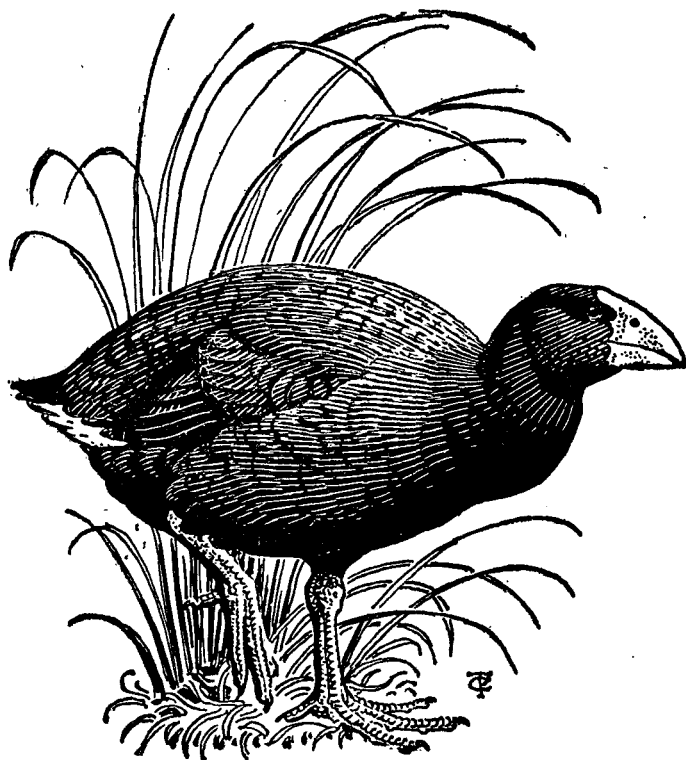


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A BRIEF SURVEY OF CUVIER ISLAND

By A. BLACKBURN

SUMMARY

The present state of the vegetation on the island is recorded, and the vigorous regeneration of the undergrowth since the extermination of goats and the exclusion of cattle is noted. Birds observed in June, 1966, and those recorded previously, are listed. The history of the eradication of goats, the exclusion of live stock, and the extermination of wild cats is summarised. The potential value of the island for the future is indicated.

GENERAL

Cuvier Island lies 25 miles due east of Cape Colville at the northern tip of Coromandel Peninsula, and 10 miles north of Great Mercury Island. It has an area of 782 acres, of which 58 acres at the southern end are fenced off to contain the lighthouse-keepers' live stock, and consist mainly of open pasture. Steep bare slopes encircle the northern and eastern aspects, whilst forest covers most of the remainder of the island, and is estimated to be 200 acres in extent. A main ridge, with a maximum height of 755 feet, runs approximately north and south, with a branch running to North West Point. In view of the potential wildlife value of Cuvier, the present state of the vegetation is noted in some detail, as there will probably be important changes in the future.

VEGETATION

Since the final eradication of goats in July, 1961, and the exclusion from the forested area of the lighthouse-keepers' cattle and sheep in June, 1963, regeneration under the whole of the canopy has been extremely vigorous, and there is everywhere a marked gap between the old under-storey and the regenerated growth. Some areas show distinctly the layer of six year old vegetation, and others, where the cattle grazed heavily, show a remarkably vigorous three year growth. In parts the new growth is so considerable that it is difficult to traverse.

The forest is generally an open one of pohutukawa (*Meterosideros excelsa*) 30 to 40 feet high, but it includes many old trees of giant girth. Puriri (*Vitex lucens*) is scattered throughout, and many of these are also of great age and girth. Tawapou (*Planchonella novo-zelandica*) is mostly restricted to a few areas. There are many large kohekohe (*Dysoxylum spectabile*), and a few large karaka (*Corynocarpus laevigatus*). Two species of maire (*Olea cunninghamii* and *O. apetala*) are scattered throughout, the former being the more common. Odd rewarewa (*Knightia excelsa*) and tawa (*Bielschmiedia tawa*), and one lone specimen of mangeao (*Litsea calicaris*) were noted.

In the under-storey, kohekohe is most abundant, with mahoe (*Melicytus ramiflorus*) and puriri next in order of abundance. Whau (*Entelea arborescens*), kohuhu (*Pittosporum tenuifolium*), kawakawa (*Macropiper excelsum*), houpara (*Pseudopanax lessoni*), are scattered throughout, also nikau palms (*Rhopalostylis sapida*), which in one valley form a very extensive grove. Rangiora (*Brachyglottis repanda*) is much in evidence. Parapara (*Hiemerliodendron brunonianum*) is confined to the main gully, but seedlings are sparsely appearing in other parts. Tree ferns of at least three species are common.

In the regenerated growth, kawakawa is generally predominant, with kohekohe next in abundance; but in some areas houpara is predominant, and in others hangehange (*Geniostoma ligustrifolium*).

Rangiora is everywhere in great abundance, as is raurekau (*Coprosma australis*), mahoe, and puriri. Other very common species are kohuhu, nikau, mapou (*Myrsine australis*) and karaka. Less abundant are wharangi (*Melicope ternata*), *Coprosma macrocarpa*, whau, fivefinger (*Pseudopanax arboreum*), rewarewa, and a trifoliate form of *Pseudopanax*. Porokaiwhiri (*Hedycarya arborea*), maire 2 spp., tawapou, and parapara are widespread but not common; and kowhai (*Sophora tetralopata*) and tawa are rare. Broom (*Carmichaelia* sp.) is flourishing in all situations, some specimens still showing signs of the severe predation by goats of six years ago. *Rhabdothamnus solandri* is common in some places, particularly along the bed of the one permanent stream on the island.

Climbing plants are limited to two species, *Clematis paniculata* and kaiwhiria (*Parsonsia heterophylla*), which are everywhere abundant. There is a complete absence of any of the climbing ratas (*Meterosideros* spp.), and no supplejack (*Rhipogonum scandens*) or lawyer (*Rubus* spp.). Epiphytes are scarce, only a few largish clumps of *Collospermum* being noted.

In old Maori clearings and other open areas, bracken fern (*Pteridium aquilinum*), a tall species of *Gahnia*, *Dianella intermedia*, and introduced grasses form the ground cover, with emergent vegetation such as kawakawa, mahoe, rangiora, houpara, and koromiko (*Hebe* sp.) slowly taking over. Several stands of vigorous young manuka (*Leptospermum scoparium*) are to be seen, and in some open areas *Muehlenbeckia complexa* has spread through the ground cover. Flax (*Phormium tenax*) is sparsely scattered over open areas and under the canopy, but has nowhere formed into clumps; it is, however, tending to do so on some seaward slopes.

In the coastal vegetation, there is the usual association, with taupata (*Coprosma repens*), ngaio (*Myoporum laetum*), karo (*Pittosporum crassifolium*), and some toitoi in evidence. Native spinach covers much of the ground. *Cassinia retorta* is showing a robust regeneration on bare seaward slopes.

THE BIRDS OF CUVIER

Bird life, except for Bellbirds and Fantails, is generally sparse throughout the forested area of about 200 acres but with the rapidly reverting habitat, changes may be expected to occur. Only one petrel, the Grey-faced, breeds on Cuvier.

NORTHERN BLUE PENGUIN (*Eudyptula minor*). A few come ashore in the coastal bays.

GREY-FACED PETREL (*Pterodroma macroptera*) nest in moderate numbers round the coastline, and particularly on headlands at North, East and South Points, on the lighthouse promontory, on the steep faces on the landward side of the isthmus, and on the ridge leading down to North-West Bay.

MOTTLED PETREL (*P. inexpectata*). There is no evidence today of *P. inexpectata* breeding on the island, nor has Merton seen any evidence on visits during the breeding season of the species. It was reported by Falla (1), who found freshly cleaned out burrows under the roots of pohutukawas on 7/10/33. He also quotes a report by the late R. S. Sutherland dated 1923 that there were odd burrows of *P. inexpectata* scattered over the island.

- PIED SHAG (*Phalacrocorax varius*). A colony of 6 pairs nests on the eastern coastline.
- HARRIER (*Circus approximans*). Three seen regularly.
- N.Z. FALCON (*Falco novaeseelandiae*). One seen on two days, and also noted by Merton in July, 1961, and by R. T. Adams in 1960.
- RED-BILLED GULL (*Larus novaehollandiae scopulinus*) nests in many hundreds on the rock ledges of the 'monument,' a big stack by the lighthouse isthmus, and on nearby cliffs. Skegg (*unpub.*) estimated 400 to 500 pairs in 1963.
- WHITE-FRONTED TERN (*Sterna striata*). The lighthouse staff reported that this species had nested on the monument and nearby, but numbers unknown. Skegg estimated 5 to 10 pairs in 1963.
- N.Z. PIGEON (*Hemiphaga novaeseelandiae*). A walk along either of the two main ridges usually produced two or three, and the total number we estimated at 12. The population appears static, small numbers having been recorded by Merton on both summer and winter visits. Falla (*unpub.*) recorded "a few" in 1933.
- NORTH ISLAND KAKA (*Nestor meridionalis septentrionalis*). An occasional bird seen, and numbers are probably limited to two pairs. Two were observed by Merton in February, 1961, but there is no earlier record.
- RED-CROWNED PARAKEET (*Cyanoramphus novaeseelandiae*). Not seen in June 1966, nor are there any recorded earlier sightings; but various lighthouse-keepers have reported seeing them occasionally.
- SHINING CUCKOO (*Chalcites lucidus*). Merton and party heard several in February 1964, and it was recorded by Falla in October 1933.
- LONG-TAILED CUCKOO (*Eudynamis taitensis*). Merton reported them as numerous and calling in Feb. 1961, and again in Feb. 1964 he heard one, and saw a juvenile.
- MOREPORK (*Ninox novaeseelandiae*). The only record is by Merton in June, 1963.
- KINGFISHER (*Halcyon sancta vagans*). Common in coastal bays and seen in bush clearings.
- SKYLARK (*Alauda arvensis*). Very common in the open pasture.
- NORTH ISLAND FANTAIL (*Rhipidura fuliginosa placabilis*). Common, particularly in the small bush clearings. Six regularly around the old radar barracks near the summit, and 8 counted in one small clearing. The species was more in evidence than during previous visits by Merton. An interesting feeding association with Silvereyes was noted on occasions, the Fantail keeping a few inches below a feeding Silvereye, and catching the flying insects disturbed by it.
- PIED TIT (*Petroica macrocephala toitoi*). None was observed on this visit, nor on any previous visit by Merton. It was recorded by Falla on 6/10/33, but no numbers were stated.
- GREY WARBLER (*Gerygone igata*). Generally distributed, but not common.
- SONG THRUSH (*Turdus ericetorum*). Not common. A few on the open pasture, and occasionally in the bush.
- BLACKBIRD (*Turdus merula*). Very common, on the pasture and elsewhere.

- DUNNOCK (*Prunella modularis*). Observed in small numbers throughout the forested area.
- PIPIT (*Anthus novaeseelandiae*). Uncommon, but seen or heard occasionally on the coast and in the open pasture.
- BELLBIRD (*Anthornis melanura*). The predominant species. Density appeared to be at least three per acre, giving a total population of c600. Song was heard frequently from isolated trees by the keepers' dwellings, and from low vegetation on "the monument."
- TUI (*Prothemadera novaeseelandiae*). Not seen on this visit, nor in recent years, although reported by the lighthouse staff as seen occasionally. It was recorded by Falla in 1933.
- SILVEREYE (*Zosterops lateralis*). Common, in small flocks. In July, 1961, Merton found flocks of 1000+ a common sight. "They left as suddenly as they had arrived."
- GOLDFINCH (*Carduelis carduelis*). The only sighting was a flock of 8 in a bush clearing. Previously recorded by Merton on the open pasture.
- REDPOLL (*Carduelis flammea cabaret*), CHAFFINCH (*Fringilla coelebs*), and YELLOWHAMMER (*Emberiza citrinella*). All common on the open pasture land.
- HOUSE SPARROW (*Passer domesticus*). 100+ live near the keepers' dwellings.
- STARLING (*Sturnus vulgaris*). Flocks numbering up to 50 in the open pasture.
- INDIAN MYNA (*Acridotheres tristis*). Three birds were recorded present and breeding in Jan. 1964, but have disappeared.

HISTORICAL

Eradication of Goats. The first step towards extermination of these extremely destructive animals was taken by B. D. Bell, R. T. Adams and N. Ewing in August, 1959, when about 160 were shot. A Wildlife party went again in June and July, 1960, and destroyed a further 333. It was then thought that eradication was complete; but in Feb., 1961, D. V. Merton found fresh sign on the lower edge of the nikau grove, a favoured camping spot, and later saw three goats. In the following July, Merton and I. Hogarth destroyed these, together with three kids, and extermination was complete.

Exclusion of Live Stock. In the winter of 1963 Merton and G. Anderson constructed a stout 9-wire fence to enclose the lighthouse-keepers' live stock, and about 70 acres of pasture land. Cattle surplus to requirements and found within the reserved area were destroyed, and no live stock have since been able to enter the reserve.

