

BIRDS OF THE HEN AND CHICKEN ISLANDS

By P. D. G. SKEGG

INTRODUCTION

In recent years the writer has been a member of five parties which have camped on the Hen and Chicken Islands group. The first three were King's College Bird Club parties, led by Mr. R. B. Sibson; 15-21 December 1960, and 14-21 December 1961, on Hen Island; and 12-20 December 1962 on Big Chicken. On the 1962 trip landings were also made on Middle and Eastern Chickens. Two more recent expeditions, both to Hen Island, were organised by Wildlife Branch, Department of Internal Affairs, and led by Mr. D. V. Merton. The writer spent from 23 August to 3 September 1963 and from 23 January to 4 February 1964 on these expeditions. In January and June 1964 brief visits were made also to Big and Middle Chickens.

This paper is based on the observations made by the members of these expeditions, but it also collates the observations of earlier visitors to the Group.

DESCRIPTION OF THE ISLANDS

The Hen and Chicken Islands consist of six islands which lie to the east of the mainland of northern New Zealand. Hen Island, the largest and southernmost island of the Group, is 64 miles north of Auckland and twelve miles east of Ruakaka Beach. The Chicken Islands are four miles north of Hen Island, and extend almost five miles from west to east in a one-mile band. The westernmost Chickens are about seven miles east of the Whangarei Heads. The South-western Chicken is half a mile south of North-western Chicken, and 1600 yards west of Big Chicken. There is a 280-yard channel between the eastern extremity of Big Chicken and Middle Chicken, and Eastern Chicken is 160 yards east of the eastern end of Middle Chicken.

Hen Island. The Hen, or Taranga, is 1775 acres in extent. It has an attenuated east-north-east to west-south-west shape, extending three miles 1540 yards in length, but varying considerably in width. The island is only 300 yards wide at the knife-edged easternmost peninsula, but is 1650 yards wide at the central part of the island. The average width over most of the island is 1200 yards.

A sharp central ridge extends along the axis and is roughly 900 feet high for most of its length. At the western end of the island the ridge rises to a number of andesitic pinnacles, the highest of which is 1400 feet above sea level. Rugged, broken topography and an intense degree of dissection characterise the island. There are precipitous fissured cliffs around parts of the coast, along with a variety of wave-cut platforms and immense irregular boulders. Beaches with rounded boulders are mainly on the western and southern shores of the island.

As would be expected from a long, intensive period of Maori occupation, there is no evidence of ancient undisturbed vegetation. There have now been more than 140 years of almost uninterrupted growth. An 1870 map shows that there were then still cleared areas along the western coast, and muttonbirding parties continued to visit the island into the present century. Light-resistant species, particularly Kanuka and Pohutukawa, were probably the first trees to colonise the slopes, and shade-resistant species such as Taraire, Kohekohe, Tawa and Karaka then grew up beneath them. Much of the island is in various



[Whites Aviation photograph

] — Hen Island, from the south-west.

stages of this succession. The main vegetation communities have recently been listed (Atkinson, 1964). Tuataras (*Sphenodon punctatus*) are still uncommon, their numbers being much as they were eighty years ago. Kiores (*Rattus exulans*) have increased greatly during the present century and they are now common.

Hen Island was privately purchased in 1871, but was bequeathed to the Crown in 1925. There is an excellent campsite at Dragon's Mouth Cove and another at Old Woman Cove.

North-western Chicken. The North-western Chicken is approximately seven acres in extent, and is of north-north-west to south-south-west orientation. It is composed of two sections. The northern section is 320 yards long and 180 yards across at its widest point. The southern section is 260 yards long and 110 yards wide. Much of the island is bare rock, but there are extensive areas of Taupata, Pohuehue and iceplant, with some larger vegetation higher up. There is a smaller vegetation-covered islet a short distance to the south-east of North-western Chicken.

South-western Chicken. The main section of the South-western Chicken is 1000 yards long, varies from 260 to 350 yards in width, and is approximately forty-nine acres in extent. An axial ridge of up to 290 feet above sea level runs east-west, and from this ridge the island falls very steeply to the north and slightly less steeply to the south. Steep slopes are characteristic, and these are mostly covered with low scrub, flax and *Astelia*. Pohutukawa and Kanuka are emergent in places, but there is very little larger vegetation.

Rocks join a four-acre triangular shaped islet, also very steep, to the southern side of the eastern end of the island.



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II — The Chicken Islands, from the summit of Hen. Left to right: South-western (obscuring North-western), Big, Middle and Eastern Chickens.

Big Chicken. Big Chicken, or Maro-Tiri, is also known as Lady Alice Island, and (incorrectly) as West Chicken. The 340-acre island is one mile 400 yards long, and varies in width from 530 to 840 yards. The sedimentary rocks of which the Chickens are composed have weathered into more rounded hills and basins than have the tertiary andesitic rocks of Hen Island. Like Middle and Eastern Chickens, Big Chicken is characterised by numerous offlying rocks and reefs, a generally irregular outline of cliffs and indented bays, well-watered south-sloping valleys, rounded ridges, and steep northern faces.

In 1955 Mr. C. A. Percy mapped the vegetation of Big Chicken, and he has kindly permitted the inclusion of the following extract from his paper.

"The vegetation of the Big Chicken shows a close correlation with topography. Ridgetop vegetation differs markedly from that in the valleys. The latter are remarkably uniform with a transition from flax and coastal scrub through Kohokohe-Puriri forest to Pohutukawa-Puriri forest at the heads of the valleys. This Pohutukawa dominated forest community is also found in the broad hanging valleys of the south and south-west.

Between the vegetation of the valley floor and that of the ridgetop is a transition community of mixed character which varies greatly in extent.

Ridges are dominated by Kanuka although on the southern headlands this is replaced by Pohutukawa forest. In more exposed areas as on the north coast and behind West Bay the tall Kanuka is reduced to a low scrub.

The cliffs and headlands have a distinct vegetation tolerant of the exposed conditions. Pohutukawa scrub is characteristic of the higher areas and resistant andesitic ridges but is replaced at lower levels by coastal scrub. On the steepest faces and on quickly eroding slopes, flax grasses and succulent halophytes are the only colonisers.

