seen to fly with them and settle near them on an islet in the pool.

Further changes occurred in the ensuing week, for when N.M. photographed the tern on 12/4/53 the neck was darkening but forehead, face and chin were still white. By 17/4/53, as reported by H.R.McK. and J.C.D. the white area on the head had still further diminished. The bill was still dark. Although this was the last occasion on which the white-winged black tern was seen at Miranda by regular members of the Auckland ornithological team, Mr. Jonson's letter, quoted above, seems to indicate that two birds were frequenting the pools at least till May. (v. Sketch B.)



WHITE-WINGED BLACK TERN, MIRANDA, 1953.

Sketches from photographs by N. Macdonald. A: In early stage of assuming breeding plumage on Feb. 22, 1953; and B (three positions) in advanced nuptial dress, showing the distinctive underwing pattern and white tail.

Some weeks later, Auckland ornithologists had another C. leucopterus to watch. On 14/6/53 when they were taking a winter census of waders in Manukau, B. D. Heather reported seeing an unusual tern over a flooded paddock beside Ascot Road, Mangere, and about a quarter of a mile inland from Puketutu Flats. The collapse of a drain and prolonged rains had turned a low-lying paddock into a most attractive pool, some three acres in extent. Because of the wet winter, this pool lasted till September. Stilts soon found it a rich feeding-ground; red-billed gulls in hundreds resorted to it for bathing; a white-faced heron spent a week there in late June; and on almost any day till 27/8/53 it was possible to see the white-winged black tern swooping and dipping over the surface. Of the many ornithologists who went keen to see it, few were disappointed. In the eleven weeks between June 14 and August 27 I made twenty-three visits to Ascot "flash", and on nineteen of these the tern was present. The following notes are from my diary:—

June 15.—3 p.m.: Clear and sunny. The tern was busily hawking and alighted only once while I was watching. Many stilts and gulls were present but did not molest it. Once it picked something off the water from among four gulls and later its sudden swoop upset a stilt's balance. Its plumage is much the same as that of the Miranda bird when it was first seen, but the black and grey pattern of the wings is less vivid and there seem to be faint brown flecks on the upper surface.

June 16.—3.45 p.m.: Tern tirelessly flitting up and down pool. Two stilts which came in followed it up and down once, during which pursuit it twice dipped unconcernedly down to the surface.

June 18.—4.10 p.m.: Tern left the pool for the harbour, where I found it resting on a small rock near Puketutu causeway.

June 19.—4 p.m.: Tern restless as ever. Weather bitterly cold.

June 25.—4 p.m.: A squall was threatening and the tern came in from the harbour. Then parties of stilts, with the wind behind them, came rocketing in from the tideline. The tern flew up and down the pool with them before they settled.

July 11.—The brown in the wings seems to be fading.

July 22.—3.15 p.m.: Very cold. Tern feeding busily. The grey of the upper wing is cleaner. The contrast between the black and grey is sharper.

July 29.—1.30 p.m.: N.M. kindly supplied the following note: "The tern landed on a small grassy island in the pool and stayed there preening busily while I watched it through Mr. Prickett's powerful telescope. Of particular interest were the markings on the head which could be clearly seen. Crown and nape were dark and mottled, while the dark continued in a line at the back of the eye, but with a space of pure white between it and the eye. The neck was pure white. The back was grey, slightly darker across the shoulders, the rump grey and the tail was pale grey above and white underneath. The outer primaries were black or very dark. The rest of the wings was grey, darker on the secondaries. The bill was dark with a slight reddish tinge. The feet were hidden in the grass. The bird was obviously moulting, because as I watched, it pulled out a grey secondary feather which fluttered on to the grass. When not preening, the bird would settle down into the grass and appear to doze. A characteristic movement in flight is a graceful skimming for several yards just above the surface of the water, then a rapid rise and down again, wings flapping continuously."

August 4.—9.15 a.m.: Red-billed gulls dominated the pool. The tern was lurking either in a corner or on a little pond nearby. When it flew over the big pool the gulls chased it, but it had no difficulty in dodging them. It appeared to catch insects over the land. Once, with stilts, it flew some way inland and returned with them. It spends much more time resting now. As the gulls moved away it resumed its hunting over the pool. The croaking of frogs suggests that frog spawn or tadpoles may be a new source of food.

August 6.—4 p.m:: The tern was resting on the island and I was able to examine with the aid of a telescope the markings of the head and to confirm N.M.'s findings. Its legs are reddish.

August 8.—8.45 a.m.: Hundreds of gulls present. When the tern emerged from its secluded corner into the open it was harried by gulls.

August 12.—The water is down a little. With the milder weather the tern spends more time on the ground. Today it was seen to walk about, apparently snapping up insects, which are likely to abound along the muddy fringe of the pool.

August 16.—Water very high again. Tern very active. No gulls.

August 27.—2.45 p.m.: Tern not present when Dr. Falla and I arrived. Suddenly it tumbled out of the sky and began to feed in its usual way, which recalled the popular song "Round and Round for Ever and Ever." Whereas back, rump and upper surface of tail were of a fairly uniform pale grey when this tern was first noticed in June, now the rump is showing white in contrast to the grey of the back and tail, and the pattern in the wings is more pronounced.