Extermination of Cats. This has proved a long and difficult task. An unsuccessful attempt at biological control of the wild cat population was made by Merton and party in Feb., 1961. They found cat sign in the form of droppings and scratch marks on trees widely distributed over the island. Kiore (*Rattus exulans*) were particularly abundant, and it was found that because of this source of food, the cats were not interested in trap baits. One cat only was taken. A further visit in the following July was more successful, despite kiore being just as plentiful as before. Of 13 cats trapped or shot, Merton records that three had malignant facial growths. During the building of the fence

in June, 1963, no cats were seen; but there were some signs in the form of droppings, and partly eaten carcasses of kiore and birds. The lighthouse-keepers reported wild cats being seen occasionally. A further determined effort at eradication was made by Merton and party in Feb., 1964, but extremely humid conditions rendered the trap baits ineffective, and 50 per cent of traps were sprung by kiore within hours of setting. Sign was abundant on all headlands, and on some of the ridges and saddles; but under the very difficult conditions, only one cat was trapped.

A detailed programme for final extermination was arranged by Merton for June, 1966, to include biological control, and the hunting of any survivors with fox terriers. However, a thorough search over many days failed to reveal any of the usual tell-tale signs of the presence of cats; and a month of intensive trapping along the main ridges down to the shore line, with the various types of bait renewed daily, was without result. No wild cats had been seen by the lighthouse-keepers. It became increasingly apparent to us that there were none now surviving, and the likely causes of their extermination were discussed. The two cats reported by the keepers in Feb., 1964, had later been shot by them, and these had survived in *open* country. These, in addition to the cat taken in Feb., 1964, may have been the last survivors, for three cats can leave much sign. The tremendous regeneration of undergrowth, making it difficult in places to push one's way through, may have restricted movement for the cats, and hindered the taking of their prey, kiore and birds. The disease noted in July, 1961, may have wiped out the remnant population. In any case, there was no evidence of survivors. To make quite certain that extermination is complete, a thorough search with fox terriers is now in prospect.

DISCUSSION

The habitat now provided by Cuvier Island would appear to be ideally suited for the reintroduction of Saddleback (*Philesturnus carunculatus rufusater*), a species which Oliver (2) states was present in 1878, before the introduction of cats. Insect life abounds in the ground litter, under bark, in the nikau palms, and elsewhere, and this source of food is virtually unexploited. The vegetation is sufficiently varied to provide a succession of berries and fruits over part of the year, a food supply which will continue to improve as the new growth develops. With more knowledge of the food requirements of the Stitchbird (*Notiomystis cincta*) the habitat may also prove suitable to meet the needs of this species. There would appear to be no shortage of suitable nesting sites for either species. It is now a matter of the utmost importance that cats be rigidly excluded from the lighthouse station.

The impact of the kiore on bird life is not really known, although this rat is not generally considered to be directly inimical. The disappearance of the Pied Tit from Cuvier, and from Inner Chetwode Island, where kiore also abound, might be considered significant; but the species survives in small numbers on Hen Island, which has a high population of kiore. The indirect effects of large numbers of kiore may be quite important. There is obviously some competition with certain species for food in the way of ripe seeds, and insects in

the ground litter. In Feb., 1964, Campbell (3) erected an enclosure to ascertain the effects of the kiore on regeneration of the vegetation, and his findings will be awaited with interest.

Mention has been made of the old radar barracks. The opportunity was taken in June, 1966, to reglaze the windows, all of which had been destroyed by vandals, and to do other essential repairs, so that the building will now provide a base for parties for many years to come.

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SOME OBSERVATIONS ON BLACK STILTS

By M. F. SOPER

A total of six Black Stilt nests is no number to be drawing conclusions from; even tentative ones. On the other hand, when the total population of Black Stilts (*Himantopus novaeseelandiae*) is down to about fifty birds as the recent Wildlife Survey indicates, every scrap of information becomes of value.

I found my first nest in a wet field four miles from Omarama on 10/11/58. This nest, containing four eggs, is of interest in that it is the only one I have seen incorporated as part of a colony of other nesting Stilts. It is also the only occasion I have seen Black Stilts elsewhere than on a river-bed. There were six Black Stilts, an unusually large number to see together — all pure — in company with twenty Pies. Six nests were found: five Pied and the one Black. The other Black Stilts did not, I am sure, have either eggs or chicks, and were not attached as mates to any of the Pies.

My next breeding birds were observed on 29/10/60 when two pairs were found; and again both pairs were pure Black and both had chicks estimated to be four or five days old. Both were on the Ahuriri river-bed.

The remaining nests were all found in the one area (Ahuriri river-bed) within a short time of one another.

On 12/10/65 a pair of pure Blacks was found with three recently hatched chicks; the (presumed) nest was situated in a precarious position on a small tuft of grass at the apex of a small island and contained one addled egg.

On 16/10/65 the nest of a Black x near-Black — a bird with slight white mottling of the cheeks and head — was located in a precarious position on a small tuft of grass in the middle of a ripple in one of the many side divisions of the river. There were three eggs and on 18/10/65, four. Like the previous pair these birds were well separated from their nearest neighbours.

On 18/10/65 I found another three-egg pure Black x pure Black nest, in a good position in the centre of an island. On 22/10/65 one of the eggs was found broken — one of the birds had obviously trodden on it — and incubation was estimated to be half completed.

On 20/10/65 a nest of four eggs, 30 yards upstream from the last nest was found to belong to a pure Black x pure Pied. These two nests are the only ones of the series (excluding the first) which could be said to be close together. At this nest I was able to confirm — or, at least, add weight to — an impression I had gained that Black Stilts have a different incubating rhythm from Pied Stilts. I have found that Black Stilts normally change over when incubating every 15-20 minutes. When I put a hide at this mixed pair's nest — and it is necessary to add here that Black Stilts are much more tolerant of a hide than are Pied Stilts — the Pied partner would not come near it. The Black from the first returned without hesitation, but every 15 minutes or so would stand up, fly to a nearby shallows, feed for 3 to 5 minutes and then return. At the end of the day I removed the hide and the following day observed the birds from the hide previously erected at the pair of Blacks 30 yards down stream. With the hide removed the Pied incubated happily, but, as a result of the Black's different incubation rhythm, had a very easy day of it. When the Pied relieved the Black, the Black would return in 20 minutes or so; but when the Black relieved the Pied, the Pied would stay away the usual Pied period of two hours — during which time the Black repeatedly flew off for a short feed and then returned.

On 22/10/65 a three-egg nest of a Black x dark "smudgy" Black was found well away from all other Stilts in a safe position on an island in mid-stream. The smudgy bird had a white face like a White-faced Heron's, large areas of white on the flanks and some white mottling on the lower abdomen. A hide was erected and it was interesting to observe that whereas the Black behaved with the usual tameness of Blacks, the smudgy behaved like a typical Pied — all 'yaps' and temperament! This clutch was judged to be near hatching as the chicks could be heard inside the eggs.

To my knowledge this is the first time that "Smudgy" birds have been proved breeding. The colouring of these smudgy-plumaged birds — which vary from those with a few white flecks about the head (as at nest 3) to those called "dark smudgies" (as at this last nest) to those called "light smudgies" (where the birds approach more the Pied pattern except that the areas normally white are peppered with black) — has been ascribed usually to hybridism; though the possibility of an immature "Black" plumage has not been entirely ruled out. The discovery of two breeding smudgy birds in a total of fifteen breeding Blacks — or 1 in 8 — rather, I imagine, discounts this last possibility, as breeding in immature plumage does not seem to be a regular occurrence — apart perhaps from occasional and presumably abnormal, exceptions. These breeding smudgies also rule out an attractive theory tentatively put forward to try to explain the rapidly decreasing numbers of the Black Stilt — that the hybrids are sterile. Obviously they are not. Admittedly no chicks were seen but the eggs of one clutch undoubtedly contained live embryos.

The field work which was associated with the nests described and which involved a greater number of birds than nests were found for, brought out some interesting differences in behaviour between the two species:—

- (a) Blacks are essentially solitary birds; not gregarious like PIEDS.
- (b) The nests of Blacks are usually widely separated; not in colonies as PIEDS tend to be.
- (c) Blacks prefer their own company to that of PIEDS.
- (d) Blacks, for preference, mate with Blacks or near-Blacks. One instance of Black x Pied is recorded.
- (e) Blacks change over when incubating much more frequently than PIEDS.
- (f) Blacks appear to place their nests in precarious positions more often than do PIEDS. Two of the six nests found looked very vulnerable (though one had hatched). One, after a very slight rise in the river, was found to be awash with the eggs submerged to a third of their depth. Whether harm came from this was not ascertained.
- (g) Blacks favour islands for nesting; more so than PIEDS.
- (h) Blacks are associated almost exclusively with river-beds. Only once were they seen elsewhere. This is by no means true of PIEDS in the same area.

None of this throws much light on the slow, remorseless decline of the *Black Stilt* which remains *unsatisfactorily explained*. Predation and alteration of habitat do not seem to be factors; neither does interference by man. Displacement by the more vigorous and successful Pied race could be a factor and there seems also to be a degree of breeding-out by a genetically dominant Pied pattern — this last evidently resisted in some measure by the Blacks as cross-breeding seems to be the exception. Whatever the cause, the fall in numbers over the last eight years is noticeable. I should be sorry to see the *Black Stilt* go. It is an attractive bird.



SHORT NOTE

LOW NESTING OF WHITE-FACED HERON

The impression gained from information published of the nesting habits of the White-faced Heron is a decided preference for rather high sites in eucalyptus or pine trees; the following nest record may well be of interest therefore owing to its siting.

Discovered on 18/3/66 on the lower reaches of the *Matau branch* of the Clutha River, the nest contained one addled egg, measuring 45 x 35 mm., the dried remains of one chick and two fully fledged young that flew the following day. The nest itself had been built on a willow branch that had grown horizontally from the river bank, the nest being some 36 feet from the bank and 8 feet or so above water, and composed totally of willow twigs. Viewed from the bank of the river the nest was at ground level.

I. G. McLAREN

[Another point of note is the late season for young birds still to be in the nest. In northern New Zealand some White-faced Herons are already busy at their nests in June.—Ed.]

FOODS OF THE WHITE-FACED HERON

By A. L. K. CARROLL

SUMMARY

A study of the stomach contents of 89 White-faced Herons showed them to be primarily wetland-pasture and aquatic feeders. Although predominantly carnivorous, 65 birds had eaten plant material, usually in small amounts. Vegetative parts of sedge, grass and clover occurred most frequently, but in two specimens water-weed comprised the bulk of plant food.

Invertebrate food, present in every specimen except one, was predominantly crustaceans, insects, annelids and arachnids. Molluscs and a proportion of smaller invertebrates were considered in most cases to be present as a result of their liberation from gut of digested fish.

All birds were collected from habitats where fish, especially trout, were present or within feeding range. Fish occurred in 49 stomachs. In order of weight consumed they were bully, smelt, trout and whitebait (adult and immature). Elvers and carp were eaten so rarely that they were unimportant in this study.

INTRODUCTION

White-faced Herons (*Ardea novaehollandiae*) are not indigenous to New Zealand but have been carried to this country from Australia by weather systems. Oliver (1955) noted that a small population was already established in Nelson and that a few specimens had been recorded in the North Island when Buller first listed the species in this country in 1865. During the following seventy years their numbers increased as a result of breeding by resident birds, augmented periodically by the arrival of Australian vagrants.

The species remained scarce and restricted almost exclusively to the South Island until the 1930's when the population began to increase rapidly and disperse throughout the country. New areas are still being actively colonized particularly in North Auckland and the Bay of Plenty.

Colonies have been established successfully not only in coastal areas but far inland beside streams and rivers or in other wetland habitats. This increase in population has caused anxiety among fishermen in some districts, who report serious depletion of trout stocks, which they attribute to excessive predation by herons. As a result of continued complaints, the Department of Internal Affairs undertook a study of the food habits of these birds.

MATERIAL

Between May 1963 and October 1965, 93 birds were examined. Collecting was done in places where trout were known to be present or within feeding range. South Island samples were from localities in Canterbury:— Ellesmere 30, Hororata-Selwyn 18, Christchurch environs 6, Pareora district 2. Most North Island specimens were taken in the Rotorua Conservancy as follows:— Rotorua-Taupo 15, Wairoa-Gisborne 6, Whakatane 8, Mangakino 1. Those remaining were from Waikato 3, Mt. Bruce 1, Pautahanui 1, Dannevirke 1, Rangitikei R. estuary 1.

Collecting was done chiefly by field staff of the North Canterbury Acclimatisation Society and Wildlife Branch of the Department of Internal Affairs. Six specimens were given by the Canterbury Museum.

Birds were frozen whole as soon as possible after death. Analysis of stomach contents entailed measurement of weight and volume of total food, together with a count of individual items. Recently ingested organisms are readily identifiable but as digestion proceeds the food becomes increasingly macerated by the action of strongly-acid digestive juices. Eventually there collects at the base of the stomach a residue

of indigestible fragments. Here it is possible to make a reasonably accurate assessment by a count of diagnostic fragments e.g. mouth-parts of insects, otoliths of fish and shells of gastropods.

When stomachs contain fish there arises the problem of determining what proportion of organisms present in the lower stomach has been liberated from the gut of previously-digested fish. Many smaller organisms recorded must certainly originate in this way. A study was made of all specimens with regard to degree of digestion of ingested fish in relation to kind and condition of other organisms present in the stomach. A comparison of types of invertebrates occurring in the presence or absence of fish indicates that the greater part of food found in heron stomachs has been selected as such. Table 1 shows on a seasonal basis the number of occurrences of food organisms and number of birds taking each kind.

Table 2 shows the average weights and volumes of total stomach contents.

Identification of plants was based on Allan (1940), Hubbard (1954), Hyde (1957), Martin and Barkley (1961) and Mason (1964); and that of animals on Parker and Haswell (1940), Powell (1947), Imms (1947 and 1951), Stokell (1955) and Torrie (1962).