Variations in this general pattern are usually the result of more recent fires. The main area so affected is West Bay where ridges are covered with low scrub and the valleys are still in the transition stage — typified elsewhere by the valley wall community. Areas in the South Cove and in the North-east valley show similar mixed scrub communities. A large area of mixed scrub to the east of the main pa appears to have been cultivated rather than burnt soil." (Percy, 1955)

Tuatara and Kiores are both numerous.

The lengthy and intensive Maori occupation of Big Chicken ended in 1821, though the cultivations were described as "fairly fresh" in the 1840's. In 1880 Reischek found the islands "covered with bush, with the exception of a few abandoned Maori plantations, now overgrown with flax and scrub." Ten years later a second occupation began. For a number of years Nova Scotian fishermen spent long periods ashore at the sandy crescentic western bay known as Grave Bay (because of the child who half a century earlier had died on an immigrant ship and was buried there). The fishermen introduced cattle, which remained until 1924, and willows, which still thrive. The last major fire was in 1902, and since the cattle died out and Whangarei flax-millers stopped taking flax from the island, regeneration has continued undisturbed.

There is a good campsite at South Cove, where there is an easy landing, Maori terraces on which tents can be pitched, and a constant water supply. A smaller stream runs down to the crescentic sandy Grave Bay, but landing here is more difficult because of numerous offlying rocks and reefs.

Middle Chicken. The Maori name for Middle Chicken is Whakahau. A large eastern section makes up the main part of this 160-acre island, and from the western end of this section a promontory runs south-west to form the western side of a large southern bay. The main (eastern) part of the island is three-quarters of a mile long, varies from 480 to 930 yards in width, and rises to 775 feet — the highest

point of any of the Chickens. There are low cliffs and steep valleys to the south, and an almost sheer drop from the summit to the rugged northern coastline. A 300-yards-long isthmus runs out to the promontory, which is 530 yards from north to south, and from 150 to 230 yards in width.

The vegetation of Middle Chicken is larger than that of Big Chicken, with considerably less Kanuka. Four plant communities were noted during a traverse across the centre of the island in 1962. The low southern cliff area is covered with a tangle of Pohutukawa, Taupata, Ngaio, Kawakawa, flax and *Astelia*. The mid-slopes, with their large old trees, provide the nearest equivalent to the larger vegetation of Hen Island that is to be found on the Chickens. The valleys are steep, there is very little undergrowth, and Kohekohe, Karaka, Mapou and Puriri predominate in the canopy. The flatter summit area has a cover of Kanuka, *Hebe*, sedges and grasses. On the northern cliffs Pohutukawa and flax are common. Tuataras and Kiores are both present.

Eastern Chicken. Eastern Chicken, or Coppermine Island, is seventy-seven acres in extent. The island is 1530 yards long and is in two sections. A larger western part is 925 yards long and varies from 330 to 650 yards in width. This part is steep on both sides, but particularly so to the north. The summit (535 feet) area is the flattest on the island. A 270-yard-long isthmus leads to the eastern part of the island, which is approximately 600 yards long, 400 yards wide, and rises to 480 feet high.

A short visit in 1962 gave an opportunity to make brief observations of the plant communities in a narrow transect over part of the western section. The southern coastal slope is steep and, in places, very rocky. The dominant vegetation is Pohutukawa over Kawakawa and Karaka. There are some areas of flax. The mid-slopes are steep and intensively burrowed, the ground being liable to give away at every step. Tall Mahoe, with patches of Kawakawa and Karaka beneath, is the usual cover. The flatter ridge-top has a canopy of Kanuka and Pohutukawa. Under this Whau, Mahoe, Mapou, pigeonwood, *Coprosma*, *Olearia furfuracea*, bracken and other plants form a tangled undergrowth. The very steep northern slope is largely covered with flax and Mahoe, with some patches of Pohutukawa. The rocky south-western corner of the island was inspected from the sea, and appears to be largely covered with flax, Toetoe, Reinga lily, *Astelia* and Ngaio, with Pohutukawa higher up. Late last century tuataras were present in large numbers and many were removed. Some are still present.

The presence of deposits of native copper on Eastern Chicken was known as early as the 1840's, and a small syndicate once put in a drive. Some bush was cut during the installation of a navigational light on top of the western section of the island, but for the most part Eastern Chicken, like Middle Chicken, appears to have been little disturbed since Maori times.

THE BIRDS

The Hen and Chicken Islands were subject to very great Maori modification over many hundreds of years. Few parts of the Group have not been cleared at some time; though some areas were probably not used for many years before the islands were finally abandoned in

1821. During the period of Maori occupation the bird population was probably decimated, and some species have only recolonised the Group since the occupation ended.

Seven species of petrel breed in the Group, and their numbers have increased greatly during the last eighty years. In the 1880's Reischek recorded neither Pycroft's Petrel on Hen Island, nor Flesh-footed and Sooty Shearwaters on Big Chicken, but now they are important features of the bird life. Grey-faced Petrels are the dominant petrel on Hen Island and perhaps also on Big and Middle Chicken, where their numbers may be rivalled by Flesh-footed and Sooty Shearwaters. Flesh-footed Shearwaters appear to be the dominant petrel on Eastern Chicken, the only one of the larger islands with concentrations to compare with those of the great petrel strongholds elsewhere. Grey-faced Petrel and Allied Shearwater skulls have both been found in coastal deposits on Hen Island (Wilson, 1956), but it is not established that these date from the period of permanent Maori occupation, for muttonbirding parties continued into the present century (Cowan, 1908).

