

me that a group of roughly 100 Emperor Penguins had been noticed on the sea-ice as the U.S.S. *Glacier* passed Cape Washington and the entrance to Wood Bay en route to Coulman Island, late in November, 1958. He agreed that this might indicate that there is an Emperor Penguin rookery in the vicinity of Wood Bay, in addition to the Adelie Penguin rookery on the north flank of Mt. Melbourne. He added that in earlier seasons he had noticed groups of a dozen or more Emperor Penguins in the vicinity of Marble Point in McMurdo Sound, which suggested that there might be other small Emperor Penguin rookeries along the Victoria Land coast. In the 1957-58 season he had noticed an Emperor chick, still partly in down, on an ice-floe in McMurdo Sound, and he did not see how it could have drifted there from Cape Crozier or Coulman Island.

In the narrative of the National Antarctic Expedition of 1901-4, Captain Scott and Dr. E. A. Wilson recorded that many thousands of Emperor Penguins were observed from a distance on sea-ice near the junction of King Edward VII Land and the Ross Ice Shelf. So it is likely that a large rookery exists in that area. Scott also noticed from the vicinity of Cape Jones, that there were many penguins on the ice near the north-west end of Coulman Island, but did not investigate the occurrence closely.

Flights from McMurdo Sound by photo-reconnaissance aircraft, at dates recommended by biologists, would be the most effective way of searching for new rookeries, and obtaining a record for census and other purposes of the known Emperor and Adelie Penguin rookeries in the Ross Sea. The aircraft could make one high-level sweep over each rookery to obtain general vertical aerial photographs, and another lower-level sweep to obtain vertical photographs for census purposes. The height of the lower sweep could be calculated in advance, as a function of the height of a penguin and the focal length of the camera lens, to ensure that individual penguins could be distinguished and counted.



NOTES ON THE BIRDS OF THE POOR KNIGHTS ISLANDS

By F. C. KINSKY and R. B. SIBSON

During the last decade much has been written about the birds of the outer islands of the Hauraki Gulf and reports on ornithological investigations on Little Barrier, Mokohinau and Hen and Chickens have appeared from time to time in *Notornis*. The Poor Knights, however, perhaps because of their general inaccessibility, have hardly been mentioned at all; and for many years the only authoritative account of the avifauna of this distinctive group has been a couple of papers (*Emu* 41. 56-58 and 45. 315-318) by Major G. A. Buddle, who camped on Aorangi in December, 1938 and November, 1940, and on Tawhiti-Rahi in January, 1943. We found these two papers an invaluable guide and they are likely to remain so for all future visitors to the Poor Knights who are interested in their natural history. In January, 1956,

the Auckland University Field Club spent a week at the islands, as a result of which Bruce Chambers published some useful notes in *Tane* (Vol. 7. 66-67). In 1958 Messrs. B. D. Bell and D. Graham were put ashore at the southern end of Aorangi on August 4th and taken off and transferred to Tawhiti-Rahi on August 6th, but were only able to stay for two days. Mr. Bell kindly offered us his notes and asked us to include them in this paper.

The Poor Knights lie in a north-south line about sixteen miles off the coast of Northland and due east of Tutukaka. There are two main islands, Tawhiti-Rahi (318 acres) rising to a plateau nearly 600ft. a.s.l., and just to the south of it Aorangi (163 acres), which at its highest is 680ft. a.s.l. Close to the two big islands are several rugged islets; and a few miles to the south are the three Poor Knights' Rocks, one of which is a gannetry, and Sugarloaf, which is also a gannetry (v. *Notornis* V. 51-53). Since Buddle's visits ecological changes have occurred on both the big islands. The last pigs on Aorangi, reminders of the former Maori occupation, were exterminated in 1936 and Buddle noticed a remarkable improvement in the return to natural conditions even between his two visits in 1938 and 1940. About 1923 the southern portion of Tawhiti-Rahi was burnt, but the ravaged area is now deep in a vigorous, resurgent vegetation.