STOMACH CONTENTS

Inorganic Material. In some specimens a little fine sand or mud was found. This was almost certainly taken in with the food and could in no way be considered as grit, as herons depend on chemical, and not mechanical, processes for the breaking down of their food.

Plants. Although food in all stomachs was predominantly animal, 65 specimens contained plant material. Thirty-five held only traces, probably accidentally ingested. Grass and sedge leaves occurred in 38 specimens, clover leaves in 16, *Azolla* sp. in four and *Lemna* sp. in three. Seeds from a variety of plants of pasture and wetlands were found but either singly or in numbers too small to be significant.

Animal.

(a) *Insects.*

Most consistently occurring were flies (Diptera) and beetles (Coleoptera) in both adult and larval forms. Species of Diptera occurred in 67 specimens (11.4 per stomach), members of the genus *Calliphora* predominating. This supports observations made of White-faced Herons feeding at carrion where blowflies congregate in great numbers. Coleoptera, found in 59 specimens (19.8 per stomach), were predominantly larval and adult water-beetles (*Dytiscus* sp.).

Water-boatmen (Hemiptera) were found in 29 stomachs (11.8 per stomach). Caddis larvae (Trichoptera) were also in 29 (45.3 per stomach). This average number is high because great numbers of minute *Oxyethira* sp. were sometimes present, almost certainly accidentally taken in with other organisms.

Dragon-fly larvae and damselflies (both Odonata) in either adult or larval form were present in 21 specimens (4.2 per stomach). Moth larvae (Lepidoptera) had been taken by 20 birds (7.7 per stomach). Grasshoppers and crickets (Orthoptera) occurred in 14 (18.5 per stomach).

Other insects found occasionally were, mayfly adults and larvae (Ephemeroptera) in six specimens (18.8 per stomach), stone-fly adults and larvae (Plecoptera) in three (1.3 per stomach), lacewing adults and larvae (Neuroptera) in four (1.3 per stomach).

(b) *Other Invertebrates.*

Although present in 32 specimens, Arachnids were not numerous (4.6 per stomach). They were spiders and harvestmen.

Earthworms (Oligochaeta) had been taken by 26 birds. They disintegrated very rapidly, leaving insufficient identifiable fragments to make an accurate count possible. When present they often formed the bulk of stomach contents.

Crustaceans were present in 26 specimens (33.6 per stomach). These were most commonly crabs and shrimps picked up on tidal flats and ostracods from fresh water. Fresh-water crayfish and shield shrimps occurred twice. The latter were very numerous in two stomachs collected from Ellesmere in August 1963.

Molluscs, found in 25 (8.8 per stomach), were predominantly *Potamopyrgus* sp., which occurred in 16 stomachs and were the only species of importance. *Isidora* sp. appeared in six specimens, *Planorbis* sp, and minute bivalves in three, but singly or in numbers too small to be significant. Molluscs were associated with fish remains in all but four instances.

Nematodes were found in seven specimens but numerous only in one. They were free in the stomach cavity and food was also present.

(c) *Fish.*

Forty-nine of the 93 stomachs contained fish or portions of fish (see Table 3). Numbers of fish were estimated by counting those with entire heads and, where heads were disintegrated, pairs of otoliths. This followed the example of Dickinson (1951), who considered that otoliths, found in stomachs of shags, probably came from fish consumed on the day the birds were shot.

Bullies (*Gobiomorphus* spp.) occurred in 31 specimens (23.6 per stomach), smelt (*Retropinna* spp.) in 18 (17.8 per stomach), immature and adult whitebait (*Galaxias* spp.) in 14 (22.1 per stomach), trout (*Salmo* spp.) in 10 (4.3 per stomach), eelers (*Anguilla* spp.) in two (11.5 per stomach) and one stomach contained 30 carp (*Carassius* sp.)

Sizes ranged from bullies 20 mm. in length to two headless brown trout 85 mm and 90 mm respectively. Trout occurred in nine birds collected from February to May and in one in September. Stomachs containing one species of fish only were:— eleven with bullies, seven with smelt, four with trout and one with whitebait. The remaining 26 stomachs contained usually two, and sometimes three, species.

In all seasons bullies maintained their importance among food fish (See Table 4). Although smelt were taken in greater numbers than bullies from November to January, they occurred in fewer stomachs. Excluding bullies, whitebait (adult and immature) were most numerous from August to October and February to April. Trout were found in the greatest number of

TABLE I

Food Organisms	26		22		25		18		89		100	
	Total no. of items eaten	No. of birds feeding on item	Total no. of items eaten	No. of birds feeding on item	Total no. of items eaten	No. of birds feeding on item	Total no. of items eaten	No. of birds feeding on item	Total no. of items eaten	No. of birds feeding on item	Total no. of items eaten	No. of birds feeding on item
Vertebrates												
<i>Agullilla</i> spp. Elvers	-	-	22+	1	-	30	1	23+	2	23+	2	23
<i>Galaxias</i> spp. Galaxias	-	-	174+	7	26	104+	7	310+	14	310+	14	157
<i>Gobiomorphus</i> spp. Bully	221	2	267	7	120	134+	7	723+	31	723+	31	34.9
<i>Retroplasma</i> spp. Smelt	2	1	66	1	158	54	321	18	43	18	20.2	11.2
<i>Salmo</i> spp. Trout	3	1	-	-	-	37	8	43	10	43	10	11.2
<i>Salmo</i> sp. Redpates	3	1	-	-	-	-	3	3	1	3	1	1.1
Invertebrates												
Insects												
Coleoptera. Beetles	287+	17	74+	12	188	14	22	10	581	53	591.5	24.7
larvae	30	3	32+	17	145	4	19	16	590+	22	280.3	11.1
Diptera. Flies	291	17	63	5	47	18	119+	15	236	19	274	11.1
larvae	-	1	8	1	-	8	-	8	8	1	1	1.1
Ephemeroptera. Mayflies	-	-	11	2	-	94	3	7	105	5	5.6	2.3
adults	54	8	108	3	14	9	166	7	342+	29	13.5	5.1
larvae	-	-	-	-	-	-	-	-	-	-	-	-
Hemiptera. Water-beetles	117	10	31	5	5	7	1	1	154	22	12.3	4.5
larvae	-	-	-	-	1	1	3	2	1	3	1	1.1
Neuroptera. Lacewings	-	-	-	-	-	1	1	1	1	1	1	1.1
adults	-	-	-	-	-	6	3	3	1	3	1	1.1
larvae	-	-	-	-	-	-	-	-	-	-	-	-
Odonata. Dragonfly	6	3	6	2	15	6	8	3	23	9	10.2	3.7
adults	31	3	1	1	52	1	23+	16	65	16	17.9	6.7
larvae	231	3	6	1	1	1	1	1	259	14	13.7	5.1
Orthoptera. Grasshoppers	-	-	-	-	-	-	-	-	-	-	-	-
adults	-	-	-	-	1	1	2	2	3	3	3	3.5
larvae	-	-	-	-	-	-	-	-	-	-	-	-
Trichoptera. Caddis flies	19	6	49	4	37	5	1,210+	14	1,315+	29	32.6	12.1
larvae	-	-	-	-	-	-	-	-	-	-	-	-
Others												
Annelida. Earthworms	∞	11	∞	7	∞	7	∞	1	∞	26	29.1	11.1
Arachnida. Spiders	20	7	21	7	87	19	19	3	147	32	35.9	13.5
Crustacea. Crabs, Grayfish etc.	95	8	62+	7	42+	7	31	6	872+	26	289.1	109.1
Mollusca. Fresh-water Snails	127+	9	22	4	41	8	-	2	221+	25	28.1	10.7
Myriapoda. Centipedes and Millipedes	1	1	1	1	-	-	-	-	2	2	2	2.3
Plant												
Azollaceae. Waterfern	2	2	13	1	19	1	9	1	65	65	73.0	27.7
Cyperaceae. Cyperus	2	2	1	1	1	1	1	1	4	4	4.5	1.6
Gramineae. Grass leaves	15	6	8	6	3	6	3	3	38	38	42.7	15.6
Junaceae. Rush seeds	7	7	5	5	3	3	3	3	10	10	11.2	4.1
Leguminosae. Clover leaves	3	3	1	1	1	1	1	1	16	16	17.9	6.7
Lemnaceae. Duckweed seeds	2	2	1	1	1	1	1	1	6	6	6.7	2.5
Polygonaceae. Willow-wood seeds	-	-	-	-	-	-	-	-	4.5	4.5	4.5	1.6
Salvinaceae. <u>Salvinia natans</u> seed	-	-	-	-	-	-	-	-	1	1	1.1	0.4

birds from February to April; they were few, but usually of a relatively large size.

Elvers occurred in two stomachs and carp in one and thus were of little significance in this study.

(d) *Other Vertebrates.*

With the exception of three tadpoles found in one stomach and a portion of intestine, almost certainly of a swan, in another, no further vertebrate remains were found. This second bird, shot at Lake Ellesmere in November during the swan breeding season, also contained 93 flies and was probably feeding on carrion.

Assuming that all remains in stomachs were part of the day's intake, an estimate was made of the total wet weight of each animal food species consumed. This was done by weighing as large a number as possible of whole specimens of each species and calculating the average weight, which was then multiplied by the estimated total number of the species occurring in all stomachs. It should be clearly understood that these results can be regarded as approximate only.

Total weights were roughly in the proportion of invertebrates 40 per cent to vertebrates 60 per cent. Invertebrates having the greatest importance by weight were crustaceans, earthworms, larval moths and beetles, grasshoppers and crickets and adult beetles and flies. Vertebrates were predominantly fish. Carp were not weighed, as only tails were found and the total weight of elvers was no more than 1.4 grams, so it was decided to exclude these two species from the study. (See Table 5). It should be borne in mind that this omission has made the percentages appearing in Table 5 slightly higher than they really are.

Bullies were, by weight as well as numerically, the predominant food fish. Smelt were, on both counts, slightly less than half as important as bullies. Trout were present in greater weight than adult and immature whitebait although comparatively few in number. The latter although numerous, weighed little as most were immature when taken and therefore very small.

DISCUSSION

An attempt has been made to determine what influence the presence of White-faced Herons may have on the trout population.

Although in the sample studied the estimated weight of trout was 15.5 per cent of the estimated total weight of all fish consumed, it could be argued that, by eating other small fish and aquatic invertebrates, herons compete with trout for food, thus indirectly as well as directly threatening their populations.

However, Allen (1951) noted a substantial overlap between the feeding requirements of trout, bully and smelt and Hobbs (1940) reported predation of trout fry by bullies. Thus, as by far the greatest weight of fish taken was bully and smelt, on these two counts the presence of herons could be considered as beneficial to trout.

TABLE 2 — TOTAL STOMACH CONTENTS

Season	Weight	Volume	No. of Birds
May - July	18.0 g	19.1 cc	26
Aug. - Oct.	21.6 g	17.5 cc	22
Nov. - Jan.	27.2 g	20.9 cc	23
Feb. - April	20.4 g	17.8 cc	18
Av. for year	21.7 g	18.8 cc	89 total

TABLE 3 — NUMBERS OF BIRDS CONTAINING FISH

	May-July	Aug.-Oct.	Nov.-Jan.	Feb.-April	Whole Year
Birds with fish	26	22	23	18	89
Total birds	6	10	17	16	49
Percentage of birds with fish	20.1	45.4	73.9	88.9	57.8

TABLE 4 — AVERAGE NUMBER OF FISH PER STOMACH IN STOMACHS WHERE FISH OCCURRED

	May-July	Aug-Oct	Nov-Jan	Feb-April	Total
Total No. of birds	26	22	23	18	89
No. of birds with fish	6	10	17	16	49
<u>Anguilla</u> spp	- (-)	22+ (1)	- (-)	1 (1)	11.5 (2)
<u>Carassius</u> sp.	- (-)	- (-)	- (-)	30 (1)	30 (1)
<u>Galaxias</u> sp.	3 (2)	22+ (7)	13 (2)	34.7 (3)	22.1+ (14)
<u>Gobiomorphus</u> spp	73.7 (3)	38.1 (7)	8.6(14)	17.7+ (7)	23.6+ (31)
<u>Retropinna</u> spp	3 (1)	22+ (3)	19.8(8)	9 (6)	17.8+ (18)
<u>Salmo</u> spp	2 (1)	4 (1)	- (-)	4.6 (8)	4.3 (10)

Figures in bracket indicate numbers of birds

TABLE 5 — Mean weight of predominant species of food fish, also total weight of each species expressed as a percentage of total weight of fish consumed.

	Number	Mean Weight	Total Weight	Percentage
Whitebait	310+	0.14 g	40 g	2.4
Trout	43	6.04 g	260 g	15.5
Smelt	321	1.35 g	430 g	25.6
Bully	732	1.30 g	950 g	56.6

Thirty-seven of the total 43 trout found in stomachs were eaten during late summer and autumn. Of these 23, i.e. more than half, were taken in North Canterbury. At this time of year great numbers of fish, including fingerlings, are trapped in diminishing pools left by the annual drying-up of long reaches of many Canterbury rivers. Flocks of birds, including herons, gather here to feed, but their activities are not necessarily harmful as most of these stranded fish would die in any case, despite the salvage operations of North Canterbury Acclimatisation Society field officers.