The Group is characterised by particularly high densities of native bush birds, and there must be few, if any, places in New Zealand with higher densities than those of Hen Island. The native bush birds are probably in greater numbers than for many centuries, but the population continues to change. It appears safe to predict that on Hen Island Pigeons and Kakas will very gradually increase in numbers as the large-berry trees become more numerous, whereas Tuis and Bellbirds will either change their staple food supplies or decrease as some of their main nectar sources are replaced by other species. The enormous increase in the Kioie population during the present century has led to an increase in the number of Moreporks, but the Kioies have had an even more important effect in controlling the regeneration. The changing vegetation does not appear to account for the sudden change in the proportion of Tuis to Bellbirds on Hen Island in the 1930's, nor the great increase in Saddleback numbers during the 1940's and 50's.

Introduced birds did not become established in the Group until much later than they did on the far outlying islands (Williams, 1953) and they are still only present in small numbers. They show a marked preference for the most recently modified areas, particularly Big Chicken, and also the Lighthouse Bay-Stead Bay area of Hen Island.

Land-birds probably often fly between the various Chickens, but passage between the Chickens and Hen Island (four miles) and between the Group and the mainland (ten miles from Hen Island, eight miles from Big Chicken), is much less frequent. There are reliable records of Harriers, Pigeons and Pipits passing between Hen Island and the mainland, and Bellbirds from the Chickens have colonised the adjacent mainland. It is probable that most of the native land birds can, and do, fly between the Group and the mainland. Here, as elsewhere, Starlings are the landbirds which most frequently fly over the open sea, and they roost on North-west Chicken. Starling island roosts known in northern New Zealand include the Cavalli Is.; a small islet between Kawau I. and Mullet Pt.; Noises Is.; Mercury Is.; Alderman Is.; Shoe I.; Kawera I. and Rabbit I. (off Mt. Maunganui).

Various attempts have been made to explain why Whiteheads and Robins are present twenty-six miles away on Little Barrier, but not

on Hen Island. However, a suspected record of Stitchbirds fifty miles from Little Barrier at Ngunguru, near Whangarei (Williams, 1962), indicates that there is always the possibility of new species being blown from Little Barrier to Hen Island.

SPECIES NOTES

(*Denotes species introduced into N.Z.)

NORTHERN BLUE PENGUIN (*Eudyptula minor novaezelandiae*)

Blue Penguins breed on Hen Island, and Big, Middle and Eastern Chicken. The largest numbers come ashore on the more sheltered southern and western coasts, particularly where there is a pebbly beach. The cliffs which run down to the northern coasts restrict numbers on this side, but some come ashore at those places which provide access to nesting sites, as at Pycroft Bay, Hen Island. Access to nesting sites is poor on Middle and Eastern Chickens, but burrows have been found in the southern bay of Middle Chicken and by the eastern landing on Eastern Chicken.

Large numbers are found pounded on the large boulders which surround most of the coast. Most burrows are near the coast, but some have been found as high as 700 feet a.s.l., and also above the steep Lighthouse Cliffs, on Hen Island.

FAIRY PRION (*Pachyptila turtur*)

The status of the Fairy Prion in the Group is uncertain. Reischek never recorded Fairy Prion from the Chickens in his own papers, but Buller (1888) wrote:

"Reischek found this Petrel breeding in holes underground on both the Little Barrier and the Chickens; but it was met with only on the highest wooded ridges in the centre of the Island."

The "highest wooded ridges" are undoubtedly those of Little Barrier, and there are no comparable places on the Chickens. Presumably on the basis of this record Falla (1934) lists the Chickens as a breeding place of the Fairy Prion, and subsequent writers have sometimes broadened this to the "Hen and Chickens."

The fact that subsequent observers have not found the Fairy Prion on the Chickens is not in itself sufficient reason for disregarding the record, for it is only in recent years that Fairy Prions have again been recorded from Little Barrier (Bishop, 1963). However, as Reischek did not record Fairy Prion in his own paper on the Chickens (Reischek, 1881), and as no skins of Fairy Prion from the Chickens can be located in the major New Zealand collections, the record should not (on this evidence) be unreservedly accepted.

On 16/12/61 calls of what was considered to be a Fairy Prion were heard over Dragon's Mouth Cove, and the following evening two birds uttered the same call over Pycroft Bay. One of the birds circled above the bay, where there was a campfire, before proceeding inland. Fairy Prions might possibly breed on the ledges around the rugged peaks of Hen Island, and here they would be extremely difficult to locate. However, it is more probable that the birds heard were passers-by, attracted by the lights.

THIN-BILLED PRION (*Pachyptila belcheri*)

Oliver (1930, 1955) states that Iredale lists what was apparently a storm-killed specimen from Taranga (Hen) Island.

FLESH-FOOTED SHEARWATER (*Puffinus carneipes hullianus*)

Flesh-footed Shearwaters are very occasionally found ashore on Hen Island. They were first recorded in January 1937, when several Flesh-footed Shearwaters were located among the Sooty Shearwater burrows on the headland between Dragon's Mouth Cove and Pukanui Bay. None had eggs (Fleming, 1941; Buddle Photograph Collection, Auckland Museum). The colony was not occupied in 1939 (Fleming, 1940), but was again in use in December 1947. No birds were found here in December 1954, but one was located in a burrow elsewhere (Chambers *et al*, 1955). Later parties have not recorded any.

Reischek did not record Flesh-footed Shearwaters on Big Chicken, and the first record appears to be that of E. F. Stead, who discovered a colony on a bank at South Cove in 1916 (Wilson, 1959). The number has continued to increase, and several hundred pairs now breed on the island. Burrows riddle the trenches and terraces of the former Maori *pa* above the northern cliffs. Flesh-footed Shearwater burrows are most common on the slopes with direct access to the sea, but they are found even on the flat, sandy valley floor behind Grave Bay. Burrows are in similar numbers on Middle Chicken.

Eastern Chicken is one of the strongholds of this species in New Zealand waters. The numbers were evidently large by the turn of the century, when James Cowan compared the ground to that of rabbit-ridden country (Cowan, 1908). Apparently referring to the same trip, he wrote:

"Entering the pohutukawa bush that thickly clothes the steep slopes above the cliffs of Coppermine Island, the first thing one notices is the curious pitting of the dark soil with countless holes and burrows. These are the *ruas* or caves of the muttonbirds." (Cowan, 1926).