It is rather surprising that a white-winged black tern should spend the coldest months of the winter in a place so bleak as Mangere, which is exposed to the full force of the south-west winds. Ihumatao, which is part of Mangere, means "cold nose." There is no doubt that the tern was attracted, as were many stilts, by a sizeable sheet of casual water as a potential feeding-ground. Recent observations, both in Mangere and at Miranda, suggest that shallow pools near the coast which are sufficiently rich in insect life to attract stilts, also suit wandering white-winged black tern.

It may not be unprofitable to speculate on the age of the two single terns which are the subject of this discussion. If, as seems likely, they were bred in some Asiatic marsh, I am inclined to think that the Miranda bird was nearly two years old, i.e., hatched about June, 1951, and the Mangere bird a yearling, i.e., hatched about June, 1952. This hypothesis tallies quite well with the observed changes in their plumages, e.g., the almost complete assumption of nuptial dress by the Miranda bird—though it would have to travel fast if it was going to be breeding in Asia by the end of May—and the disappearance of the last traces of brown immature mottling in the Mangere bird. Alexander (Emu, Vol. 17, pp. 95-100) has described a remarkable invasion of thousands of white-winged black tern into Western Australia at Easter in 1917. They arrived overland from the north-east after a strong easterly blow. Nearly all were immature. Less than 1% were in full breeding plumage. The Cape York area is probably a regular wintering ground for white-winged black tern of Asiatic origin. The species is not known to breed in Australia.

But if, as Stead believed, white-winged black tern bred at Lake Ellesmere and these birds were of New Zealand origin, I would suggest that the Miranda bird was hatched about December, 1951, and the Mangere bird about December, 1952. On this hypothesis the Miranda bird was assuming nuptial dress some six months before actual breeding. This is not as surprising as it at first seems. Some black-fronted terns (**C. albostriatus**) are in nuptial dress by the end of May, though four or five months must elapse before egg-laying. In Africa, **C. leucopterus** breeds just south of the equator, in Kenya nd Tanganyika, in June and July. It would, indeed, be interesting if at the other end of its world range it was breeding as far south of the equator as the South Island of New Zealand.

All previous New Zealand records of the white-winged black tern have been from the South Island. However, had I not been guilty, as I am now convinced, of a misidentification, this species would have been recorded more than a decade ago from the North Island. On 6/5/41 W. Ridland and I watched a marsh-tern flitting over Lake Kanono, a big pool among the Poutu sandhills near North Kaipara Heads. Although I was a newcomer to New Zealand, I had seen black-fronted terns at Muriwai, some thirty miles to the south, and I somewhat hastily assumed that this bird was also a

black-fronted tern. (Rep. and Bull, O.S.N.Z., p. 85 and Notornis 3, p. 11.) Fortunately the bird was so strikingly marked that I took careful note of its plumage, and when it alighted on a post made a hasty thumbnail sketch. In the light of recent experiences I am quite certain that it could only have been a white-winged black tern. While we were watching the tern, a fine specimen of the blue moon butterfly (**Hypolimnas bolina**) was sunning itself on the scrub manuka. Is it too fanciful to suppose that both tern and butterfly had been borne on the same wind from the direction of northern Australia?

Two other possible occurrences of **C. leucopterus** have come to light. In September 1953 I visited the Far North and in the course of conversations with Messrs. A. H. Watt and Kaka Wiki, learnt that in August 1949 and again in August 1953 at Te Kao single small greyish terns had visited wet paddocks which were much frequented by red-billed gulls. From the description of their behaviour I concluded that, while certainty was impossible, these terns were in all likelihood specimens of **C. leucopterus**, which has truly been described as a "great wanderer."

If the white-winged black tern is not breeding in New Zealand—and there is no substantial evidence that it is—its reaching New Zealand at all is a feat of travelling comparable with the occasional wandering to eastern America by specimens of presumably European origin. A perusal of the relevant literature shows that little is known about the normal southern limits in winter of the Asiatic population. Malayan ornithologists agree that the species is a regular migrant and winter visitor to the Straits of Malacca, Gibson-Hill adding that the numbers vary considerably from year to year. In the Philippines, Delacour and Mayr tersely describe it as a winter visitor. Mayr does not include it either in his list of New Guinea Birds, 1941, or in his Birds of the South-West Pacific, 1945. According to Serventy and Whittell, it "sometimes reaches the coast of northern Australia." Alexander chronicled the great invasion of Western Australia in 1917, but nearly thirty years elapsed before the species was recorded again. Hindwood (in lit) knows of no occurrence near Sydney.

Of the many Auckland ornithologists who watched the local white-winged black terns in 1953, I am especially grateful to Miss N. Macdonald, Mr. H. R. McKenzie and Mr. and Mrs. J. Prickett, who put at my disposal their notes and photographs, and, in discussion, gave me the benefit of their observations on these stimulating birds.

THREE OBSERVATIONS OF FANTAILS.

By J. M. Cunningham, Masterton.