Consideration should also be given to the fact that, under any conditions, the mortality rate among trout, in their first months of life, is very high. Death, from whatever cause it may be, is certain to come to the great majority of fry and fingerlings. In fact, if this were not so, the waters would soon become over-stocked with under-nourished trout.

Regulation of a population, usually effected by predation, is necessary in a community in order to maintain a vigorous stock in good condition. Thus, in the case of White-faced Herons, their feeding habits cannot be considered inimical to the well-being of the trout population; indeed they could well be beneficial.

CONCLUSION

A fitting conclusion is a quotation from "The Heron" (F. A. Lowe, 1954):— "Because it is partially a fish-eater the heron has been persecuted far beyond its deserts, for it is virtually omnivorous and its feeding habits vary with prevailing conditions."

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CENSUS RECORDS OF GODWIT FOR FIRTH OF THAMES AND MANUKAU HARBOUR

By H. R. McKENZIE

The Eastern Bar-tailed Godwit (*Limosa lapponica baueri*) is one of the most numerous waders of the above two areas. Its being a migrant promotes interest in its comings and goings from and to Siberia and Alaska. The adults return in our spring showing remnants of red breeding dress, which, after arrival, fades away in a week or two. The young ones making their first migration are pale already. The dressing up for going away is more spectacular. In January some start to colour and when they leave in March and April the light under surface of the males has changed to almost a sunset red while the patterned upper side turns mostly to a warm brown. The females, which are larger than the males, are less brightly adorned. Some non-breeders stay with us over our winter, the numbers varying greatly from year to year. For these reasons we have taken our counts twice a year at each habitat; in the summer when we have the large population of "wintering" birds and in the winter when there are only the non-breeders present. This we have done since 1951, with some gaps in the record. Census dates are carefully chosen so that there will be a high tide to reduce the number of roosting places which have to be covered by the counting teams. Since 1951 hundreds of different people have taken part, many of them very frequently, and it is regretted that it is not practicable to list them by name. From Auckland, South Auckland and Waikato many travel long distances and even if they have been assigned to a place where they may see only a few birds they fully realise that they have made a valuable contribution in effecting a wide coverage of the high-tide haunts of the area. Now that enough years have elapsed it is intended that accounts of the various waders in turn should be written up. The South Island Pied Oystercatcher (*Haematopus ostralegus finschi*) has been so dealt with already by R. B. Sibson (*Notornis* 13, 94), reference being made also to adjacent populations. In writing of the Godwit it will not be feasible to depart to any extent from the census results.

Its roosts are so numerous that "stab" counts of parts only are of little use and only a full survey at one time can provide adequate coverage. "Stab" counts, shown in parenthesis on the chart, are used only where they are larger than the census counts of the same season or when there has been no census. They may be of only one place, or several, but not all.

Firth of Thames, Summer Counts

The first count on 29/4/51 was really too late to be of use as migration would have been well on the way. The full summer number would most likely have been over 5000. The further summer counts have been remarkably regular. They were taken in November or December when the birds had settled in after their long migration. They tend to move about somewhat erratically in the later part of

Godwit Census Totals for Firth of Thames and Manukau Harbour
From Feb., 1951, to Dec., 1966

FIRTH OF THAMES			MANUKAU HARBOUR		
Date	Summer	Winter	Date	Summer	Winter
29- 4-51	3253 (Late count)		25- 2-51	6300	
24- 6-51		1290	6- 5-51		2312
2-12-51	4800 (5500 on 20-1-52)		1951-52	-----	
13- 7-52		797	14- 6- 52		1570
1952- 53	-----		1952- 53	-----	
2- 8-53		1906	14- 6-53		4829
13-12-53	9154		22-11-53	9433	
1954		-----	1954		-----
1954- 55	-----		1954- 55	----- (7000 on 11-12-54)	
26- 6-55		1109	24- 7-55		1815
4-12-55	5924		1955- 56	-----	
17- 6-56		149	8- 7-56		4575
25-11-56	8204		4-11-56	6500 (7000+ 11-1-57)	
1957		-----	1957		-----
1957- 58	----- (5000 on 9-2-58)		1957- 58	----- (6000 on 22-2-58)	
1958		-----	1958		-----
1958- 59	----- (3500 on 13-12-58)		1958- 59	----- (5000 on 28-9-58)	
1959	(690 on 13-8-59)	-----	21- 6-59		6317
6-12-59	9215		8-11-59	14780 (16000 on 1-11-59)	
1960		-----	10- 7-60		3557
27-11-60	9650		4-12-60	15283	
2- 7-61		900	30- 7-61		(7500 on 30-8-61) 3650
26-11-61	11290		10-12-61	12430	
24- 4-62	(690 on 19-8-62)	243	22- 7-62		1380
2-12-62	6765		16-12-62	13385	
14- 7-63		502	23- 6-63		1458
8-12-63	5522		3-11-63	16748	
17- 5-64		410	14- 6- 64		1209
8-11-64	8490		22-11-64	11048	
4- 7-65		582	1- 8-65		1683
14-11-65	8110		12-12-65	17314	
24- 7-66		808	5- 6-66		1326
4-12-66	8119		11-12-66	10280	

their term here. The census count of 4800 on 2/12/51 for the whole area compares badly with the count of 5500 on 20/1/52 on only a part of the area. On 2/12/51 a flock of say 1000 birds could have been tucked away in an unusual place but even so there should have been many more than 5500 in the whole area on 20/1/52. Human error could account for this but an odd movement of the nature of those described later may have caused it. The "stab" counts of 9/2/58 and 13/12/58 would almost certainly represent only part of the total.

Firth of Thames, Winter Counts

These show considerable variation. No concern need be felt about this as it is to be expected that differing seasons must bring about a variation in the proportion of non-breeding birds. The small counts, being winter ones, may have occurred because many of the birds were staying far back in the sodden fields, where they will sometimes feed irrespective of whether their tideflat feeding grounds are available or not. A big population of over-wintering non-breeders may indicate a successful breeding season in the Arctic; and small numbers a poor one.

Manukau Harbour, Summer Counts

The numbers in the first three counts are on the average only about half the size of those of the last eight. It is most unfortunate that so much is missing from the upper part of the chart. For the seasons 1957-58 and 1958-59 the scheme went into recess. One attempt was completely wiped out by torrential rain. The teams grimly tackled their tasks but just could not see the birds. The records for the seasons 1953-54 and 1954-55 and some others were lost in being passed from one to another. The larger numbers from 8/11/59 to 11/12/66 are very satisfactory. From 22/11/64 counts have been taken at Whitford for the Manukau Census because of the frequent traffic from one coast to the other. The summer counts are:— 22/11/64, 1820; 12/12/65, 2; a "stab" count on 8/10/66 of c.1000 and a census count on 11/12/66 of 2200. The Whitford tallies of 1820 and 2200 show that its inclusion is necessary even though there are few or none there some years.

Manukau Harbour, Winter Counts

These show great variation. It is unlikely that birds have been counted twice over. On the other hand some could be missed owing to their changing to an unknown inland roost or haunt as already suggested. Also as already mentioned, there is no reason to believe that numbers should be anywhere near the same each year. Whitford counts were 8 on 14/6/64, 80 on 1/8/65 and 25 on 5/6/66.

Unusual Occurrences

(1) Feb. 1932 approx. Geo. H. and C. V. White on farm on top of hills, south of Clevedon, at evening, saw a great stream of Godwit of several thousands flying over them from south to north. As this route would have brought them up through the centre of the North Island it seems more likely that they had left the Miranda coast, swung in an arch to avoid the higher coastal and Hunua ranges and were then, if they kept on in a straight line, heading for Whitford.

(2) Mid-Feb., 1940. Geo. H. White, at 6.30 to 7 p.m., while travelling by car saw, all the way from Kirikiri Hill, near Papakura, to Waiau Pa, via Karaka, south Manukau Harbour, several great flocks flying roughly east, which could take them from south Manukau Harbour to Miranda. It was of course too early for migration.

(3) 12-18/3/43. Clevedon estuary. I received four separate estimates of c.5000. This was most likely a migratory move as the local population up to then had been 400.

(4) 19/3/49. Miranda. 20,000 to 25,000 Godwit and Knots, the latter being in the majority, all doing pre-migration flighting. Mixed parties such as this are not recorded on the chart.

(5) 6/11/49. Off wharf at Maraetai Beach, early rising tide, c.600 flying east along Clevedon coast of Tamaki Strait. This was puzzling. Were they flying from Whitford or northern Manukau Harbour via Whitford to Clevedon estuary or to Miranda?

(6) 14/4/57. Mangakino, Waikato River, c.40 grey winterers flying north along Maraetai Lake (Hydro). This is far inland and could only have been related to a long flight.

(7) 1/3/64. Oruarangi, just south of Puketutu Island, north Manukau Harbour, c.10,000, with c.800 knots, flying to Whitford, which was proved by following them by road. The movement is known to be an old habit of late in the season and used to be exploited by shooters posted on hilltops when a strong wind kept the birds low. This was $1\frac{3}{4}$ hours before high tide in the Manukau so had there been a census that day and Whitford not visited these would have been missed. Strangely enough this flight was of $12\frac{1}{2}$ miles, whereas they could have gone to Mangere Airport, $3\frac{3}{4}$ miles, Puhinui, $6\frac{1}{2}$ miles, or Karaka Shellbank, $8\frac{1}{4}$ miles. At Whitford they merely rested on the partly exposed sandy flats, the tide being about three hours earlier than Manukau, and then flew back as the tide fell on the Manukau side.

It is to be noted that all except one of these "Unusual Occurrences" have happened close to the outward migration time. This is well clear of both our summer and winter censuses but when such odd happenings occur at this season it can surely be expected that lesser ones can occur occasionally at the census times, thus accounting for variations which may otherwise be attributed to human error. The writer is satisfied that the good work of members has resulted in a good coverage of these two important godwit habitats.



SHORT NOTE

TURNSTONES AT SEA

On 27/11/66 I was on passage from Suva to Lyttelton in M.V. Matua. At 1630 hrs. an unusual and unexpected bird-call was heard, and I found that not one but three Turnstones (*A. interpres*) were accompanying the ship. They flew about for some time without coming on board. They were last seen at 1800 hrs., when the ship's position was $29^{\circ} 26' S$, $175^{\circ} 42' E$.

— JOHN JENKINS

SPECULATING ABOUT SHOVELERS NEAR AUCKLAND

By R. B. SIBSON

During the nineteenth century and the first half of the twentieth the Shoveler (*Anas rhynchos*) seems to have been a rare bird north of the lower Waikato and the Hauraki Plains. In the Auckland War Memorial Museum there are no skins from the immediate vicinity. Buller in his second edition (1888) has this to say, "In the extreme northern portions of the North Island, so far as I am aware, it has never yet been met with. . . . It is often met with on the Waikato river"; and a little later — "Mr. Cheesman writes to me from Auckland 'rare with us. I have heard of it on the lakes near the Kaipara Heads.'"

The past scarcity of the Shoveler on the Auckland Isthmus may be attributed partly to a shortage of freshwater lakes or open pools of any size and the drainage of wetlands. Over the years I have discussed Shovelers with several local landowners and their sons. Recently Mr. T. W. McLaughlin, whose well-watered farm was on the slopes of Puhinui, laughingly recalled how I growled at him for shooting a drake Shoveler in May 1949; but confessed it was the only one he ever saw on his farm. Not far away on land which Mr. O. R. Self has farmed for many years is Crater Hill, which once held a freshwater lake with its surface 40 feet above sea level. Till the middle 1940's when it was drained, this crater-lake was rich in wildfowl, and local ornithologists visited it in search of Grey Duck, Bittern, Harrier and Pukeko. Mr. Self was familiar with the Brown Teal, which once frequented this water; but he has no recollection of ever having seen a Shoveler there. Three miles to the west were the swamps in the "great bowl of a crater nearly half-a-mile across," known as Waitomokia or Gabriel's Hill. It was here that Dr. P. C. Bull grew up, began his bird-watching and became a skilful nest-finder; but he never saw a Shoveler. Nearer the centre of Auckland, a shallow but extensive lake once filled a hollow between Mt. Wellington and Little Rangitoto. Known as St. John's Lake it was reputed to be a haunt of Brown Teal. During a very wet winter, the shallow lake is temporarily reformed and could attract Shovelers, as it may have done in the past. The only truly natural open freshwater lake in suburban Auckland now is Lake Pupuke, Takapuna. In the course of many visits made to examine its waterfowl, I have not yet found a Shoveler there.

Cheesman mentions 'the lakes near the Kaipara Heads.' These are the pools which lie in the Muriwai dunes west of Kaipara Harbour and form a chain some twenty miles long. They begin about thirty miles north-west of the isthmus proper. Although they would seem to be the most suitable natural waters for Shoveler in the district, hitherto the population has been only small. Talks with several shooters show that a Shoveler in the bag is always worthy of note. In January 1944, D. Beggs and I spent two days walking the length of the Muriwai pools; and on only two did we find Shovelers, the total of birds being 24.

Numerous visits since to pools at the southern end of the chain confirm a scarcity which seems to apply to the whole of Kaipara. The biggest count of Shovelers was made by D. A. Urquhart, B. D. Heather and myself on 6/1/49 on a big shallow pool in what was then the mid-Kaipara wilderness of Taporā. Here not only were there some scores of Shoveler, including a duck with four ducklings, but also a number of Scaup (*A. novaeseelandiae*) including two ducks each with broods of five; and three pairs of Dabchicks (*P. rufopectus*). This pool no longer exists (N.Z.B.N.3. 205), but on 1/5/59 twelve Shovelers were seen flying along the tideline off Taporā. Finally, the findings of two censuses show how scarce the Shoveler is around Kaipara. In 1956 when H. R. McKenzie and J. C. Davenport organised a waterfowl census of the lakes of the Pouto peninsula, only nine Shoveler were logged. In 1965 when a survey of shorebirds attempted to cover the internal coastline of Kaipara, the tally of Shovelers was a mere three. However, it must be conceded that the Muriwai and Pouto pools were outside the survey. (Notornis 12, 75).