The burrows are not particularly numerous on the smaller eastern section of Eastern Chicken, but on the southern slopes of the western section large numbers, perhaps some thousands, breed. The burrows are most numerous in the tall Mahoe forest, but they are found under a wide variety of vegetation cover, including dense flax.

In December 1939 a Flesh-footed Shearwater was found in a burrow on North-western Chicken, and a further two pairs were breeding on an islet between Big and Middle Chicken (C. A. Fleming, *pers. comm.*).

BULLER'S SHEARWATER (*Puffinus bulleri*)

Buller's Shearwaters sometimes join the other petrels gathering around these islands at dusk; e.g. two in Dragon's Mouth Cove on 19/12/60. Three corpses have been found washed onto the south-western shore of Hen Island: one on 28/12/62 (J. A. Bartle, *pers. comm.*), one on 24/8/63 (very ancient), and one on 1/2/64 (fresh).

Buller's Shearwaters have not yet been recorded coming ashore in the Group. The rapidly expanding population has been found breeding only on the Poor Knights Islands, twenty-two miles north of the group. However in 1960 single birds were found ashore on Cabbage Tree Island and Montague Island, two islands off the coast of New South Wales (D'Ombraïne and Gwynne, 1962), so the possibility of their coming ashore in the Group should not be discounted.

SOOTY SHEARWATER (*Puffinus griseus*)

Sooty Shearwaters were not recorded by the early visitors to the group. They were first recorded on Hen Island in December 1927 (Moncrieff, 1928), and since then they have bred regularly. In the 1930's the largest concentrations were found near the westernmost end of the island (R. A. Wilson, *pers. comm.*), and they are still the dominant petrel in this area, i.e. Stead Bay and Wilson Bay. For nearly thirty years they have bred regularly on the headland between Dragon's Mouth Cove and Pukanui Bay, the numbers never being as great as ten pairs and sometimes dwindling to one or two pairs. In January 1963 small numbers were also recorded in burrows under the large boulders directly behind the campsite at Dragon's Mouth Cove (J. A. Bartle, *pers. comm.*).

In December 1939 R. A. Wilson thought he heard Sooty Shearwater calls on Big Chicken (C. A. Fleming, *pers. comm.*), and in December 1953 they were recorded breeding (Chambers *et al.*, 1955). Big Chicken appears to be the largest breeding station of this species in northern waters, the population probably sometimes running into hundreds. The fluctuating proportion of Sooty Shearwaters to Flesh-footed Shearwaters recorded by the King's College Bird Club parties is remarkable.

LARGER SHEARWATERS BANDED BY K.C.B.C. PARTIES

			1953	1957	1961
Flesh-footed Shearwater	---	---	27	16	39
Sooty Shearwater	---	---	28	1	12

Sooty Shearwaters probably breed on Middle and Eastern Chickens, but no night work has been done on these islands. On 21/3/53 a corpse was found in a deep man-made pit on a scrub-covered slope of Eastern Chicken (Davenport, 1954).

SHORT-TAILED SHEARWATER (*Puffinus tenuirostris*)

In December 1961 one Short-tailed Shearwater corpse was washed ashore at Pukanui Bay, Hen Island.

Mainland beach-combing records, and sight records from Plate Island (Sladden, 1954) and the Poor Knights Islands (Kinsky and Sibson, 1959), suggest that the Short-tailed Shearwater is a regular visitor to these waters.

FLUTTERING SHEARWATER (*Puffinus gavia*)

Fluttering Shearwaters are the second most common petrel on Hen Island, for they are the dominant petrel on the upper slopes. They were first recorded in 1903 (Peat Collection, Auckland Museum), and have been reported by subsequent visitors (Moncrieff, 1928; Stead, 1963; Fleming, 1940, etc.). Fluttering Shearwaters nest in greatest numbers on the higher portions of the island, and listeners near the coast hear only a small proportion of the birds coming in. (In August 1963 only the usual small numbers were heard at Dragon's Mouth Cove, but by training J. L. Kendrick's parabolic reflector on the inland cliffs some hundreds could be heard.) In the Dragon's Mouth Cove-Pukanui Bay area Fluttering Shearwaters are only rarely

found in their typical coastal sites. Three were found near the coast in December 1960, none in December 1961, and only two in August 1963. Large numbers nest in the valley behind Old Woman Cove.

Fluttering Shearwaters nest spasmodically on Big Chicken, where they were found breeding in December 1880 (Reischek 1886), and where they were heard coming ashore regularly in December 1939 (C. A. Fleming, *pers. comm.*). None was recorded in December 1953 (Chambers *et al.* 1955) and December 1957 (R. B. Sibson, *pers. comm.*), but in December 1962 many were heard, and ten were caught for banding on the south coast of the island.

Fluttering Shearwaters also breed in numbers on North-western Chicken, particularly around the lower slopes (1939: Fleming, *pers. comm.*; 1957: Sibson, *pers. comm.*). In December 1939 four occupied burrows were found on the main islet between Big and Middle Chicken (Fleming, *pers. comm.*), but they were not recorded here in 1957 (Sibson, *pers. comm.*). They may also breed on South-western Chicken (Fleming, *pers. comm.*) and Middle Chicken, for on both these islands likely-looking burrows, with white breast-feathers at the entrance, have been found.

NORTH ISLAND ALLIED SHEARWATER (*Puffinus assimilis haurakiensis*)

Allied Shearwaters breed on Hen Island, where a skull has been found in a coastal deposit (Wilson, 1956). They were recorded in September 1903 (Peat Collection, Auckland Museum), and in March 1933 a freshly moulted pair was found in a burrow (A. T. Pycroft, *pers. comm.*). More were recorded in November 1933 (Stead Collection, Canterbury Museum). A pair of adults was found in a burrow by day on 21/11/35, and small numbers came ashore in late November 1939 (Fleming and Serventy, 1943). In December 1947 a dead bird was found on the face of one of the great boulders behind Dragon's Mouth Cove (Sibson, 1949), and in August 1953 an Auckland University Field Club party found them breeding behind Old Woman Cove (Heather, 1957). Another Field Club party camped at Dragon's Mouth Cove in May 1956. A series of photographs taken by members of the party was published in *The Weekly News*, 30 May, 1956, and one shows an Allied Shearwater. The caption reads: "A Pycroft's Petrel just after alighting near its burrow."