Here, with Dr. O. F. Lamb and twelve boys from King's College, we were able to spend five days, Dec. 17-21, 1958; permission to land and camp having been courteously granted by the Commissioner for Crown Lands at Auckland. Sailing from Tutukaka at 6 a.m. on Dec. 17th in Hugh Going's deep-sea fishing-launch, *Kitty Vane*, we were going ashore on Tawhiti-Rahi by 8 a.m. Most of the coast of this island rises in sheer cliffs from deep water and there is hardly a vestige of a beach; but the landing is not difficult — unless a nor-wester is blowing — in a bay near the southwest corner of the island, where a steep but easily climbable slope interrupts the line of abrupt cliffs. Without a doubt, this was the landing-place most commonly used by mutonbirders during the Maori occupation of Aorangi. Camp was pitched amongst the sheltering scrub of a hanging valley, near the place where the one stream on the island goes over a 60ft. cliff in a waterfall. Thanks to a wet spring and the choking of its bed with flax, there was a steady run of water in the stream. During its last ten yards before it plunges over the cliff, the rocky stream bed has evidently been hollowed in a succession of holding pools, which proved most helpful. In a dry season there is said to be no water in this stream. This would be a cogent reason why there was no permanent Maori settlement, but the early Maoris were evidently frequent visitors, for flakes of obsidian were commonly found and stones appeared to have been piled to form crude walls, as on Hen Island.

The portion of the island which was burnt a quarter of a century ago lies to the south of the stream. Toetoe now dominates the slopes which rise gently from the stream to the top of the cliffs from which one looks across the intervening channel to Aorangi. The acres of toetoe Red-heads, waving in the breeze or bending under the weight of eager Red-fronted Parakeets were a pretty sight, not easily forgotten. Interspersed among the toetoe are flax, ngaio, koromiko, cassinia, bracken, mingimingi, native broom and a few small cabbage-trees. Near the

southern cliff top are scattered dense patches of Poor Knights' Lily and wind-stunted kanuka. Scattered pohutukawa and karo already 10-12ft. high and rising above the other plants give some indication of what trees will eventually dominate this slope. Although compared with the rest of the island it is still open country, we found no sign of the Brown Quail or Skylarks which Buddle reported.

North of the stream the island rises steadily to the plateau. Pohutukawa forest covers most of this slope. Parapara is quite common and, to judge by the abundance of seedlings, will become more so. There are also mahoe, karaka, houpara, kohekohe, wharangi, tawapou, towai. A big-leaved kawakawa is plentiful and of the twiggy shrubs *Suttonia divaricata* forms dense patches. Whau and Scotch thistles have colonised a small slip.

We scarcely reached the plateau proper, much of our time being spent on the slopes leading up to it. Here under the bigger trees where the soil is soft and the shearwaters find easy burrowing, extensive areas are almost devoid of ground vegetation. Tuataras are extraordinarily plentiful. On one excursion there was scarcely a niche among the boulders or a burrow in which we did not find one. Most of our ringing of Buller's Shearwaters was done here; yet despite the persistent searching of a team of schoolboys whose energy seemed inexhaustible, we were unable to find a burrow in this area occupied by any other species of petrel.

Several species which may usually be found on the northern offshore islands are rather surprisingly missing from the Poor Knights. They are: Morepork, Kaka, Pigeon, Grey Warbler and Silvereye, all of which are reasonably common on the Chickens Islands some twenty-five miles distant. The Tui is only a casual visitor, Mr. E. G. Turbott having once noted one there. The lack of suitable landing beaches may explain the absence of the Little Blue Penguin. Nor have some of the European passerines which are so common on the mainland, yet succeeded in establishing themselves. The southern portion of Tawhiti-Rahi now appears to be an ideal habitat for the Hedge-Sparrow, but we were unable to find it there. Skylarks may have bred for a few years after the fire, but have evidently been driven away by the robust regeneration of the native flora. Another surprising absentee, since it is firmly established on the Chickens, is the Chaffinch. Yet as we sailed up Tutukaka harbour in the evening after an absence of five days, two of the most striking sounds for an ornithologist's ear were the songs of Chaffinch and Hedgesparrow, coming clearly across the water from the forested shores.