The lack of waters suitable for Shovelers on the Auckland Isthmus has been remedied by the construction of artificial lakes, farm dams, reservoirs and especially the big oxidation ponds of the Auckland Metropolitan Drainage Board between Mangere and Puketutu Island (Notornis 8, 220-221). About 1932 the upper reach of Hihi Creek, Karaka, was cut off by a dam behind which a long freshwater lake was formed. Yates' Dam, as it is now called, offers plenty of shallow fuddling water such as Shovelers love. Here D. A. Urquhart reported a pair of Shovelers in October 1948 (N.Z.B.N. 3, 205). Now along with Pied Stilts and Whitefaced Herons they are one of the species normally present. Yates' Dam may serve as a handy staging post between the lower Waikato and the oxidation ponds at Mangere.

To the north of Manukau Harbour there are several rather inaccessible reservoirs in the Waitakere Ranges. The only one which I have visited with any frequency is Lower Nihotupu, Parau. Occupying a fairly wide valley at the head of Big Muddy Creek, it looks ideal for Shovelers. Mallard are numerous; and pure Grey Duck may still be seen but, as far as I know, no-one has yet been able to find Shovelers there.

It is on the wide expanse of open non-saline water, provided by the four oxidation ponds of the A.M.D.B. that Shovelers and other surface-feeding ducks have found conditions to their liking. In windy weather the many miles of embankment provide shelter and the ducks can always find calm water. Not only is there a regular post-nuptial influx, probably from the lakes of the lower Waikato, where as the water level falls and the many families of Black Swans grow up, competition for food and open water increases; but also some pairs of Shovelers stay to breed.

The first Shovelers to be seen here were two pairs on 2/11/58. They were in the explosion crater at the south-west foot of Mangere Mountain, once known as "Mangere Lagoon" when the tide crept into it through a breach in the tuff rim, and described by Professor E. J. Searle as 'this little jewel of a volcano.' In November 1957, I had noted that as the result of a newly completed stop-bank no tidal water was entering the lagoon; the floor was drying out and there

were shallow pools covered with a bright green alga. In February 1958, there were torrential rains and the explosion crater became a shallow lake and remained so all winter. In spring it was often crowded with non-breeding Pied Stilts; and it was among them that these first Shovelers were discovered. Since then it has usually been possible to see some Shovelers on one or other of the ponds. There have been temporary setbacks following explosive outbreaks of midges, and aerial spraying of generous doses of insecticides. The treatment of sewage began in September 1959. But since the scheme came into full operation, Shovelers appear to have become a permanent part of the establishment.

Whether the first two pairs bred locally or not is unknown; but on 2/2/59, c.20 Shovelers were present together with three Grey Teal (*A. gibberifrons*) the first of this species to be recorded near Auckland; and on 12/2/59 H. R. McKenzie, J. C. Davenport and I counted about 60 Shovelers. Probably as a result of the use of insecticide sprays the latter half of 1960 and most of 1961 were comparatively lean years, though some scores of Shoveler had returned by 29/12/61.

It is often difficult now to count the Shovelers when the duck population on the four ponds of the A.M.D.B. is at its peak in autumn. The area of the ponds is considerably more than two square miles and on the water there may be over a thousand Mallard, probably some hundreds of Grey Duck and perhaps up to two hundred Grey Teal. If the water is calm and the Shovelers are in discrete groups, as they sometimes are, fairly accurate counts are possible; but if the weather is windy or the ducks are all mixed up far out near the centre of the ponds, estimates are hardly to be trusted. Normally the influx begins in December but the biggest counts are made between February and May and there is a distinct drop in numbers before mid-winter, by which time the drakes are in full plumage; many pairs have been formed; and in the lake district of the lower Waikato water levels are rising. Autumn estimates for the last five years are: 1962, Scores; 1963, c.120; 1964, scores (? c.100); 1965, 120+; 1966, 150+.

Ever since two pairs of Shovelers were found on the explosion crater in November 1958, it has been hoped that a breeding population would become established. Accordingly any spring occurrences have been carefully noted. Successful breeding was not proved till 1964. In the intervening years the following suggestive sightings had been made:

- 1959 1 pr. on Sept. 30.
2 drakes and one duck on October 11.
3 drakes on October 26.
- 1962 10+ on November 20.
- 1963 2 prs. on November 9.
- 1964 Several pairs and 2 ducks with broods of 5 and c.6 on December 28.
Duck with 11 nearing flapper stage on December 28.
- 1965 10 drakes and 4 ducks in flock on July 19.
3 drakes and 1 duck on August 29.
8 drakes and 1 pr. on September 20.
3 prs. and 5 drakes on October 18.
8+ on November 30.
30+ and 1 duck with 7 small ducklings on December 31.

- 1966 2 prs. and 6 drakes on September 22.
6 prs. and 3 drakes on October 20.
6 prs. and 6 drakes on November 5.
1 duck with 10 half-grown ducklings and drake in attendance.
Other solitary drakes (waiting hopefully?) on November 23.
Another duck with 8 week-old ducklings and drake in attendance;
also another with 3 downies, on November 25.

Something has been learnt to fill in the not inconsiderable gaps in our knowledge of the behaviour and breeding of the Shoveler. At Mangere in the spring of 1965 and 1966 there was a marked preponderance of males over females, e.g. one pair and eight drakes on 20/9/65; two pairs and six drakes on 22/9/66. Unpaired drakes at this season are conspicuous because they tend to stay in small flocks. Later in November and December some drakes, whose ducks are sitting, are solitary and apart. They appear rather jumpy and may be seen loitering where apparently they are expecting the ducks to lead the ducklings down to the water. Some drakes at least show a sense of parental responsibility and join the ducks in escorting the families.

By November the plumage of the drakes has a worn look and between December and February they are rather drab. According to my notes there were no brightly coloured males on 20/2/65; but by April 17 the drakes were in fine plumage. Again on 7/4/66 drakes were in splendid colour. The breeding dress of these local Shovelers is something of a puzzle. Others besides myself have examined them closely; and there is a marked lack of white on the breast, commonly just a faint suggestion. In May 1956, when I examined the Shovelers on Waikanae Lagoon, Wellington, I was struck at once by the extent of very obvious white on the breasts of the drakes, one of which was so white-breasted that it recalled a European Shoveller (*A. clypeata*). Is there an albinistic strain in the Waikanae Shovelers or are they typical of the variable New Zealand race, *variegatus*? Dr. C. A. Fleming tells me that these highly decorative Shovelers may still be seen on the Waikanae Lagoon.

This leads to the thought that the increase of Shovelers in northern New Zealand may be the result of an irruption of Australian Shovelers. According to Delacour and Scott, Shovelers of the Australian race are duller; "the head markings are more or less blurred with black dots; there is little or no white on the breast, mantle and scapulars; and the white patches on the sides of the rump are streaked with black; the flanks and vent are more heavily spotted." The New Zealand Shoveler is "altogether a prettier bird" and "definitely better coloured than its Australian relative." In 1965 and 1966 Mr. H. R. McKenzie and I paid several visits to the lakes of the lower Waikato, particularly Waikare, Hakanoa, Wahi and Whangape. The commonest duck on these lakes after the Mallard is now in our opinion, the Shoveler. Yet amongst the hundreds of drakes that we have seen in breeding dress, few have shown more than a trace of white on the breast. It is reasonable to suppose that the Mangere ponds have been colonised from the lower Waikato.

In 1957 under what were evidently favourable conditions, many Australian birds, especially ibises, egrets and herons, and probably others,

are known to have crossed the Tasman Sea to New Zealand. The most significant record is that of a Grey Teal ringed at Lara, Victoria, on 12/5/57 and shot on L. Whangape on 7/5/59. If Grey Teal flew the Tasman, why not Shovelers, too? The two species commonly associate both in the lower Waikato and on the Mangere ponds, where the first Shovelers were seen in 1958 and the first Grey Teal in 1959. If this hypothesis is valid, there are two races of Shoveler in New Zealand, *Anas rhynchos variegatus* and *Anas rhynchos rhynchos*. And it may be that in the north, stimulated by an infusion of new trans-Tasman blood, the Shovelers are predominantly of the duller Australian race.

For naturalists and conservationists the important thing is that a fine species, formerly rather scarce but now apparently expanding, has quickly adopted a man-made suburban refuge, where it is now both a resident breeder and an abundant autumn visitor; and it appears to be thriving in what may seem to some people an unsavoury habitat provided by a system which dilutes and purifies the waste of a great city.

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RECORDS OF COOK'S PETRELS AND BLACK PETRELS FROM GREAT BARRIER ISLAND

By J. A. BARTLE

Over many years records of small unidentified *Pterodromas* were obtained from Great Barrier Island. Bell and Brathwaite (1964) summarized these in *Notornis* 10, pp. 363-383. Observations made by D. V. Merton (*Notornis* 10, p. 382), P. D. G. Skegg (pers. comm.), and M. J. Hogg (pers. comm.) indicated that these birds might nest in the Mt. Hobson area. I spent two nights investigating these birds at the summit of Mt. Hobson (2038 ft.) in November-December, 1966.

Examination of six small *Pterodromas* caught at the top of Mt. Hobson, and measurements of another two cat-killed birds from the lower slopes, showed that these petrels were typical Cook's Petrels (*Pterodroma c. cooki*). An upper mandible measurement of 36.8 mm from one of these specimens compared well with an average of 34.6 mm (range 33.5-36.2) for the equivalent measurement taken from six Little Barrier Is. specimens in the Auckland Museum. Eighteen Cook's Petrel skins from various localities were examined in the Auckland Museum. The wing length of the second Great Barrier Is. specimen (A.V. 148.27) was 244 mm, the tarsus was 30.9 mm, and the toe, 38.8 mm. These measurements agree fairly well with an average length for the wing of 235.8 mm (range 228-246 mm), for the tarsus of 31.2 mm (range 30.4-32.8 mm), and for the toe of 38 mm (range 37.0-39.6 mm) for the eighteen Auckland Museum skins.

The calls of Cook's Petrel during nightly arrival are noticeably harsher than those of the related Pycroft's Petrel (*Pterodroma pycrofti*), and they can be heard from almost any part of Great Barrier Island.

In the early evening, large numbers (up to fifty at one time) of this species can be heard circling the summit of Mt. Hobson, calling and engaging in aerial courtship in the manner described by Turbott (*N.Z.D.S.I.R. Bull* 137, pp. 136-175, 1961).

On Little Barrier Is. the species lays its egg in early November (Reischek, 1885, *Trans. N.Z. Inst.* 18, pp. 87-96). This, coupled with the fact that all birds which I captured in the summit area had down-covered brood patches, strongly suggests that these birds were non-breeders. No burrows were found in the summit area.

The discovery of six cat-killed birds on the track at a relatively low altitude suggested a solution to this problem. These birds were found together on the track above 'Kauri Dam,' the lower of the two dams in the Kaiarara watershed at about 800 ft. a.s.l. These, and another corpse at an even lower altitude, indicate that the breeding population burrow into the slopes of Mt. Hobson rather than the summit itself. This pattern is the same as is seen on Little Barrier Is. (Turbott, 1961).

Local people report that cat-killed corpses are frequently found, and it seems probable that the species is scattered over a number of the central peaks on the island.

The other petrel to nest on Mt. Hobson is the Black Petrel (*Procellaria parkinsoni*). This species lays its eggs from the 28th November on Little Barrier Is. (Reischek, 1885).

On 1/12/66 a bird was discovered on Great Barrier Is., incubating a freshly-laid egg, its brood patch still down-covered.

Adrian Stewart noted that Black Petrels could be found cleaning out their burrows in October, with pairs present during the daytime. In mid-November pairs could be found in burrows during the day, but without eggs. The Maori people used to take well-developed chicks in March, and Adrian Stewart found chicks in early April. Perhaps the most extraordinary record is of a bird which Adrian Stewart found freshly dead on 8/7/66 after flying into powerlines.

The consensus of opinion as to the numbers and distribution of Black Petrels on Mt. Hobson is that they are confined to the summit pyramid (1600-2038 ft.) and that there are about fifty occupied burrows in this area.

For permission to camp on Mt. Hobson I am grateful to Mr. A. N. Sexton, Conservator of Forests (Auckland), and Mr. M. Johnston, Chief Ranger (Forest Service) on the island. The Forest Service, and in particular Mr. M. Johnston, were extremely helpful and hospitable. Mr. R. Sowerby kindly allowed me to travel out to the island on the M.V. "Colville."

A number of local residents, and in particular, Adrian Stewart, of Haratonga, gave me a great deal of interesting information. I am especially grateful to Adrian Stewart and some of the Maori residents for allowing me to incorporate their observations.

The Director of the Auckland Museum, Mr. E. G. Turbott, kindly allowed me to examine the Cook's Petrels in the collection.