(1) INCUBATION.—On September 5, 1953, I noticed a pair of fantails (**Rhipidura flabellifera**) had just, within a few hours, commenced building a nest on a tree fern frond, overhanging a stream flowing through my garden. It was thus favourably placed for observation and activities were watched in some detail. The nest, five feet above the water, was sheltered by another dead frond, and differed in no way from numerous published descriptions. On examining the not inconsiderable literature, however, I was amazed to find an almost complete absence of data concerning the incubation period. With such a common and readily observable species, it is certain that the period must have been determined on many occasions, but the only published references are W. R. B. Oliver (N.Z. Birds, 1930, p. 470) who states: "Mr. Wilkinson informs me that the period of incubation is 13 days and the young spend a further fortnight in the nest," and A. S. and the late Amy Wilkinson (Kapiti Bird Sanctuary, 1952, p. 64): "Incubation lasts about 13 days and for two weeks the young stay in the nest." ("About 13 days" does not, of course, imply doubt but rather that the period is variable.)

The following is the relevant information from my nest record card number 245 (on which entries were usually made three times daily):—

September 5—4 p.m.: Nest just commenced.
7—p.m.: Shell almost complete.
8—8 a.m.: No lining yet.
9—8 a.m.: Lining and nest complete.
11—Empty.
12—10 a.m.: One egg.
13—9 a.m.: Sitting.
11 a.m.: Two eggs; not sitting.
5.30 p.m.: Two eggs; not sitting.
14—8 15 a.m.: Three eggs; not sitting.
5.30 p.m.: Three eggs; not sitting.
15—8.15 a.m.: Sitting.
12 a.m.: Four eggs, sitting, but flushed bird which returned.
29—5 p.m.: Four eggs, " " " " "
30—8 a.m.: One egg and three chicks.

October 1— 5 p.m.: One egg and three chicks.
2—8 a.m.: Three chicks, unhatched egg disappeared during night.
13— p.m.: Three chicks.
14—1 p.m.: Out of nest.
17—5 p.m.: Three flying well.

It may be seen that the nest was completed on September 9, in about 3½ days. Eggs were laid daily, apparently early in the morning, the first on September 12, and incubation commenced with the laying of the fourth egg on September 15. Up till then no bird had been found on the nest except when (apparently) laying. Three eggs were found hatched on September 30 at 8 a.m., giving an incubation period of 15 days. The extreme limits could have been as little as 14 days 5 hours or as much as 15 days 14½ hours, but if it is assumed that eggs were in fact laid before 8 a.m. and that hatching took place about the same time the period was almost exactly 15 days. The last egg, which did not hatch, disappeared on October 2 and the three chicks left the nest on the morning of October 14, after a nestling period of 14 days. They were seen to be flying well on October 17, when observations ceased.

The above is given in some detail to impress on members the desirability of completing nest record cards—though it is rarely that such complete details can be given—and the necessity of not making unjustifiable assumptions. (For instance, it is not shown conclusively that laying and hatching take place early in the morning.)

(2) NESTING TENACITY.—It is well known that fantails are devoted to their nest, and birds can frequently be stroked when sitting. On September 23, 1940, during a high gale, I observed two birds (one of which had only one leg), sit together, one on top of the other. This may have been due to their anxiety to protect the eggs in the gale which was heavily lashing the branch on which the nest was built, or possibly it was due to excitement caused by the near hatching of the eggs (one or two days later). The former, however, is the more likely, as on October 27, 1952, I observed a similar occurrence only nine days after commencement of incubation.

(3) DISTURBANCE WHILE NESTING—Although I have not known a fantail's nest to be deserted through being watched, undue disturbance may well cause this. While a pair was feeding very young chicks in the nest, one bird repeatedly flew close to me so I caught it in a small net, for examination. It was ringed and on its release it immediately left the nest site and took up residence some two chains away. The feeding of the chicks was continued by the other bird on its own. They were all successfully reared.

NOTES ON THE BIRDS OF MOTUNAU ISLAND

By D. E. Crockett, Christchurch.

Motunau Island lies two miles south-east of the Motunau River mouth and at one stage in the past has been part of the mainland. The island rises 110 feet and is topped by a plateau about three acres in extent. This plateau is covered mainly with tussock, except for one or two patches of bracken. The scotch thistle grows plentifully throughout. Two cabbage tree are the only "trees" of any type on the island. The south and east sides, which have relatively gentle slopes, are covered in tussock with scattered patches of scotch thistle. The north and west sides are very steep and only in a few places is there any vegetation, this being the ice-plant (**Mesembryanthemum**).

In the late nineties, sheep were grazed on the island, but were later removed owing to competition from rabbits which had been foolishly introduced there by a shepherd in 1893. The offspring of these rabbits persist on Motunau Island to the present day. The present population consists of rabbits of numerous colour varieties, including black, golden brown and streaked. These rabbits suffer from some disease which causes a "spotted effect" on their liver, which makes them unfit for human consumption.

The landing place is a small shingle beach on the north-east side of the island, and only in very calm weather is it possible to effect a landing. On January 15 and 16, 1953, Mr. W. V. Jacobs and myself managed to land for a few hours. This was made possible through the help of Mr. H. Taggart, of Christchurch.