The sea being very calm on Dec. 20th, Dr. Lamb took us in his out-board driven dinghy on a trip right round the southern island, Aorangi. No landing was made as a drizzle was setting in. Numerous Red-fronted Parakeets were flying about the cliffs. South-east of Aorangi between the two outliers Mammoth and Aorangaia, we had the unique experience in N.Z. of cruising within a few feet of three Tasmanian Muttonbirds as they sat on the unruffled sea among Red-billed Gulls. On Dec. 21st our stay on Tawhiti-Rahi was cut short by the threat of bad weather, which did indeed materialise just as we got ashore from *Kitty Vane* at Tutukaka a little before dark.

LIST OF SPECIES

FAIRY PRION. In August, Bell noted them as coming ashore in moderate numbers on both islands. We saw plenty at sea. Buddle reported very small numbers on Tawhiti-Rahi and we succeeded in finding only one downy chick, which had a damaged wing that appeared to have been chewed. Few were coming in at night. Aorangi evidently is still the main breeding island.

FLESH-FOOTED SHEARWATER. Fairly plentiful at sea. No evidence that any were coming ashore on Tawhiti-Rahi.

BULLER'S SHEARWATER. None seen by Bell in August. On our two crossings these shearwaters outnumbered all other species of petrel put together. All the best slopes on Tawhiti-Rahi are honeycombed with their burrows and we believe that the aggressiveness of *bulleri* is the reason for the scarcity of other breeding petrels on this island. Burrows are often shared with tuataras and the partnership is not always a peaceful one. On one occasion we came upon a *P. bulleri* and a tuatara matched in fierce combat. The tuatara was severely torn about the neck. On another occasion we found a large tuatara lying dead on a slope riddled with burrows.

On the ground *P. bulleri* is nimble and swift. We sometimes found these shearwaters moving about by day, leaving their burrows and gliding down to the sea. Recolonisation of the once burnt area is going on, some burrows being among flax and toetoe rather than in the soil. Competition for good nesting sites must be keen, for many eggs are found exposed and punctured. The contents always seem to have been cleanly eaten. The hole in the side of some empty shells was not big and looked as if it might have been made by a bird's beak.

The average of twelve eggs measured was 64.2 x 42.9 m.m.; maximum length 69.9, minimum length 58.8; maximum width 45.5, minimum width 40.9. Buddle's average for fourteen eggs, 66 x 43.5, was slightly larger than ours. All Buddle's eggs were longer than 60 m.m.; two of ours were shorter.

The first incoming shearwaters in the evening appeared before 8 p.m. At first they were very silent. Generally about an hour elapsed before they became noisy. Some birds were sitting in burrows without eggs. One bird found incubating in a burrow near our camp on Wednesday morning had not been relieved on Saturday. The number of adult Buller's Shearwaters which were banded was 152.

SOOTY SHEARWATER. Chambers reported one coming ashore at night. We found a bird with an egg in a tunnel between big boulders above our landing. The bird, which was sitting on Wednesday morning, was relieved by its mate on Friday night. In the course of investigating hundreds of burrows we found no others.

TASMANIAN MUTTON BIRD (*P. tenuirostris*). On the evening of 20/12/58 three were seen sitting on the sea just off the south-east

corner of Aorangi. They were among Red-billed Gulls, and in the dinghy we approached literally within two yards of them. Even at a distance their size, colouration and slender bills marked them as something different from the shearwaters which are normally seen in N.Z. waters. When we forced them to fly by nosing the dinghy right up to them, they did not go far. The increasing number of these shearwaters reported dead from the beaches of the Hauraki Gulf and the Bay of Plenty seems to indicate that they are regular summer visitors to these waters.