DURABILITY OF BANDS ON DOMINICAN GULLS

By R. A. FORDHAM

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ABSTRACT

The rate of wear of size S lock-type aluminium-alloy bands on Dominican Gulls is discussed. Rate of weight loss is constant and mean annual loss of weight per band is about 0.06 gms. (4.9% of the initial weight). Bands may start to fall off in the sixth year and there may be marked loss of bands by about the tenth year. Recovery rates after about the sixth year will therefore be biased.

Since organised bird banding began in New Zealand in 1951, three types of bands have been used for Dominican Gulls (*Larus dominicanus*): size L butt-end, size L lock-type, and recently in large numbers, size S lock-type. The last is the lightest of the three, and was the type used in a gull study in the Wellington area from 1961-65. Because gulls may lose their bands (whatever the type) after a number of years, a bias is introduced into the recovery rate, which increases with time. Birds that have lost their bands are no longer identifiable on recovery with the result that mortality in the first few

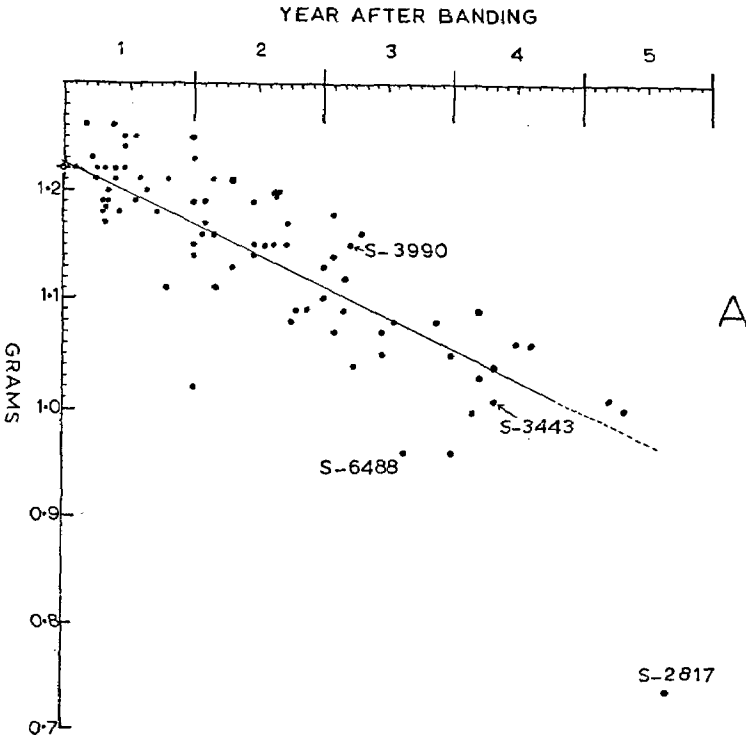


Fig. A — Loss of weight of bands with age. Mean initial weight = 1.22 gms. (1965 bands). The line shows mean weights for intervals of six months.

years after banding appears disproportionately high in comparison with later years. S bands have now been used widely in New Zealand and the question how soon after banding may a gull lose its band is important (c.f. Poulting, 1954; Olson, 1958; Coulson & White, 1959). The bands are stamped from Swedish aluminium-alloy, and since their introduction to this country, have not altered in composition (F. C. Kinsky, pers. comm.). However, weights of some recovered bands suggest fractional differences in thickness so that the mean initial weight, and consequently the average potential life of the bands may have varied fractionally. Individual bands also vary in weight.

In 1965, I examined 80 bands from my own gulls and from the "used-band" file of the *Dominion Museum*, which included gulls banded and found dead since 1959. The bands were weighed to 0.01 grams and the amount and areas of wear noted in relation to the time each had been worn. Also 150 unused (1965) bands in the S-27,000 series were weighed; mean weight = 1.22 grams (Fig. A). Bands were received throughout the year, so calculation of mean annual loss of weight could not be made from a sample collected exactly one or more years after banding. However, recovered bands showed a mean annual loss of weight of about 0.06 gms. (4.9% of the initial weight). Rate of weight loss was constant. Extreme loss of weight was shown by some bands, e.g., S- 5542 lost 16.4% of its initial weight after only one year, and S- 2817 lost 39.3% of its initial weight after four years eight months. Band S- 2817 (Fig. B) was eroded to paper thickness and could not have remained intact much longer, indicating a possible loss of bands beginning in the sixth year. Even if only a small proportion of bands in the sixth year are similar to S- 2817, extrapolation of the line of mean weights indicates that on the average bands would have eroded to the weight of S- 2817 (0.74 gms) in less than nine years, which suggests marked loss of bands by about the tenth year.

The shape of lock-type bands appears to affect their rate of wear. If the band is clipped on correctly, there is little chance of the lock opening but (unlike butt-end bands) the bands do not balance

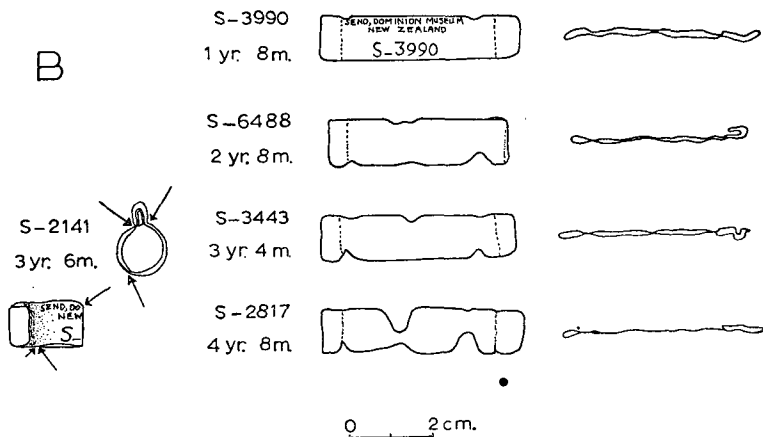


Fig. B — Examples of worn bands showing parts of the surface most subject to wear.

evenly on the bird's leg but tend to tilt from front to back. Thus wear occurs especially at the base against the lock, and at the top in front (Fig. B). Fortunately, the serial number is often the last part of the inscription to become illegible.

Large *Larus* gulls are potentially long-lived (Gross, 1940; Paludan, 1951; Olsson, 1958; Vermeer, 1963) and it is clear that if the bands used for Dominican Gulls may fall off after about six years' wear, then the recovery data obtained are accurate for only part of the potential life of the bird, and recovery rates after about the sixth year will be biased. In fact, when bands of low durability are used, whatever the species in question, it is important to first establish "mortality rates" for the bands themselves before trying to deduce mortality rates for the birds.

ACKNOWLEDGEMENTS

I am indebted to Dr. R. W. Balham, Zoology Department, Victoria University of Wellington, for his supervision during the study, part of which was made during tenure of the Internal Affairs Wildlife Scholarship. Mr. F. C. Kinsky and Mr. C. J. R. Robertson helped with access to the "used band" file of the O.S.N.Z., and Mr. Kinsky and Dr. H. Milne read the manuscript.

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SHORT NOTE

NORTH ISLAND KAKA IN HAWERA

The occurrence of a Kaka (*Nestor meridionalis septentrionalis*) in Hawera is of interest in view of the uncertain status of this bird in Taranaki. The Kaka was first seen on or about 10/8/61, following particularly cold weather with strong southerly winds and snow down to low levels on Mount Egmont. This may have caused it to leave the bush.

During late August I worked in a florist's gardens in Hawera and was informed that the Kaka had been seen frequently in these gardens. I saw the bird there daily from the 22nd to 25th of August. It was remarkably tame, on one occasion allowing an approach to within a few feet, and was observed feeding amongst humus on the ground and on flowering *Camellia* trees. Apparently the *Camellia* flowers were its main food source. It selected unopened or partly open flowers which it forced open with the lower mandible, petals often being torn out, before the lower mandible and tongue were inserted to obtain the nectar. I did not hear it utter any calls.

The Kaka was observed by many people in various gardens and parks in Hawera. It may have remained in the town for some months as there were reports of its being seen until October or early November, 1961.

— M. J. IMBER

BIRDS OF THE HEAPHY RIVER AREA

By R. J. SCARLETT, *Canterbury Museum*

The following list of birds observed on various trips to the Heaphy River area in 1959-1963 will supplement the paper by David Dawson, *Notornis* 11, pp. 127-129, 1964.

In all, seven trips, led by Owen Wilkes and myself, and covering the months of May, July, August, September, November and early December, were made, for caving, collecting sub-fossil bird bones, and archaeological purposes. On one of them, in November, 1961, four of us went right through the Heaphy Track, spending over two weeks on the way, mostly on archaeological work near the Heaphy River mouth, and caving at Goulund Downs.

The list gives the months in which the birds were seen, usually by both Owen and myself, and often by other members of the parties, but there were a few occasions on which only one of us saw a particular species. Unless otherwise stated, the list concerns the area within a few miles of the Heaphy Hut. In the Goulund Downs area Owen and I were mostly inside caves, the others having left us to continue the journey; and when we left we were too weighted down with moa bones, clambering around or through wind-fallen trees across the track, and, in my case, coping with blistered feet, to have time for bird observations on the last 18 miles to Brown's Hut.

KIWI (*Apteryx* sp.): Heard, both male and female, at night only.

One calling intermittently most of the night at the Lewis Hut 19-20/11/61. Mr. J. Lowe, of Karamea, who knows the area well, informed us in 1963 that he has seen both the Great Spotted Kiwi (*Apteryx haasti*), and the South Island Kiwi (*Apteryx a. australis*), within the area. I do not know if the calls of the two species can be distinguished. Heard May, July, August, September, November, early December.

BLUE PENGUIN: Not seen by us, but locally reported as occasionally seen at the mouth of the Kohaihai River, where the Heaphy-Bainham track begins. Found sub-fossil in a cave and in the Moa-hunter deposits, so the report is credible.

GANNET: Seen on several occasions diving into the sea off the Heaphy River mouth, in July.

BLACK SHAG: A small colony up the river from the Heaphy Hut. Not as plentiful as the Pied Shag. July, August, November.

PIED SHAG: A colony a few hundred yards up the river from the Heaphy Hut. Common, often seen flying towards the bar, feeding on the river, or swimming, and occasionally seen also between the Kohaihai and Heaphy rivers. May, July, August, September, November, early December.

HERON: Probably the White-faced Heron, but it was seen on one occasion only, across the river and too far away for certain identification without binoculars. July. Two more were seen by Owen Wilkes at dusk at the river mouth: September 1963.

GREY DUCK: Mainly on the lagoon which lies behind the sandhills to the south of the Heaphy River mouth. July.

PARADISE DUCK: One was seen on the river, between the Gunner Creek and the Lewis Hut. November.

BLUE DUCK: Mainly seen on the lagoon. July, August, September, November. Also one between Kohaihai and Heaphy (seen by Maurice Sinclair, September 1963).

HARRIER: May.

N.Z. FALCON: May, July.

SOUTH ISLAND WEKA: The two or three at the Heaphy Hut, unlike all other wekas I have known, seemed shy, and rarely appeared before dusk. One was seen on the morning of 20/11/61 at the Lewis Hut, and there were two at the Goulard Downs Hut in November 1961. At Heaphy, May, July, August, September, November.

PUKEKO: May.

BLACK OYSTERCATCHER: The repeated trips, affording thirteen opportunities for me to observe them, revealed that there were pairs established at the Kohaihai and Heaphy River mouths, and three pairs in the twelve miles of coast between the two rivers, a total of five pairs. In the early 1930's I saw a pair just north of the Kohaihai Bluff, but did not see any others on what was my first trip to the Heaphy River. May, July, August, September, November, early December.

BANDED DOTTEREL: A pair was frequently seen at the mouth of the Heaphy River, mainly on the sand. No nest was found in the very limited time available for searching. August, November, December.

BLACK-BACKED GULL: Appeared intermittently, usually appearing as one or two flying above the river near its mouth. May, July, August, November, early December.

CASPIAN TERN: Off the river mouth. July.

N.Z. PIGEON: Not plentiful. July, August, November, December.

SOUTH ISLAND KAKA: Beyond the Lewis Hut, and beyond the Goulard Downs. November 1961.

KEA: Plentiful at Goulard Downs, observed in two places between the Heaphy and Lewis Huts. Sometimes flew down over the Heaphy Hut, calling, and making an unholy row on the tin roof about daybreak. Some of them very "cheeky." May, August, November, early December.

SHINING CUCKOO: Six or seven individuals seen. November, early December.

MOREPORK: At least two in the vicinity of the Heaphy Hut. One individual came to within a few feet of me after dusk, and held a "conversation," answering my imitations of its call. May, August, November, December.

S.I. RIFLEMAN: May.

S.I. FANTAIL: Both black and pied forms, the latter more plentiful. There were usually 3 or 4 individuals around the "dig," after the insects we disturbed. I wish they ate sandflies! May, July, August, September, November, early December.

YELLOW-BREASTED TIT: May, July, November, December.

S.I. ROBIN: One was seen at the "Bivvy," above the rise from the Lewis Hut. November 1961. One was seen by Don Miller between Kohaihai and the Heaphy in May 1962.

S.I. FERNBIRD: Goulard Downs: Heard far more often than seen, as most of our time was spent in caves. November 1961.

GREY WARBLER: May, July, August, November, early December.

PIPIT: Mainly seen on the sandy river beach of the Heaphy below our "dig," between there and the mouth of the river. July, August, September.

BELLBIRD: May, August, September, November, early December.

TUI: May, July, November, early December.

SILVEREYE: November, December.

A total of 30 species seen or (Kiwi) heard, one (Penguin) reported.

Introduced Birds

BLACK SWAN: Five flew over the river, near the mouth: September.