Notes on the birds follows:—

PENGUIN (**Eudyptula sp.**).—This penguin I identified as the white-flippered penguin (**Eudyptula albosignata**), but as I did not collect a specimen for comparison with museum series, the identity of the breeding penguin on Motunau Island must remain in doubt until such time as specimens can be obtained for comparison. If my identification of this bird is correct, then the breeding range of the white-flippered penguin will be extended to take in Motunau Island, forty miles north of Banks Peninsula. This penguin nests plentifully all over the island, especially under the beach boulders which are piled high on the western and northern sides of the island. These provide excellent nesting places for this species; under every rock there are one or two nests; under one large rock which formed a small cave, I found 22 nests. They also nest in burrows, mainly on the steeper north and eastern sides, although a few may be found on the plateau. It was easy to determine the species which inhabited each burrow by pushing a stick into the back of the burrow; if there was a series of sharp tugs the burrow belonged to a penguin, whereas if it was a whale bird (**Pachyptila turtur**) there would be a gentle tugging and pushing of the stick. At the time of our visit, January 15 and 16, the burrows were occupied by nearly full-grown chicks in a brownish down covering; no adults were present at the nests examined.

FAIRY PRION (**Pachyptila turtur**).—The fairy prion is an abundant nesting petrel on Motunau Island. Burrows of this species were located all over the island, large concentrations being found on the south and east sides. The fairy prion apparently falls victim to the ravages of the harrier and maybe, the black-backed gull; large numbers of skeletons were present at various parts of the island. The burrows of this species were about two or three feet long with a sharp turn to the left or right near the end; at the end the burrow was slightly enlarged. There a small nest was made of grass and feathers. At the time of our visit the burrows were occupied by chicks covered in greyish-blue down, the primaries were beginning to show and 1½ inches of down had been lost from the forehead. The chicks examined on Motunau resemble very closely a chick photographed on Whero Island by L. E. Richdale (Trans. Royal Society of N.Z., Vol. 74, Plate 21, Fig. 1). This bird was photographed on January 29, whereas the birds observed on Motunau Island at the same stage were noted on

January 15. This suggests a slightly earlier breeding season for the Motunau Island birds. No adult fairy prions were noted on the island or in adjacent waters during our visit.

SOOTY SHEARWATER (**Puffinus griseus**).—We did not locate any nests on the island although the sooty shearwater was common in waters off the island. In the Stead collection at the Canterbury Museum, there is a pair of sooty shearwaters taken from a burrow together on Motunau Island by Edgar Stead on December 23, 1928.

FLUTTERING SHEARWATER (**Puffinus gavia** subspecies).—About a dozen **gavia**-type petrels were observed on January 14, 16 and 17, 1953, feeding among the kelp on the reefs off Motunau Island. I was unable to determine whether they belonged to the typical form of **gavia** or to the elusive **huttoni** form.

WHITE-FACED STORM PETREL (**Pelagodroma marina maoriana**). Stead records this species from Motunau Island and he obtained eggs from the island on November 24, 1928. During our visit in January, 1953, we did not locate any nesting storm petrels, but they probably had burrows in the bracken on the north-west sector of the plateau, where small burrows were seen, but we did not have time to investigate them and establish the identity of their occupants.

PIED SHAG (**Phalacrocorax varius varius**).—Three seen drying themselves on the shingle beach near the landing place on January 15 and 16, 1953. Representatives of this species can be observed feeding in waters around the island at any time of the day.

SPOTTED SHAG (**Phalacrocorax (Stictocarbo) punctatus punctatus**). The spotted shag can be seen feeding in the waters around the island at any time of the day, and eight birds were noted resting on a large rock near the landing on January 15 and 16, 1953. This species probably nests on the north-west headland, but we visited the island too late to note it as a breeding bird of the island.

AUSTRALASIAN HARRIER (**Circus approximans gouldi**).—On January 16, 1953, we flushed a harrier on the plateau; it was feeding on a black rabbit. At various other points on the island we discovered the remains of a harrier's dinner. Harriers are apparently not resident at the island, although Stead, in his "Life Histories of New Zealand Birds," p. 107, states that he found a nest with eggs on the island; but during our visit we did not locate a nest or any young, and I am quite certain there was no nest on the island.

SOUTHERN BLACK-BACKED GULL (**Larus dominicanus**).—This species uses Motunau Island as a roost every night. During our stay in January 1953 and 1954 I observed numerous black-backed gulls flying towards the island. This species also nests on the island and on January 15 and 16, 1953, we found thirty to forty nests that had been used during the season. Only twelve nests contained chicks, which were nearly ready to leave. These nests were located on the north and east sides about twenty feet above the high tide mark.

WHITE-FRONTED TERN (**Sterna striata**).—Numbers can be seen feeding around the island and also in small groups in sheltered coves bathing and washing themselves.

ROCK PIGEON (**Columba livia**).—Three birds flew out of the cliffs on the north-western side of the island on January 16, 1953. Apparently large numbers roost on the island, according to a local fisherman.