An Allied Shearwater corpse was found ashore at Stead Bay in December 1960. In August 1963 Allied Shearwaters were found breeding from 30 to 850 feet a.s.l. (below Balancing Rock), and eleven birds were caught with little searching near Dragon's Mouth Cove. The Allied Shearwater population on Hen Island probably runs into some hundreds.

In December 1880 Reischek discovered the North Island Allied Shearwater on Big Chicken (Reischek, 1886). They were not again recorded until 23/7/58, when one was heard and the corpse of another found (B. D. Bell, *pers. comm.*). On the evening of 15/12/62 one was found ashore in the valley east of South Cove.

GREY-FACED PETREL (*Pterodroma macroptera gouldi*)

Grey-faced Petrels are the most numerous petrels on Hen Island. Buller (1888) described a chick from a Hen Island specimen, probably collected by Reischek. Grey-faced Petrel burrows are found from the

summit to within a few feet of the sea. However, there are no widespread concentrations such as are sometimes found elsewhere, but there are local concentrations at the Pinnacles, Moran's Lookout, parts of the inland cliffs, and the knoll on the ridge above Old Woman Cove. Recent observations confirm Heather's (1957) statement that:

"Particularly favoured was the soil at the foot of the bluffs, in *Astelia* and flax communities, and among boulders and the roots of big trees. They were thus distributed throughout the lower slopes where either beach or cliff is handy. In higher regions they were confined to the neighbourhood of those peaks, bluffs and rocks which pierce the bush canopy."

Grey-faced Petrels are common on Big Chicken, where Reischek recorded them in 1880 (Reischek, 1881) and 1883 (Canterbury Museum Collection). In mid-December 1962 their numbers were second only to Flesh-footed Shearwaters, and at the height of their breeding season they may be more common than Flesh-footed Shearwaters ever are. On Big Chicken, as on Hen Island, Grey-faced Petrels nest inland more readily than the large shearwaters. They are common on Middle Chicken.

In 1939 there was one Grey-faced Petrel burrow on the islet between Big and Middle Chicken (C. A. Fleming, *pers. comm.*).

PYCROFT'S PETREL (*Pterodroma pycrofti*)

The Group is one of the strongholds of the Pycroft's Petrel, and there are up to four or five hundred pairs.

Pycroft's Petrels were first found on Hen Island in December 1932 (Falla, 1933). Recent observations corroborate Fleming's (1941) statement that:

"On Hen Island Pycroft's Petrel is moderately abundant and burrows have been found on all parts of the island where there is soft soil for burrowing. The greatest numbers, however, appear to be on the northern and western faces of the island, and burrows are not aggregated into large colonies, though a group may be found within a few yards in places particularly suitable for burrowing. More burrows were found on the lower slopes, under three hundred feet, than on the higher ridges leading up to the highest peaks, which *Puffinus gavia* almost monopolises. On the other hand, there are few Pycrofti in the hard soil of the abrupt cliffs immediately above the shore, where *Eudiptula*, *Pterodroma macroptera*, *Puffinus griseus*, and *P. carneipes* have their burrows."

Pycroft's Petrels also breed on Big and Middle Chickens. They were recorded breeding on Big Chicken in December 1880, but were then identified as Cook's Petrel (Reischek, 1886; AV325, Canterbury Museum Collection). One was heard on 25/1/23 (R. A. Falla, *pers. comm.*), and in 1933 several were found ashore (Auckland Museum Collection). In December 1953 the number was thought to be smaller than that on Hen Island (Chambers *et al.*), but by December 1962 the number was greater than that found on Hen Island in December 1960, December 1961 or January 1964, though not nearly as great as on Red Mercury Island in November 1962. The population of Pycroft's Petrel on Big Chicken has probably grown considerably since 1953. On his first night on Big Chicken in December 1953 R. B. Sibson noted "calls of several *Pycrofti* heard" (*pers. comm.*), but such a description would have been a gross understatement nine years later. The difference in the number of Pycroft's Petrels caught for banding — 4 in 1953, 17 in 1962 — also indicates an increase.

Pycroft's Petrels were discovered on Middle Chicken in December 1962, but their number was not ascertained.

NORTHERN DIVING PETREL (*Pelecanoides u. urinatrix*)

Diving Petrels were discovered breeding on North-western Chicken on 18/4/33 (A. T. Pycroft, *pers. comm.*), and in December 1939 "burrows were abundant" (C. A. Fleming, *pers. comm.*). They have not been recorded breeding elsewhere in the Group.

AUSTRALIAN GANNET (*Sula bassana serratior*)

There are no breeding or roosting places in the Group, but Gannets frequently fish in the adjacent waters. On 1/9/63 a brown juvenile Gannet flew past Dragon's Mouth Cove, Hen Island. The occasional occurrence of juvenile Gannets in New Zealand waters at this season has been noted by Stein (1961, 1962).

BROWN BOOBY (*Sula leucogaster plotus*)

Moncrieff (1928), who visited Hen Island in 1927, records the following observations:

"On December 11th, at sunset, we saw what appeared to be a Gannet sail high above the island. When the sun shone on its upper parts, though too high to identify, it appeared light biscuit colour above, and white below. On December 7th the bird in question was seen by the writer, just passing out of sight round a headland. It was close enough to ascertain that it was the size of a Gannet, and biscuit brown in colour. Therefore, in view of the fact that Mr. W. M. Fraser has often seen *Sula leucogaster* in this vicinity, the writer took it to be the bird above mentioned."