ROCK PIGEON: A banded (? racing) bird died apparently of exhaustion, at the Heaphy Hut, in November 1961.

SONG THRUSH: September.

BLACKBIRD: November, December.

GOLDFINCH: July, August.

A list of the sub-fossil birds from the area is included in a report on the archaeological work, to be published in the *Records of the Canterbury Museum*.



SHORT NOTES

PACIFIC GOLDEN PLOVERS AT LAKE REREWHAKAITU

While motoring past the southern side of Lake Rerewhakaitu, on 4/12/66, I spotted several large ducks walking near the lakeside. When I examined them through my glasses I saw they were Paradise Ducks (*Tadorna variegata*) — 8 dark-headed birds and one duck. Also dotted along the lakeside were numerous Pied Stilts (*Himantopus leucocephalus*) and a strange wader running about in the grass. I soon discovered that there were other similar birds nearby, either feeding or standing about. Presently one of these flew along the lake nearer to me and, thanks to the excellent light, I was able to examine it clearly through my telescope. At once I saw it was a Pacific Golden Plover (*Pluvialis dominica*), its golden back, greyish throat and breast, pale eyebrow, black bill and grey feet showed very clearly. It rose again, flying off with a rapid zig-zag flight showing no marking above, and a dull white underneath as it banked.

I counted thirteen of these plovers and saw another smaller wader nearby which I suspect was a Banded Dotterel (*Charadrius bicinctus*), but was unable to get another sight of it so cannot be sure at all. Later as I drove on I saw yet more Golden Plovers standing about in the grass at the lakeside so that there must have been at the very least some 25 birds, as some would have been obscured by vegetation.

— R. W. JACKSON

[Golden Plovers have rarely been found far inland in New Zealand. This report is therefore all the more interesting. In 1962 one was photographed by P. McD. McLean on a pool with ducks and Pied Stilts at Piopio.—Ed.]

WHIMBRELS AT LAKE WAITUNA, SOUTHLAND

On 6/4/65 I was at the western end of Lake Waituna in company with Mr. R. Bond. We decided that we would have a good look over Walker's Bay. This bay is about one mile long by half a mile wide and adjacent to the sea coast, but separated from the sea by a large permanent shingle bank. At low tide it consists almost entirely of mud flats and is greatly favoured by a variety of wading birds.

From a position among tussock overlooking the bay we could see scattered groups of waders which included Godwit, Turnstone, Golden Plover, and two birds which we concluded could only be Whimbrel. We viewed these two birds at a distance of about 200 yards with 15x and 30x telescope in a moderately good light. Both birds were together, but quite apart from all other waders. Neither of us had previously seen a Whimbrel. Only after returning home did I realise that we had made no attempt to determine which subspecies of Whimbrel we had seen — Asiatic (*N. phaeopus variegatus*) or Hudsonian (*N. p. hudsonicus*).

On 11/4/65 Mr. and Mrs. C. E. Barlow visited Walker's Bay but were unable to locate the two Whimbrel, and it was assumed that they had departed for the north.

On 21/9/65 I was making a count of wintering waders on a mud flat on the western shore of Lake Waituna, some half a mile from Walker's Bay, when I again sighted two Whimbrel. There can be little doubt that these were the same birds sighted on 6/4/65 and that they had spent the winter in Southland. They were by themselves when first seen and immediately took to flight at my approach. I had only 6 x 30 binoculars with me. The two birds flew about half a mile and fortunately landed on the mud flat close to the lake shore, which at this point is well covered with manuka and flax, some six to eight feet high. After making a careful stalk through this cover I arrived at a point about 50 to 60 yards from the Whimbrel, which were feeding near, but not with, some 100+ Godwit and a few Turnstone. It was fine and sunny and visibility was good. Although my approach had been very careful, the two birds seemed to sense my presence and appeared alert. They had stopped feeding, although the Godwit, some of which were nearer, continued to feed. I could not get a full back view of the birds as they moved slowly and cautiously to my left. I showed myself deliberately, hoping they would fly directly away from me. Both birds immediately took to flight, but went at right angles. I watched the birds through my binoculars as they flew away, and apart from what I am sure was just the bright sun shining on one bird's back, saw no sign of any light coloured plumage on either rump or back.

Because of their extreme wariness and the fact that no light colouring was noted on rump or back on either occasion, especially at the second sighting when it was particularly looked for, I think the evidence suggests that they were *hudsonicus*; but because of my lack of previous experience with Whimbrels I feel I am not qualified to make a very strong claim to the certainty of this sighting.

ANOTHER TATTLER IN MANUKAU HARBOUR

About one mile to the west of the Mangere end of the Onehunga bridge in upper Manukau and at the end of Kiwi Esplanade is a rocky bay. Lying between two lava-flows from Mangere Mountain, it contains numerous rocky reefs and one prominent shellbank which at full tide is often packed with roosting waders, especially S.I. Pied Oystercatchers, Pied Stilts and Godwits.

On the evening of 22/11/63, when I visited this bay at low tide, I was puzzled to see a dark shape sharply silhouetted against the water on the end of one of the reefs. Access was easy by a circuitous route which enabled me to have the evening sun at my back. The solitary bird was clearly a Tattler, mostly white underneath and showing a minimum of barring, so that it was either an adult in winter plumage or a young bird, more probably the latter. My problem was to try to decide whether it was *incana* or *brevipes*. When I was within about a chain, the Tattler, after running nimbly about the reef, called briefly once as it rose, flitted low across the bay and settled on another reef. If the husky brevity of its call was a reliable pointer, it should have been a Siberian Tattler (*Tringa brevipes*).

The bay was evidently to its liking, for the Tattler stayed at least two months, during which it was seen four times in the bay and once in a swamp about half a mile away. On 8/12/63 it was watched by M. J. Hogg and D. G. Fenwick as it was walking about among 150 Oystercatchers on the shellbank. At 5.30 p.m. on 26/12/63 my wife and I saw it again. At first it was isolated on a reef; then with the rising tide, it flew in to settle among about 70 Stilts in a shallow pool; finally it moved on to the shellbank to rest among the Oystercatchers. On 2/1/64 there was a very big tide, which forced all waders off the shellbank in 'Roadend Bay,' whence they had flown across farmland to a swampy area, formerly a creekhead, beside No. 4 pond of the A.M.D.B. Here the Tattler was found on a small patch of open ground amongst watercress and Bachelors Buttons.

It was last seen on 27/1/64 when it was back in the bay where it was originally found. Again the tide was rather high and the waders at the shellbank were restless. Godwits and Oystercatchers flew away; but the Tattler, after flying round with the Stilts, returned with them. Though I watched it on five occasions during its two months stay, not once was it possible to see clearly the length of the groove along the side of the bill; and though I flushed it several times, not once did I hear it utter a prolonged trill. In fact it was rather a silent bird. During the early summer of 1963, other species of Asiatic waders, namely a Broad-billed Sandpiper (*L. falcinellus*), a Green-shank (*T. nebularia*) and three Asiatic Black-tailed Godwits (*L. melanuroides*) which are rarely reported in New Zealand, reached Manukau Harbour.

A rare American visitor, seen only on November 9th near Puketutu, was an Hudsonian Godwit (*L. haemastica*).

I have given this account in some detail because this is the first Tattler to be recorded in Manukau Harbour for some years. Between April 1955 and April 1959, numerous sightings by many observers of a Tattler along the Karaka shore between Urquhart's Point and Kidd's Bay are believed all to refer to the same bird. On 18/4/57 one was found resting among Pied Stilts and Wrybills in the Explosion Crater below the south-west slopes of Mangere Mountain; in April waders are very much on the move. This may have been a migrant passing through or it may have been the Karaka Tattler on a more extensive 'walkabout' than usual.

— R. B. SIBSON

[Since the autumn of 1965 there has been a veritable spate of reports on the sightings of Tattlers, the localities concerned being Kermadec; Tarawera estuary, B.o.P.; Waiongona estuary, New Plymouth; Farewell Spit; Kaikoura peninsula; Papanui Inlet, Otago. These will be published in a forthcoming issue.—Ed.]



LONGEVITY OF WEKA

I am indebted to Mr. Charles Burland, of Patutahi, near Gisborne, for the following information on a pair of North Island Weka (*Gallirallus australis greyi*), which nested for many years in his garden, the same pair that is recorded in *Notornis* X, 300, as raising four broods within the year. Early in 1950, a year clearly fixed by other events, Mr. Burland took particular note of this pair breeding in his garden, the female being distinguished by unusually bright orange legs, and the male being a particularly friendly bird. He came to know the birds well, the male coming frequently to the house for food, and doing so daily when there were chicks. The hen, much more shy, came occasionally with the chicks. The same pair was observed breeding in the garden each year until 1963, since when no breeding has occurred; but the male still comes to the house occasionally, and the female is seen from time to time.

The pair's territory has always been strictly protected by Mr. Burland by excluding all dogs from the property, and other Weka transgressing are trapped and moved away from the area. As the birds bred in 1950, they must be at least 18 years old; and they are reported as still being in good plumage.

The Weka is known to be multiple-brooded, and if such longevity is common in the species, it can be readily understood how the Buff Weka (*G. a. hectori*) continues to survive in such large numbers in the Chatham Is., as does the N.I. Weka in the Gisborne district, despite severe persecution in both places.

— A. BLACKBURN

THE SPOTTED SHAGS OF THE COROMANDEL COAST

Acting on the good news from Miss Anthea Goodwin (*Notornis* 13, 220), a launch party consisting of two visiting ornithologists from U.S.A., Dr. and Mrs. Dryer, and the writers, visited Motu Kahaua Is. (Happy Jack Islands) to see the new nesting place of this shag (*Stictcarbo punctatus*) and to show the visitors the nesting Gannets. A.G. had found some nesting still in progress on 28/2/65; but on 30/1/67 no nests were seen to be occupied. All except a very few birds were out of plumage and from the launch it was not possible to distinguish the number of immature birds among the faded adults. G.K.McK. took his launch as close as possible, but the whole flock panicked and flew off before we were close enough to check the colour of the feet. It was thought that many were young.

The number of Spotted Shags at the place described by A.G. was estimated at c.800 and a further 300 or so were seen on the nearby groups of islands. This number was unexpected, but G.K.McK. recollected that a very short time before this he had noted that the Spotted Shags of Anita Bay, on the outside of Waiheke Is., were down to a count of 20 where H.R.McK. and P. A. S. Stein used to see from c.60 to 150 or more. On the same day he had noted that there were only 100 to 150 at Tarakihi Is. where there were usually some hundreds. It is known that they have been badly shot up at these breeding places and this may have driven them to the islands just off the Coromandel coast. Even so this, and a very successful breeding season would hardly account for c.1100 birds. It is possible that many have moved across from The Noises, where they have also been persecuted.

That there has been a displacement is borne out by Miss Goodwin's account and the fact that she, H. R. McK. and other observers have seen parties of up to 75 resting birds on some rocks at Tarata Pt. on the Wharekawa coast on the western side of the Firth of Thames, from Aug. to Nov. 1966, where previously they had never seen more than eleven. An interested local resident, just before the above period, had noted several hundreds feeding and resting; and there was evidence of this on a rock face which had been used. They were scared from there, though not directly molested, by holiday makers; so they may return this autumn. Of these a considerable number was in breeding dress, a fine sight from a car at c.100 yards.

Many Waiheke and Tarakihi birds have long used a roost on the N.E. corner of Ponui Is. and are still using it from the Coromandel side. These have another minor roost at Papanui Pt., Orere, Clevedon. A.G. has noted such roosts at Opopoto Pt., (Thompson's) and Te Whau headland, near Onetangi Bay, Waiheke Is. north, used no doubt also by the Noises colony. It has obviously been in this way that small numbers have been using the Coromandel coast for many years, perhaps for ages. A.G. has seen them there at odd times over a period of twelve years, one or two at a time and one group of nine. T. M. Roberts reported a party of what must have been Spotted Shags at or near Motu Kahaua Is. during or before 1942 and, on 5/1/44, saw a party of c.30 feeding in Coromandel Harbour.

It would be interesting to know if these Spotted Shags have returned to an ancestral breeding-place or if they are colonising new territory.

— G. K. McKENZIE
H. R. McKENZIE

OUTLINE OF REPORT TO COUNCIL ON ATTENDANCE AT XIV INTERNATIONAL ORNITHOLOGICAL CONGRESS AND PRE-SESSIONAL SCOTTISH BIRD STUDY CRUISE, JULY, 1966

Following attendance at the 9th General Assembly of the International Union for the Conservation of Nature held in Lucerne, Switzerland, June 24th - July 3rd, I was able to join the Scottish cruise on 16th July. This was a most successful event, well organised by the Scottish committee, and conducted throughout with remarkable efficiency. A contributing factor to success was the fine weather experienced throughout; and the result was that some 900 participants were unanimous in their expressions of satisfaction.

The M.V. *Devonia* (12,000 tons) left Greenock at noon on 16th July, passing close to Ailsa Craig during the afternoon. On 17th all passengers were landed early in Loch Scoresort on the island of Rhum, and spent an interesting day, some climbing to the twin peaks of Askival and Hallevel to see high altitude nesting Manx Shearwaters. On the following day a running coastal survey was made of the remote outer isles of St. Kilda, the Flannans, Sula Sgeir, and North Rona. On 19th the ship worked close in to the coast of Shetland, from Foula, round Muckle Flugga and anchored at Lerwick in the evening. July 20th was spent ashore, one party of 250 landing on the isle of Noss which has a high concentration of breeding seabirds, including Great and Arctic Skuas. "*Devonia*" then sailed for Orkney via Fair Isle and another interesting day (21st) was spent ashore in the neighbourhood of Kirkwall. Next was a daylight run down the east coast of Scotland, close to the Isle of May and the Bass Rock before berthing at Leith late on 22nd. Passengers disembarked on 23rd for a day of hospitality and entertainment in Edinburgh before joining a night express for Oxford.