GOLDFINCH (**Carduelis carduelis britannica**).—A small flock of a dozen birds noted feeding on thistles and other seeds during our visit in January, 1953.

STARLING (**Sturnus vulgaris**).—Two starlings flew out of the cliffs on the north-west side on January 16, 1953. The residents say large flocks of starlings roost on the island in winter.

BIRDS OF THE WHATAROA MOUNTAIN VALLEY.

By J. R. Jackson, Greymouth.

Summary.—During five days at Easter, April, 1954, and six days in May, 1954, 700 birds were counted while covering 60 map miles over the 150 square miles of the Whataroa watershed. To obtain absolute numbers from the relative figures, sheep were counted and their total afterwards ascertained. On this basis, approximate bird populations can be calculated. The validity of the method can be assessed by examining the premises and by alternative methods of estimation which are suggested.

Habitat.—The Whataroa Valley of South Westland has a watershed among mountains up to 10,000ft. at Mt. Elie du Beaumont, and for purposes of this estimation covers an area of 150 square miles, roughly rectangular in shape with vertices Mt. Adams, 7,000ft.; Mt. Tyndall, 8,000ft.; Mt. Elie du Beaumont, and Mt. McFettrick, 7,000ft. The northwestern side is along the Alpine Fault, and across the road bridge, 300ft. Geologically, the rock on the west is schist which gradually changes so that eight miles to the east in the Buller tributary it is greywacke. Schist soils are renowned for their high fertility and, indeed, the Whataroa Valley seemed an exceptionally fertile alpine valley. This may well be because of the flat floor of the glacial U-shape in the upper valley and the planar character of the lower valley formed from a fiord filled with eroded schist.

The hillside subjectively did not appear steep, though comparison of mean gradients with other neighbouring valleys shows no significant difference. The impression is confirmed by the fact that the Whataroa River has eroded down its bed as quickly as the land east of the Alpine Fault rose, so no sharp breaks in gradient occur, such as the frequent deep gorge just east of the Fault. The rivers run in vertical walled trenches between wide terraces, so the valley contains much flat and comparatively gentle sloping mountainside. This condition is conducive to fertility and a high animal population.

The vegetation on the river flats is rimu forest, or where cleared, exotic grasses, on the hillsides to 2,500ft. rimu forest, to 3,000ft. rata forest, to 4,000ft. on western faces nei nei (**Dracophyllum traversii**), and above alpine scrubs of nei nei (**D. longifolium**), five-finger, olearia, flax and tussock to 5,000ft, while beyond grasses and herbs to 7,000ft or more. The lowest snow in April was at 5,500ft., permanent ice in gullies at 6,500ft., and above 6,000ft. on southerly and easterly faces or 7,000ft. on northerly and westerly faces large neve regions. In May, during our expedition, snow settled to 3,000ft.

Accuracy.—To be counted a bird had to be seen and positively identified so perhaps as many birds were seen and not identified because of distance, light, a fleeting glimpse or lack of familiarity with the flight of each species. Later, fantails could be recognised by their flight, but all other birds were recognised by their colouring, usually on still specimens. All species were treated equally in the calculations but this introduces a bias as (1) birds and chamois of the tussock are more easily seen and identified at a distance so their numbers are inflated, possibly by two or three times; (2) in bad weather, especially above the bush, some species hide, though when passed near they could be heard. The pipit braved the weather while the rock wren hid almost at the disappearance of the sun; (3) some birds, especially the bell bird, had to be allowed to approach. On the second trip bellbird numbers are down, as in the bleak weather we had neither the time nor inclination to wait; (4) more generally the habits of birds differ: so to take extreme cases, the nocturnal animals, morepork and opossum are ridiculously low.

Method of Calculation.—The relative density method was used, and as Mr. Nolan kindly gave the number of sheep, "210 breeding ewes," the efficiency 20% of the sweep was found. The total population could now be calculated if it be assumed (1) that a fair sample of the area had been traversed; and (2) that a two-chain wide path was swept and the distance traversed twice the map miles.

The premises of the method are open to criticism, namely: (1) That relative frequency of sights is proportional to relative population (see above, differing habits). (2) That different species are equally easily identified. In the calculation it has been assumed that sheep and bush wren are equally easily identified. This method would establish suburban bird populations by including humans in the count. (3) The method can be tested by calculating the acre per chamois, namely, five. Perhaps ten might be reasonable, comparing it with Canterbury high country stock-carrying capacity (see above, animals of the tussock).

Two other independent methods are possible and worthy of using to check the method: (a) By ringing and finding the density of ringed animals. Perhaps the kea would be a convenient species to ring; (b) by nest counts.

Notable Absentees.—

Weka.—A set of arrow-head footprints were found near the Gunn confluence and possibly a weka call heard at the Butler confluence.

Gull.—No gulls were seen, perhaps because little time was spent on snowfields.

Blackbird.—Common in other alpine valleys here; no sign seen.