PIED SHAG (*Phalacrocorax v. varius*)

Pied Shags have long nested at Old Woman Cove, Hen Island. In 1903 the colony was in Pohutukawas at the western end of the Cove (A. T. Pycroft, *pers. comm.*), and it was still in use in 1923 (R. A. Falla, *pers. comm.*), 1924 (Hamilton, 1925), 1933 (Pycroft, 1933 b), and 1935 (slide taken by L. H. Millener, in Auckland Museum). No figures are recorded, but eight nests are visible in the portion of the colony shown in the slide. By 1947 the colony had shifted to the Pohutukawas above a cliff at the eastern end of the Cove (Sibson, 1949). There were 33 nests here in December 1954 (Chambers *et al.*, 1955), but only six or seven nests in 1960, 1961, 1963 and 1964. Pied Shags rest on small offshore rocks, and roost at Wilson Bay and Pycroft Bay.

Pied Shags sometimes nest on Middle Chicken. In 1953 there were twelve nests in windswept six-foot-high Ngaio. The Ngaio was on a gentle slope, and it was possible to walk around among the nests (Chambers *et al.*, 1955). A similar colony has since been noted on D'Urville Island, Cook Strait (Blackburn, 1962). Pied Shags were not nesting on Middle Chicken in 1957 (R. B. Sibson, *pers. comm.*), but they were in 1962. There were then ten nests 40-60 feet a.s.l. in two Pohutukawas in the southern bay. The vegetation beneath these trees suggested that they had been used previously. In January 1964 there were seven occupied nests at the main colony, and three nests in another Pohutukawa 40 yards to the west. By June the seven nests in the main colony were still occupied, but only one in the other Pohutukawa was.

On the Chickens, as on Hen Island, the number of Pied Shags seen considerably exceeds the local breeding population. The shags frequently rest on the stacks and rocks off the Chickens, and some roost in Pohutukawas at South Cove, Big Chicken. By far the largest number recorded roosting here was 40+ on 24/2/55 (Goodwin, 1956); in the summer large numbers had bred on Hen Island.

LITTLE SHAG (*Phalacrocorax melanoleucos brevirostris*)

A pair of Little Shags usually frequents the Pied Shag colony at Old Woman Cove, Hen Island, and in some seasons they may breed there. A Little Shag occasionally visits the Chickens. Both the white-throated and the white-breasted phases have been seen in the Group.

BLUE HERON (*Egretta s. sacra*)

One pair of Blue Herons probably breeds on Hen Island. The Blue Heron is a rare visitor to Big Chicken, where one was seen on 25/1/23 (R. A. Falla, *pers. comm.*), and another on 16/12/62.

***MALLARD** (*Anas p. platyrhynchos*)

A female Mallard was seen by Lamb Rock and later in Lighthouse Bay, Hen Island, on 1/2/64. The following day it was found dead on the boulders in Pukanui Bay.

AUSTRALASIAN HARRIER (*Circus approximans gouldi*)

Harriers are commonly seen over Hen Island, where they may breed. A pair breeds on the Chickens, and nests have been found on both Big and Eastern Chicken (Chambers *et al*, 1955). The Harriers range widely over the islands, and often fly to the mainland.

NEW ZEALAND FALCON (*Falco novaeseelandiae*)

In the early 1880's Reischek found Bush Hawks "frequenting the top of the hills" on Hen Island (Buller, 1888), and they have not been recorded since December 1924 (Hamilton, 1925). They were "scarce" on the Chickens in 1880 (Reischek, 1881), and the last record was of one on Eastern Chicken in December 1914 (G. E. Archey, *pers. comm.*).

SOUTHERN BLACK-BACKED GULL (*Larus dominicanus*)

Black-backed Gulls are present in small numbers only. Three or four pairs nest along the southern coast of Hen Island, and another three or four pairs nest at the Chickens. The resident birds regularly patrol the coastline, and others occasionally visit the Group. The only flocks seen are those in the wake of passing coasters.

RED-BILLED GULL (*Larus novaehollandiae scopulinus*)

In August no Red-billed Gulls are seen in the Group, but in early September small numbers are sometimes heard passing offshore at night. In mid-December none is seen on most days, though small numbers may gather in a bay for fish scraps, and flocks of up to 100 work off the Chickens. After mid-December juvenile birds begin to arrive. The numbers of Red-billed Gulls increase throughout January until by early February up to 100 are roosting on Hen Island, chiefly at Lighthouse Rock and the Cul-na-kalach.

CASPIAN TERN (*Hydroprogne caspia*)

One or two birds frequent the Group, but there is no evidence of breeding.

WHITE-FRONTED TERN (*Sterna striata*)

White-fronted Terns have only a precarious foothold on the offshore islands of northern New Zealand. In some seasons there is a small colony in the Group, but in others only the very occasional bird or small party is seen. White-fronted Terns bred on the Cul-na-kalach at Old Woman Cove in 1923-24 (R. A. Falla, *pers. comm.*) and in 1924-25 (Hamilton, 1925). They bred on Lighthouse Rock (1 pr.) and the rock off Pukanui Bay (1 pr.) in the 1927-28 season (Moncrieff,

1928). In the 1953-54 season White-fronted Terns bred on a rock below the northern cliffs of Big Chicken (10-12 prs.) (Chambers *et al.*, 1955). There was a colony on Lighthouse Rock in 1954-55 (8 prs.) (Chambers *et al.*, 1955); in 1961-62 (18 prs.); in 1962-63 (J. A. Bartle, *pers. comm.*); and 1963-64 (7 prs.). In the 1961-62 and 1963-64 seasons there was also a pair breeding on the rock in the western end of Pukanui Bay.

Only small numbers are seen during the winter, though on 29/8/63 a flock of about 30 flew along the southern coast of Hen Island.

NEW ZEALAND PIGEON (*Hemiphaga n. novaeseelandiae*)

Pigeons are abundant on Hen Island, although the population varies considerably from year to year. When the population reaches saturation point, or perhaps in lean years, many may fly to the mainland. About 1930 a great flight of Pigeons from Hen Island was noted arriving in the Waipu Range. The birds were so thin and weak that many fell and died (McKenzie, 1948).

Pigeons are also plentiful on Big, Middle and Eastern Chickens.