OXFORD, 24th - 30th JULY, 1966

The Congress was well organised in the matter of accommodation and information services, with a centre at Rhodes House. Main excursions were as far afield as Slimbridge and Whipsnade, and included visits to the British Trust for Ornithology and the Edward Grey Institute. There were exhibitions of books, and of bird art, and a particularly varied programme of ornithological films. Ten New Zealand ornithologists participated, five travelling to Britain to attend and five being already working or studying there. My co-delegate will have reported on aspects of the programme. We all found the pressure of six concurrent sessions of papers frustrating, but the plenary sessions included some important topics.

The proposal for an agreed world list drafted by Dr. Lack was not adopted. The "Committee of 100," the continuing body held two meetings, filled vacancies, and accepted the invitation of Holland to meet there in 1970. The new president is Dr. N. Tinbergen, of Oxford, and the Secretary-General Dr. K. H. Voous.

— R.A.F.

The Fourteenth International Ornithological Congress was held at Oxford from 24th to 30th July. The President was Dr. D. Lack, Oxford, and the Secretary-General Dr. N. Tinbergen.

The Congress Office at Rhodes House opened for registration on Sunday, 24th July, at 11 a.m., and every participating member at registration received a folder containing information on his (or her) accommodation, Congress programmes and all the relevant information leaflets, guides, etc.

Accommodation for most of the over 900 participants was provided at several university colleges throughout the city, and Rhodes House was open every day for social gatherings and provided a good centre for informal contacts with other participants. Accommodation allocated to me was at Jesus College, where I made myself at home for the week during the early afternoon on Sunday, and was able to study all the important literature obtained in a relatively comfortable and quiet atmosphere.

The official opening of the Congress took place on Sunday at 8.15 p.m. in the Sheldonian Theatre.

Plenary sessions of the Congress, at which four important papers were given each time, were held every day of the week, except on Wednesday, when all day excursions were organised for members.

Every afternoon except again for Wednesday, five sectional meetings were held simultaneously in different lecture rooms in the University science area. At each of these sectional meetings five papers were read every day.

I attended all plenary sessions, and tried to attend as many of the afternoon sessions as possible, especially those at which papers dealing either with pelagic birds or of special interest to the South West Pacific Region and the Antarctic were read. Unfortunately several interesting sessions had to be missed because of the fact that five separate sectional meetings were going on simultaneously, and often times at which papers of special interest were read coincided with each other.

In addition to the meetings mentioned above, specialists' and committee meetings were organised in the late afternoons following and in addition to the official programme. Of these I attended the following:

- (a) 24th July: Meeting on seabird research
- (b) 26th July: International bird ringing committee.
- (c) 28th July: Proposal by Dr. D. Lack for an internationally agreed world list of birds.
- (d) 28th July: International Antarctic Bird Banding Committee.

Every evening of the week, except on Saturday, two film sessions, one in a city cinema and the other in the University Museum, were held simultaneously at which many excellent bird films were shown.

The most outstanding lectures attended were the following:

- E. Stresemann, Evolutionary problems offered by the mode of wingmoult.
- G. Zink, Population dynamics of the White Stork.
- D. B. Wingate, Conservation of the Bermuda Petrel.

Whenever time permitted every effort was made to meet as many overseas ornithologists as possible, with many of whom problems of mutual interest were discussed. With others, working in similar positions to my own at overseas museums, experiences were exchanged and numerous useful contacts were established which will be followed up in the future. The most important contacts in this respect were made with Dr. R. D. Etchecopar, Dr. J. Dorst and Dr. J. Prevost of the Natural History Museum, Paris; Mr. H. J. Disney, Australian Museum, Sydney; Mr. A. McEvey, Melbourne; Dr. G. Neithammer, Bonn; Prof. K. Voous, Rotterdam, and Dr. G. Watson and Dr. P. S. Humphrey of the Smithsonian Institution, Washington.

I was unfortunately unable to participate in any of the organised excursions on Wednesday, 27th July, as this was the only day I was able to arrange a meeting with Dr. J. Prevost, France, Mr. W. L. Tickell, England, and Dr. W. L. Sladen, U.S.A., at which useful discussions were held on Antarctic research in general, and on a planned joint publication with Dr. Sladen in particular.

Very useful discussions were also held with Dr. W. Ryzdewski, the editor of the international bird banding magazine, "The Ring," and with Mr. K. Ohman, our bird band manufacturer in Bankeryd, Sweden.

At the last plenary session on Saturday morning it was announced that the next (XV) International Ornithological Congress will be held in Holland in 1970, and the Congress ended with the now traditional garden party in the grounds of Trinity College on Saturday afternoon.

My attendance at the Congress was not only an unforgettable experience for me, but, and this is probably the main object of any such conference, provided the opportunity of meeting and establishing personal contacts with top ranking ornithologists of the world, which should prove of great benefit for the Dominion Museum.

— F.C.K.



INTERNATIONAL CO-OPERATION FOR THE STUDY OF ENERGY FLOW THROUGH SPARROW POPULATIONS

A special meeting was held on 27th July, 1966, at the XIV International Ornithological Congress, to organize international co-operation in the study of geographic and climatic variations in the morphological, physiological and ecological adaptations of the House Sparrow (*Passer domesticus*) and Tree Sparrow (*P. montanus*) throughout the world. Special attention will be paid to the measurement of energy flow through sparrow populations and the economic meaning in various regions in connection with the International Biological Programme.

Correspondence from persons interested in the project will be welcomed.

International Biological Programme
Warszawa, Nowy Swiat 72, Poland.
10/10/66.

Chairman of Committee
Dr. Jan Pinowski

THE KERMADECS EXPEDITION 1966/67

Members of the Kermadecs Expedition returned to Auckland by HMNZS 'Kaiama' on 29th January, 1967, all in good health and full of enthusiasm for the work they had been engaged upon, and well satisfied that they had made the most of their opportunities. Unstinted praise was expressed for the qualities of leadership and organising ability displayed by the leader of the Expedition, D. V. Merton, Senior Field Officer of Wildlife Division, and for his capable lieutenant, C. R. Veitch, also a Field Officer of Wildlife Division. We look forward keenly to the published results of their work, which consisted largely of breeding studies of many species of tropical seabirds which occur nowhere else in the New Zealand Subregion. Nothing is so far known of the breeding biologies of some of the birds which members of the party had under close observation for eleven weeks.

Since publication of the list of sponsoring members and donors published in 'Notornis' XI, pp. 192-3, the following amounts have come to hand and are gratefully acknowledged:

	£		£
Botany Division, D.S.I.R.	25	Nuttall, A., Oamaru	5
Crockett, D. E., Wanganui	5	Pearl, J. A., Palmerston Nth.	6
Edgar, A. T., Kerikeri	10	Pengelly, W. J., Wanganui	3
Entomology Div., D.S.I.R.	50	Sykes, W. R., Christchurch	7
Fooks, Mr. & Mrs. L., Remuera	5	Veitch, C. R., Rotorua	10
H.E. the Governor-General	5	Watt, Dr. J. C., Nelson	5
Kennington, S. R., Seddon	10	Ward, W. V., Nelson	7

— A.B.

★

LETTERS

FOODS OF THE PUKEKO

The article by A. L. K. Carroll (*Notornis* 13, 133) is interesting and informative in that it gives an account of foods taken over such a wide range of the habitats of the present day. It is to me rather remarkable that other foods, which could perhaps be classed as "fringe" foods, were not found. It appears that there have been some changes in diet since the time of Buller and the earlier years of this century. This could be due partly to changes of tastes in the birds and partly to modification of the habitat of earlier days. From 1909 to 1915 I lived at Wayby, North Auckland, where there were many large and small raupo (*Typha angustifolia*) swamps. Here the raupo was the main diet in the whole district. In the more shallow swamps the upper parts of the plant would litter the water, the lower part having been eaten as described by Buller. At that time there was little pasture available at Wayby and that very rough. The swamps were later drained and good pastures established. The Pukeko, whether because of this or some other reason then staged a population explosion and took to the foods of the open land. However, it is still surprising to me that in the Wildlife surveys no raupo was found in stomach contents. Some may have been present in macerated form, as provided for at the bottom of page 140, but it appears that it can be no longer a staple item even where it is still present.

The writer of the article, on page 133, apparently accepts the accounts by Buller and Oliver as to the diet of earlier times. Mention of some habits of the past which have carried through to the present, and some which have not, may be of interest. M. E. Fitzgerald (13, 222) has remarked on the taking of eggs. I have reliable evidence of this, too; and some evidence of the killing of ducklings. Other small birds may be taken if found at a disadvantage. At Mapiu, in the King Country, a Pukeko came out of a blackberry paddock and walked across the road, carrying a Blackbird (*T. merula*) which appeared to be alive. Probably both were feeding on the fruit and the Pukeko was eliminating competition. It looked as though it did not know what to do with the Blackbird which it most likely could not eat. At Waipu, Northland, the closing of part of the Waihoihoi Stream for protection of the Brown Teal (*Anas chlorotis*) has failed and local opinion has it that the upsurge of the Pukeko has been largely responsible. I would agree that this is extremely likely. The carnivorous habit has thus been maintained.

At Wayby in 1909-15 farmers grew their own potatoes and other vegetables to last for their own use for the year. Maize was also grown for home use in feeding pigs and poultry. The crops were grown in the best soil, often near a swamp. The Pukeko scratched out and ate potatoes, kumara and other root crops to quite a serious extent. Worse harm was done to standing maize. They would alight on a maize stalk, bend it down near the ground, open the sheath of the cob and pick off the grain. Also they would pull up and eat young maize plants. Another favourite food was the fruit of the blackberry, the seeds of which were evident in their droppings. Along old logs lying with the upper rotten surface just above water level I have seen hundreds of young blackberry plants. The logs were used as roosts and lookout places. The farmers did not like the random sowing of blackberry on their farms. These habits may have been modified because most farmers do not now have field gardens nor are blackberries so readily available. There will perhaps be other "fringe" foods which I have forgotten and some of which I have had no experience.

— H. R. McKENZIE



NOTICE

The Council of the South African Ornithological Society has decided to organise the

THIRD PAN-AFRICAN ORNITHOLOGICAL CONGRESS in March, 1969

The Congress will be held in the Kruger National Park, by kind permission of the National Parks Board of Trustees, probably at Pretorius Kop.

Anyone interested in attending should notify —

The Hon. Secretary, S.A.O.S.,
C/o Percy Fitzpatrick Institute,
University of Cape Town,
Rondebosch, C.P., South Africa.

Further information will be sent as it becomes available.

REVIEW

Dusky Bay, by A. C. Begg and N. C. Begg. Whitcombe & Tombs Ltd., 55/-.

Even in a land as 'young' as New Zealand, local history has many facets. The authors of 'Dusky Bay' are brothers who have made the study of a remote corner of the South Island their hobby and recreation. Although they do not claim to be professional historians, their researches have extended far to museums and collections in Europe and America. The result is an elegant compilation which puts students and naturalists deeply in their debt.

'Dusky Bay' is generously illustrated; and its value is enhanced by reproductions of sketches by Cook and Henry; and of paintings by Hodges and George Forster. Ornithological historians will particularly welcome the reproduction in colour of a selection of Forster's paintings of birds. Two which notably catch the eye are those of Piopio and Broad-billed Prion. But the critical scrutineer will have his queries. Surely Latham was right in identifying *Parus urostigma* as Brown Creeper; for to a European this species is obviously titlike; and some taxonomists have placed Brown Creeper together with Yellowhead and Whitehead in the Paridae. Surely, too, it was a Brown Creeper that George Forster painted. The dates are significant. On 14/3/1770 the Endeavour only glimpsed Dusky Bay without entering. Three years later the Resolution's visit was from March 25 to April 29, by which season most Long-tailed Cuckoos have left New Zealand and only a few elusive laggards remain. Thus the Forsters' chance of obtaining a Long-tailed Cuckoo at Dusky Bay would have been of the slightest.

The authors provide a commentary on the birds which they themselves have found in Dusky Bay. If their Little Black Shag was correctly identified, it must be a unique record for Fiordland, as the bird was far from its normal haunts in so far as they are known. But the species appears to be extending its range.

Why is the Tui now so scarce in Fiordland? Admittedly it was tasty in a pie to sailors and sealers hungry for fresh protein; but their hunting would have touched only the fringe of a vast habitat and their bag would have been only a fraction of the numbers which early explorers reported. Moreover, it was still plentiful in Henry's time. In view of what has recently happened on Big South Cape Island, Reischek's account of a visitation of Black Rats on p. 171 may offer the key to the puzzle.

All lovers of the New Zealand scene and all dedicated collectors of local histories should rejoice in this book.

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Kermadecs Expedition, 1964, by A. T. Edgar. Reprints at 4/6d.

From all bookshops:

A Field Guide to the Birds of New Zealand, by R. A. Falla, R. B. Sibson and E. G. Turbott. 45/-.

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A Field Guide to the Waders, by Condon and McGill. 6/-.

A BIOLOGY OF BIRDS

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