FLUTTERING SHEARWATER. Only moderate numbers seen at sea. Buddle found several well-grown young on Aorangi; but failed to locate any on Tawhiti-Rahi. We were no more successful.

ALLIED SHEARWATER. The Poor Knights are not mentioned in the Checklist in the list of known breeding-islands of this rather elusive bird. A single corpse of the robust race *aurakiensis* was found up near the plateau. Also found were two eggshells, whose contents had been eaten, not hatched, and whose condition was consonant with their having been laid some months previously. Their measurements, 51.2 x 38.15 and 53.05 x 37.7 m.m., agree closely with those given by Oliver for eggs of *assimilis* from Mokohinau. These small shearwaters being winter-breeders might get away to a good start on Tawhiti-Rahi but find it hard to maintain possession of their burrows when the powerful Buller's Shearwaters returned in the spring. In August, Bell, who had met with the Allied Shearwater on the Alderman Islands, heard calls on Aorangi which he thought might be coming from these shearwaters.

We are not entirely happy that the two small eggs which we found belong to *P. assimilis*. In some respects they resemble the eggs of a *pterodroma*, especially *cooki*. They are too large for *Pt. pycrofti*.

GREY-FACED PETREL. Buddle was able to find only one on Aorangi. In August Bell was surprised that he neither saw nor heard any. It was our turn to be surprised when we failed to find a single chick or any sign of incoming adults at dusk, though at the Hen and Chickens chicks are plentiful at this season. Even these large petrels may be unable to stand up to *P. bulleri* on its chosen stronghold.

PYCROFT'S PETREL. Buddle records the finding of a scattered colony near the centre of Aorangi. At night we heard a few soft 'titi-ti' or 'kek-kek' calls which may have been made by Pycroft's Petrels.

WHITE-FACED STORM PETREL. Not recorded in August by Bell. Buddle captured one on Aorangi. Chambers mentions that one was attracted by the campfire on Tawhiti-Rahi. We saw a few at sea, not enough to indicate a large local breeding population.

DIVING PETREL. On Aorangi Buddle found them nesting near the cliff-tops, and Bell reported fair numbers coming ashore around the coast. On Tawhiti-Rahi we found the old remains of several

at Harriers' plucking or roosting places. At sea they were quite numerous.

GANNET. The numbers seen on the two crossings hardly suggested colonies of the size reported (*Notornis* 5. 51-53) on Gannet Stack and Sugarloaf. Apart from single birds only one small string was seen.

Single Gannets habitually visited our bay, which was often teeming with fish. One day when a big school of blue maomao was near the surface, a Gannet appeared cruising round the cliffs at about 100ft. The maomao seemed to spot the Gannet and would dive in a flurry of spray as their tails whisked the surface. The Gannet did not waste time diving after them; nor did it seem interested in shoals of big trevally and of other bright red fish near the surface.

PIED SHAG. Not mentioned by Buddle. Chambers reported two and Bell one. We counted six on the rocks between the two main islands. It is likely that they are visitors from Tutukaka where there is a flourishing colony near the entrance to the harbour.

REEF HERON. Bell found one on the northern end of Aorangi.

HARRIER. A nest containing one youngster and three addled eggs was found among flax and toetoe. On the adjacent slope were several plucking or roosting places, from which it was possible to form some idea of what the Harriers were eating, though most of the remains were old. There were many tails and claws of the Giant Weta (*Deinacrida heteracantha*), one small Tuatara (c.9 inches), one parakeet, one Fairy Prion and at least four Diving Petrels. The immediate neighbourhood of the nest was very clean. No remains of either of the two geckos (*H. pacificus* and *H. duvauceli*), which are common on the island, were found.

BANDED RAIL. Buddle found these rails on Tawhiti-Rahi and proved that they bred there. From the tangled stream-bed one evening we heard creaky calls that sounded like Banded Rails.