NORTH ISLAND KAKA (*Nestor meridionalis septentrionalis*)

Kakas are present on Hen Island, and Big, Middle and Eastern Chickens. The birds range widely over their particular islands, and this makes population estimates difficult. Conservative estimates of the population in the early 1960's were of at least 30 pairs on Hen Island, and about eight pairs on the Chickens. The population may well have increased, but the early statements are rather vague.

RED-CROWNED PARAKEET (*Cyanoramphus n. novaezealandiae*)

Red-crowned Parakeets are generally distributed over Hen Island. They are common on all the Chickens, and are present even on the islets between Big and Middle Chicken.

YELLOW-CROWNED PARAKEET (*Cyanoramphus a. auriceps*)

There is a small number of Yellow-crowned Parakeets on Hen Island. They were first observed in 1903 (A. T. Pycroft, *pers. comm.*), and they were again recorded in 1927 (Moncrieff, 1928). In 1933 E. F. Stead reported they were "not numerous — we know of only four pairs" (letter to M. Fraser, W. R. B. Oliver's Files, Dominion Museum). In 1939 one pair was seen (Fleming, 1940), and in 1947-48 a pair was found near Dragon's Mouth Cove, and another on the ridge east of Old Woman Cove (Sibson, 1949). A Yellow-crowned Parakeet was reported from "a northern gully" in 1954 (Chambers *et al.*, 1955), and in 1961, 1963 and 1964 a pair was recorded at Dragon's Mouth Cove. It was probably the same pair that was seen at Pukanui Bay.

Yellow-crowned Parakeets were observed in three localities on Big Chicken in 1953 (Chambers *et al.*, 1955), but there are no other records.

Reischek claimed to have shot two Orange-fronted Parakeets (*C. malherbi*) on the inland cliffs of Hen Island, on 24/11/1880 (Buller, 1888; Reischek, 1930). This record, and another from Little Barrier, were accepted by Oliver (1930, 1955), but were rejected in the absence of specimens by the O.S.N.Z. Checklist Committee (Fleming *et al.*, 1953).

SHINING CUCKOO (*Chalcites l. lucidus*)

Shining Cuckoos are widely but sparsely distributed on all the islands of the Group except South-western Chicken. In December 1962 there were an estimated five pairs on Big Chicken.

MOREPORK (*Ninox n. novaeseelandiae*)

Moreporks are present in large numbers on Hen Island, where they are widely distributed from near sea level to near the summit. Moreporks have probably not always been as numerous as they are now (cf. Hamilton, 1925). The population of their staple diet, the Kiore, has increased greatly during the present century. No Kiores were seen during a six-weeks stay on Hen Island in 1903 (Pycroft, 1933 b), but they were seen in 1910 (Stead, 1936) and by 1933 were "fairly plentiful" (Wilson, 1959). In both December 1960 and December 1961 a single dead Morepork was found, and in August 1963 five dead Moreporks were found.

Moreporks appear to be even more common on Big Chicken, once again because of the large population of Kiores. A nest in a Puriri up the stream at South Cove was occupied in 1916, and it was still in use in 1933 (Wilson, 1959), 1935 and 1939 (C. A. Fleming, *pers. comm.*). What was probably the same site was still in use in 1962. Moreporks are also common on Middle Chicken.

NEW ZEALAND KINGFISHER (*Haleyon sancta vagans*)

Kingfishers are often seen in the bush on Hen Island up to 1000 feet a.s.l. In 1964 five nests were found in the bush between Pukanui Bay and the Lighthouse. They frequent the coast, and there is a pair in most bays.

Kingfishers are also present in a variety of habitats on Big, Middle and Eastern Chickens. In 1962 there were an estimated eight pairs on Big Chicken.

NORTH ISLAND FANTAIL (*Rhipidura fuliginosa placabilis*)

Pied Fantails are comparatively scarce on Hen Island. They are present at all altitudes, but appear more common around the coast. Pied Fantails are more numerous on the Chickens, where they are present on North-western Chicken (C. A. Fleming, *pers. comm.*) and are common on Big, Middle and Eastern Chickens. They frequently feed above the boulders at the water's edge, and sometimes venture over the sea itself.

PIED TIT (*Petroica macrocephala toitoi*)

Pied Tits were "rather scarce" on both Hen Island and the Chickens in the 1880's (Reischek, 1887 a). They are thinly but evenly distributed over much of Hen Island, where the number has not changed noticeably for a quarter of a century (Turbott, 1940). Pied Tits are present on Big, Middle and Eastern Chickens, and in such small communities fluctuations may be not infrequent. Estimates of the total population on Big Chicken have been: 5-7 prs. in 1953 (Chambers *et al.*, 1955); 7 prs. in 1957 (R. B. Sibson, *pers. comm.*); and 10 prs. in 1962.

GREY WARBLER (*Gerygone igata*)

Grey Warblers are more numerous on Hen Island than first impressions suggest, though they are not nearly as common as in the mainland bush near Auckland. They are common on Big Chicken, and present on Middle and Eastern Chickens.

***SONG THRUSH** (*Turdus ericetorum*)

A single Song Thrush was seen on Hen Island in 1927 (Moncrieff, 1928), but they were not again recorded until 1947, when they were still very scarce (Sibson, 1948). They have been recorded at

Stead Bay, Dragon's Mouth Cove, the south side, near the saddle above Old Woman Cove, and near the summit. All but the last of these localities are Kanuka forest.

A Song Thrush was observed on Big Chicken in 1923 (R. A. Falla, *pers. comm.*), but the species was not recorded again until 1962, when song was heard in three localities. They have not been found on the other Chickens.

***BLACKBIRD (*Turdus merula*)**

Blackbird song was heard on Hen Island in 1923 (Falla, *pers. comm.*), and a few were seen the following year, though it was then hoped that they were only visitors from the mainland (Hamilton, 1925). However they may not have become established at this time, for a party which camped on Hen Island in 1927 did not record any, although W. M. Fraser told them that he had previously heard the bird on the island (Moncrieff, 1928). Blackbirds are now widely distributed. In 1939 there were three pairs in the 83-acre census area (Turbott, 1940), and in 1963 there were ten birds in the same area.