Results:—

Species.	No. seen.	1st Trip.	2nd Trip	%	Population
Silvereye	202	109	93	27	50,000
Grey Warbler	100	47	53	13	25,000
Fantail	105	48	55	14	26,000
Bilack Fantail	11	2	9	1	3,000
Tom-tit	81	30	51	11	20,000
Bellbird	71	46	25	9	18,000
Kea	63	16	47	8	16,000
Pigeon	34	12	22	4	8,000
Pipit	23	9	14	3	6,000
Bush Wren	20	9	11	3	5,000
Rock Wren	16	13	3	2	4,000
Blue Duck	8	4	4	1	2,000
Tui	6	1	5	1	2,000
Owl	1	–	1	–	250
Chaffinch	1	1	–	–	250
TOTAL	742	347	395	97	
Chamois	86	32	54		20,000
Opossum	3	3	–	–	1,000
Sheep	43	43	–	–	210

Rank correlation of relative numbers S=0.88 plus/minus 0.04.

Comment.—

Silvereye.—Occurring in flocks as did the warbler at this season. The decrease on the second trip would be accounted for by movement to the coastal plain. Common in riverbeds and about the bushline.

Bellbird and Tui.—Often in pairs; sought to repel the intrusion on their territory.

Kea.—Few seen when moving, but one day when confined under rock we were visited by twenty-two. They had had time to find us and come from afar.

Pipit.—Seen on the river flats and on the tussock. It braved the most bleak weather.

Rock Wren.—Common among the alpine shrub and tussock above 4000ft. Among this scrub were many glacial erratics under which the birds shelter in bad weather.

Chaffinch.—The only introduced bird; seen by Barrowmans Hut at the Perth confluence.

Chamois.—Doubtlessly too high. See text.

Opossum.—As it is a nocturnal animal this figure indicates the high infestation.

THE VALUE OF BIRD WATCHING.

In the course of his presidential address at the last annual meeting of the society, Mr. R. B. Sibson stated:—"E. M. Nicholson, one of the founders of the British Trust for Ornithology, has remarked that ornithology is one of the few sciences which remains mostly in the hands of the amateur. This may be because of the intrinsic attractiveness of seeking and watching beautiful creatures. But it is certain that the bulk of the information on the status and distribution of our birds and their breeding behaviour in the field must be collected by those who watch them for the fun of the thing; for the simple reason that the professionals are few, and in a land such as ours, with its long coastline and difficult terrain, adequate coverage can only be attained and maintained by an active society of enthusiastic amateurs.

"It is clear, therefore, that this places a high responsibility on the ordinary observer. It should be his or her aim to be a critical ornithologist, satisfied with nothing but the truth, even though it may take a long time to reach it. This is very important when a rare or unknown bird is met for the first time. I would suggest that with the aid of the new Checklist all members should make a list of the birds which are known to occur in their districts and a list of those which may occur, especially if it is a coastal district with an estuary or lakes. I would further stress the need for teamwork and regular watching at all seasons and in all weathers. We in Auckland are undoubtedly well-placed with Manukau and Miranda, Muriwai and Horuhoru so to speak, on our doorstep; but it is only by persistence that not only has much been learnt about the breeding, movements and distribution of some of the commoner birds but also a remarkable number of rare visitors and Arctic migrants has been discovered. The 'lone wolf' can do most valuable work in a district, but when rarities appear it is his duty to make careful notes in the field and if possible, to call in other witnesses I have always found the professionals in the museums and elsewhere most helpful. Only by the happy co-operation of both professional and amateur can ornithology in this country make any real progress.

"I am sometimes asked what is the point of all this bird-watching. My answer runs something like this. First of all, the collection of accurate information on New Zealand birds, with special reference to their breeding behaviour and requirements and to migration. Such information should be the basis of any sound programme of conservation. But apart from this, I believe that ornithology satisfies in a sublimated way—if I may borrow a phrase from the psychologists—man's old primitive instinct to hunt. Bow and arrow and gun have been superseded by telescope and camera. Ornithology appeals or should appeal also to man's aesthetic sense and help to satisfy his desire for beauty. It has a fascinating literature which opens up new vistas and fireside ornithology can be a profitable recreation. In short, bird-watching is not merely a science in the narrower sense. It is also a cultural activity which ought to make us into better and kinder human beings."

REGIONAL ORGANISERS.

The council has made the following further appointments:—

Otago.—Mr. Brian A. Ellis, 91 London Street, Dunedin, in place of Mrs. L. E. Walker, who has become South Island Vice-President.

For each of the following districts there has been no previous appointment under the new constitution:—

Wellington.—Mr. Kaj Westerskov, c/o Wildlife Section, Department of Internal Affairs, Wellington. His region comprises the cities of Wellington and Lower Hutt, Upper Hutt, southward and westward to the coast (including Kapiti Island), northward to Waikanae and Mt. Hector, and eastward to the divide of the Rimutaka Ranges.

Northland.—Mr. D. G. McMillan, c/o District High School, Kawakawa. Mr. McMillan's boundaries have yet to be fixed.