SPOTLESS CRAKE. Buddle stressed the rarity of this small dusky rail on Tawhiti-Rahi as compared with its abundance on Aorangi. The A.U. Field Club were lucky to find two or three pairs on the northern island, but quickly located six pairs on Aorangi. Brian Bell, in August, had fleeting glimpses of one crane on each island. In our party only Julian Bell had the opportunity of watching one, as it fossicked on the open forest floor under pohutukawas about 150ft. above the landing.

BLACK-BACKED GULL. None was seen during trips round the islands in the dinghy. A single adult visited our bay just as we were leaving.

RED-BILLED GULL. None breed. Flocks appear over shoaling fish and seem to be specially attracted when the water is thick with protoplasmic ribbons of ova, as it was on December 20th.

WHITE-FRONTED TERN. Chambers recorded a single straggler.

Bell noted a few roosting on rocks off each island. We saw two. There are no breeding colonies of any size on the outer islands of the Hauraki Gulf.

RED-FRONTED PARAKEET. During our stay many were feeding on the seedheads of toetoe which has sprung up in such profusion on the once-burnt area. Sometimes at the passing of a Harrier, 40-50 could be seen in the air together. These acres of toetoe were attracting parakeets also from Aorangi. Many parakeets appeared to be in family parties and it is likely that the main breeding season was past. Few were seen in the pohutukawa forest. Holes in trees suitable for breeding are scarce and we concluded that on the Poor Knights most of the parakeets must breed in holes among the rocks or on the cliffs.

Flax pods had already been stripped. These insular parakeets are fond of feeding on the short shore plants which thrive within reach of the salt spray. One was watched as it ate the centres out of the flowers of the native ice-plant (*Mesembryanthemum australe*).

KINGFISHER. There were certainly two pairs and possibly three on the southern part of Tawhiti-Rahi. A single bird was seen at the southern end of Aorangi.

PIED FANTAIL. Not recorded by Buddle or by us. One was reported by Chambers and three by Bell from near the top of Tawhiti-Rahi.

PIPIT. Buddle found a "few pairs" frequenting the burnt area. Bell recorded Pipits from both islands. The only one we saw rose from the cliffs to mob a passing Harrier.

BELLBIRD. All visitors to the Poor Knights have commented upon the abundance of Bellbirds. We found Bellbirds in all types of country. There was little song. A late nest was found in rather an interesting situation. It was close to the ground in the dead leaves at the heart of a flax plant, completely covered and with a small entrance. It contained a chick about four days old and one addled egg. In the gloom of the forest a Bellbird was seen searching for food on the forest floor and at first was mistaken for a Spotless Crake!



INTRODUCED BIRDS

SONG THRUSH. Bell saw one on Aorangi. One was sometimes singing near our camp on Tawhiti-Rahi.

BLACKBIRD. According to Bell, they are present in small numbers on both islands. We found that on Tawhiti-Rahi, as on other offshore islands, they are shy, and did not force themselves on either eye or ear. In the end, four singing males were located, though song was fading and infrequent.

STARLING. Four were the most seen together, though Bell mentions 'small flocks.'



[Photo by F. C. Kinsky

XVII YOUNG HARRIER AND THREE ADDLED EGGS in a nest on Tawhiti-Rahi, Poor Knights. A few pairs of Harriers breed on the small outer islands of New Zealand.



(Photo by F. C. Kinsky

XVIII BULLER'S SHEARWATER, called the Grey-backed Shearwater, in Alexander's 'Birds of the Ocean,' at its nesting burrow on Tawhiti-Rahi. These large shearwaters breed in immense numbers on the Poor Knights.



[Photo by F. C. Kinsky]

- XIX On Tawhiti-Rahi Tuataras are very numerous and habitually share the same burrows as the Buller's Shearwater. The length of the largest Tuatara measured was 25 inches.