TWO BLACK-FRONTED TERN INCIDENTS.—On January 22, 1953, Mrs. A. C. Prentice, Miss M. L. Johnston and I were watching a colony of about 20 young black-fronted terns (**Chlidonias hybrida albostriatus**) beside Lake Wanaka. The young birds were in various stages of development, and adult birds were flying to and fro with food for their young. One adult tern with food in its bill was intercepted by a black-billed gull (**Larus bulleri**) and we watched the gull chase the tern for about a quarter of a mile. The tern came back minus its catch. It flew past the colony of young birds to where it had made its previous catch in the lake. In a few moments, with something in its bill, it was flying towards the colony of young terns. This time a young tern arose from its perch on the rocks and flew to meet the adult. Until the attack made by the gull, no young terns had flown to meet adults carrying food. Two days previously, we, with other members of the Dunedin Naturalists' Field Club, had watched a black-fronted tern flying over Diamond Lake in the Matukituki Valley. Probably it was feeding young, for it would carry away its catch, always in the same direction, and in a short time was back for more. It is impossible to say that the tern was always the same bird, but during our stay of about an hour at the lake only one tern at a time was seen. A New Zealand falcon (**Falco novaeseelandiae**) which appeared to be a young, but fully-grown, bird, had been perched on a willow tree near the lake, and had allowed two of the party to approach within fifteen feet of it. We were about to depart from the lake when the falcon made an attempt to fly across the lake and was attacked by the tern. The falcon screamed and dodged, but the tern was the more agile of the two, and made repeated attacks on the falcon. The movements were too rapid to be sure if the falcon was actually struck. The falcon managed to dodge away from the tern and we lost sight of it. For about five minutes all was peaceful. Then the falcon attempted another flight across the little lake, and once more was attacked by the tern. Again there were wild screams from the dodging falcon, which finally found a refuge on the face of a cliff overhanging the lake—(late) I. Tily, Dunedin.

LINNETS REPORTED SEEN IN DUNEDIN.—On March 27, 1954, at 1500 hours, six birds belonging to the finch family were seen on a steep uncultivated hillside covered mainly in grass (cocksfoot), Scotch thistles and gorse. The hillside faces directly into the sun and overlooks North-East Valley. The birds were approximately twenty feet away from me and were watched through x10 binoculars. They were feeding on Scotch thistle seeds and appeared to be tame. I got within twelve feet of one before it flew away. They were the size of a sparrow and the general colour of the underparts was a yellowy-brown. The breast was pinkish and a conspicuous red stripe ran down the centre of the forehead. The tail was black, edged with white, and the bird did not have a dark chin spot—a redpoll's identification mark. Their call was a rather short and brisk "zip-zip." The weather was sunny with bright white clouds and a light southerly wind. Further visits were paid to the locality on March 28 and April 10, 17, 19, and 24 but no sign of the birds was seen.—James Watt, Dunedin.

BLACK-WINGED PETREL—A CORRECTION.—I am grateful to Mr. K. A. Hindwood, Sydney, for pointing out that I wrongly included Lord Howe Island among the nesting stations of **Pterodroma hypoleuca nigripennis** in my note in Notornis 6 (1):20 (see also Checklist of N.Z. Birds, 1953:25). The two specimens from Lord Howe Island in the Australian Museum were considered by Hindwood (Emu 40 (1), 1940) to represent stragglers, although the circumstances under which they were collected (in Feb. 1917 and Mar. 1923) have not been recorded. It would not be surprising if the black-winged petrel bred at Lord Howe, which lies between the latitudes of the known stations, and the two specimens were collected during its rather late breeding season, but Mr. Hindwood points out that Roy Bell thoroughly combed the island for sea birds on behalf of Mathews in 1913-1915 without finding it.—C. A. Fleming, Wellington.

A HIGH FLIGHT OF BLACK SWAN.

By L. R. Richardson, Victoria University College, Wellington.

A flight of migrating birds which can be reasonably identified as black swan was observed over Wellington Harbour in the pre-dawn light at 7.10 a.m. on June 21, 1954. The sky was brightening in the first light, clear excepting for streaks of alto-cirrus, and some sparse low scud at 1,000 feet. While watching soaring black-backed gulls over Kelburn, a small dark patch of irregular and changing shape was detected in peripheral vision. This first sight placed the patch in the vicinity of Worser Bay and near the eastern shore of the harbour. It was then at approximately four times the altitude of the eastern ranges, which can be taken as giving a general skyline at 2,500 feet. The light beyond the hills threw the patch into high relief and with binoculars it could be seen as a compact group of large birds flying with a leisurely wing-beat on a track close to true north. The formation of the flight was not constant. There was no indication of a leader, and the general appearance was somewhat that of a small evening flight of starlings since there was a movement of the mass of the birds through various formations which, seen from the left and below, held closely to altitude and track although changing in formation, occasionally swinging from square to triangular and often with an irregular front.

The formation was so far away that individual birds were visible only at the margin of the formation and not in the main body. By diagrammatic representation of several formations as scattered dots, the agreeing density indicates at least 50 to 70 birds were present in the flight. Using the observed elevation above the skyline which is about 13 miles from the observation point and a track passing over Somes Island where a good vertical orientation was possible, the true altitude of the formation can be set at 6-13ths of the extended skyline elevation. This places the formation at a minimum height of 4,500 feet. The flight was in sight for six minutes and became invisible beyond Somes Island with the strengthening of first light.

The altitude and track indicate an origin of the flight in the South Island. The observed track gives no satisfactory point of departure but is suitable for a flight to Porirua Harbour. The time of sighting establishes that the flight had commenced well before first light. The ground speed estimated from the distance covered and time between first sight and last sight is of the order of 25 miles per hour. The nearest probable points of departure from the South Island are 45 to 50 miles away and the indication is then of a starlight flight commencing not later than 5 a.m.

The description of the formation was referred to Dr. R. A. Falla, who confirms the probability that this was a flight of black swan.

REVIEWS.

Ashton, E. H. Third Progress Report. Bird Ringing, 1951-1952. The Ostrich, XXV., No. 1, Feb. 1954, 2 – 12.

The progress of bird ringing in the Union of South Africa—the area of operations extends in fact from Rhodesia to Marion Island and Tristan da Cunha in the subantarctic—is well summarised in the above-mentioned report. Twelve thousand rings were issued, nearly half as many again as in the previous year, and over 5,000 were used. The rate of recovery is regarded as disappointingly low, but reasonable in view of the composition of the human population. The author of the report suggests that the time has come to consider limiting ringing to those species that may be expected to give better returns, namely, those that can be ringed in large numbers, such as herons, cormorants, gannets, swifts, swallows, queleas, and those likely to be readily recovered such as birds of prey and game birds.

Some of the recovery records, notably those of petrels and gannets, are of interest as directly comparable to those obtained for the same or

allied species in New Zealand. Thus mollymawks and Cape hens ringed near Table Bay were recaptured a year later within a hundred miles of the point of ringing. Two Cape gannets, ringed as fledglings on Malgas Island in January, 1952, were recovered on 1st July, 1952 off Benguella, some 1400 miles N.N.E. This is comparable with the movement to Australia of young New Zealand gannets, though **capensis** presumably follows a coast line all the way and reaches more tropical water than **serrator** has yet been shown to do.—R.A.F.

Ornithological Material from the Transit of Venus Expedition (1874) St. Paul Island Station, by C. Jouanin. (Bull. Mus. d'Hist. Nat. (Paris), Vol. 25, No. 6, 1953). (In French.)

An inventory of specimens remaining in the Paris Museum, unfortunately after much over-generous dispersal (Otago Museum was one recipient) and some loss of original labels. The birds were not the subject of a special expedition report. The expedition was at St. Paul from October 4, 1874, till January 4, 1875 and the naturalists visited New Amsterdam during this time but obtained no known bird material. Lantz, the chief worker on birds, made extensive collections now mostly dispersed.

Four St. Paul and two New Amsterdam skins of rockhopper penguins confirm Falla's views on the subspecific differences between the Tristan-St. Paul-New Amsterdam populations (**moseleyi**) and those of Kerguelen and Campbell Island. **E. c. moseleyi** breeds more than a month earlier than Falkland Island birds, and more than two months earlier than Kerguelen, Heard and Macquarie Island birds. A single (unsexed) albatross is attributed to **Diomedea exulans exulans** (wings 632, culmen 165.5 mm.) but is apparently not a breeding species. Several specimens each of black-browed, grey-headed and yellow-nosed mollymawks are listed. The last is generally admitted as a breeder at St. Paul, even if Pelzeln's text, on which the record depends, is not adequately explicit. Skins and eggs of **Phoebetria fusca** confirm its breeding at St. Paul. The expedition recorded **Procellaria cinerea** (of which an undated skin remains) as quite rare, in small flocks appearing only on December evenings. Jouanin suggests this represents early reconnaissance flights by individuals intending to nest the following autumn, but there is no proof of breeding.

Broad-billed prions are represented by five eggs and the following seven specimens, welcome additions to our knowledge of the St. Paul subspecies, **Pachyptila vittata macgillivrayi** (Mathews) previously known to most writers from the single type.

		Wing.	Tail.	Tarsus.	Mid Toe.	Culmen.	Width of Bill.
Adult male,	Oct 20	212	105	35	40	32.5	19.4
—	—	204	97	33.5	42	32	19.2
Male	—	200	102	32	39	30	17.5
Male	Dec. 11	199	100	33.5	40.5	33	17.2
Female	—	196	97	31	38.5	29.5	17.2
—	—	197	98.5	34	37.5	31.5	16.3
—	—	209	102	34	40.5	31.5	16.2

Unfortunately, Jouanin could not follow Falla in his subtle distinction of adults from juvenals but he assumes the October specimen, at least, to be adult, confirming the alleged smaller bill size of the subspecies.

St. Paul skuas are put in the circumpolar subspecies **lonnbergi.** A series of Antarctic terns, attributed to **Sterna vittata tristanensis** Murphy, includes moulting yearlings.

St. Paul's bird life had probably already suffered from human exploitation and introduced animals before 1874. Jouanin lists additional species reported in the literature but lacking specimens to vouch for their validity as inhabitants of the island.—C.A.F.

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