Blackbirds were present on Big Chicken in 1923 (Falla, *pers. comm.*), and in 1962 there were an estimated 20 pairs on the island. They are also firmly established on Middle and Eastern Chickens.

***DUNNOCK (*Prunella modularis occidentalis*)**

Dunnocks are scarce on Hen Island. They were first recorded at Stead Bay in 1947 (Sibson, 1949), and they have often been recorded in the same locality, and also at Lighthouse Bay, Dragon's Mouth Cove, the inland cliffs area, and at Old Woman Cove.

Four pairs were found on Big Chicken in 1953 (Chambers *et al*, 1955), and three pairs in 1962. Dunnocks are also present on Middle and Eastern Chickens.

NEW ZEALAND PIPIT (*Anthus n. novaeseelandiae*)

Pipits are found around the coast and adjacent bare cliffs of Hen Island — there are six to eight pairs around the coast of the western half of the island. Pipits are also occasionally seen on rocky outcrops, such as Balancing Rock, and have been recorded in dense scrub on the saddle above Old Woman Cove. They are present on all the Chickens, from offshore islets to the summit of Eastern Chicken.

In April 1933 three Pipits were seen at sea approaching Hen Island, their course suggesting that they had come from the mainland (Pycroft, 1933 a).

BELLBIRD (*Anthornis m. melanura*) and

TUI (*Prosthemadera n. novaeseelandiae*)

Bellbirds and TuIs are the commonest species of bush bird on Hen Island. There has been a considerable change in the proportions of Bellbirds to TuIs during the last thirty years. In 1927 TuIs were "undoubtedly the most common species," and Bellbirds were "not as numerous" (Moncrieff, 1928). In 1933 TuIs were still the most abundant species (Pycroft, 1933 b). Stead visited Hen Island in November-December 1933, and stated (in a letter to M. Fraser, W. R. B. Oliver's Files, Dominion Museum) that Bellbirds were "about half as numerous" as TuIs, and Wilson (1959) records that Stead estimated there were as many TuIs on Hen Island as all the rest of the bush birds put together. Six years later the proportions had changed. A census in 1939 showed TuIs to be only slightly more common than Bellbirds —

the estimated proportion being 83 to 75 (Turbott, 1940). By 1947 Bellbirds were more abundant than Tuis (Sibson, 1949). In the early 1960's the numbers were fairly even, with a slight preponderance of Bellbirds. There is a definite seasonal movement of Tuis on Hen Island. In November-December-January they are fairly evenly distributed all over the island, but in August large numbers congregate on the north side (where there are many Kowhais in flower), and there are relatively few on the southern side and in the main western valley.

Bellbirds and Tuis are the most common bush birds on Big, Middle and Eastern Chicken. On Big Chicken Tuis are twice as numerous as Bellbirds. On Middle Chicken Tuis appeared the most common species at the western end in August 1955 (I. A. E. Atkinson, *pers. comm.*) and on the southern slopes on 13/12/62. However, on 12/6/64 Bellbirds seemed more than twice as numerous as Tuis on the southern and eastern slopes. On Eastern Chicken Bellbirds were the most common bird on 21/5/53 (Davenport, 1954), but on 14/12/62 Tuis were in much greater numbers. Seasonal movements may explain the changed numbers on Middle and Eastern Chickens. Both species are present on South-western Chicken (R. B. Sibson, *pers. comm.*).

Bellbirds evidently fly from the Chickens to the mainland (Reischek, 1887 a; Turbott, 1953).

WHITE-EYE (*Zosterops lateralis*)

White-eyes are generally rare on Hen Island, though they are sometimes locally abundant, with flocks of up to 35. They are in small numbers on all the Chickens, and in June 1964 they were noted flocking in numbers on Middle Chicken.

*CHAFFINCH (*Fringilla coelebs gengleri*)

Chaffinches are very rare on Hen Island. One was heard at Dragon's Mouth Cove in 1960, and a pair has since become established there. In 1963 one was also heard north of Balancing Rock. On Big Chicken there were at least five singing males in 1953 (Chambers *et al.*, 1955), but only two singing males were recorded in 1957 (Sibson, *pers. comm.*) and 1962. One was heard on Eastern Chicken in 1957 (Sibson, *pers. comm.*).

*HOUSE SPARROW (*Passer domesticus*)

One House Sparrow was seen at Dragon's Mouth Cove, Hen Island, on 31/8/63. Strong easterly winds had been blowing for a few days and they may have blown the bird from the Mokohinau, where they are established on Burgess Island. The occurrence of House Sparrows away from civilisation in New Zealand has been discussed elsewhere (Wodzicki, 1956).

*STARLING (*Sturnus vulgaris*)

Starlings are rather scarce on Hen Island. They were present, though "in no great numbers" by 1924 (Hamilton, 1925), and by 1927 their numbers did not exceed "twenty or thirty, if that" (Moncrieff, 1928). The number around the coast has not increased much, the most frequented locality being the cliff between Pukanui Bay and Sibson Bay. A flock of twenty was seen in December 1960, but such flocks are rare. In May 1956 two separate flocks were seen flying inland late one afternoon (King, 1956). Starlings are very occasionally

seen below the bush canopy on Hen Island. There is some traffic between the mainland and Hen Island.

Starlings were first recorded from Big Chicken in 1923 (Falla, *pers. comm.*), and there is now a small resident population on this island, as also on South-western, Middle and Eastern Chickens. In the 1930's Starlings from the mainland were twice recorded roosting on North-western Chicken (Cranwell and Moore, 1935; Fleming, *pers. comm.*), and they may still do so.

? AUSTRALIAN RAVEN (*Corvus* sp.)

On 3/1/48 a large black bird of corvine appearance passed along the inland cliffs of Hen Island. R. B. Sibson, who was familiar with ravens in Europe, had "no doubt that this was a large member of the *corvidae*" (Sibson, 1959). At the time it was suspected that this may have been the same bird that was earlier observed at the Mokohinau (Turbott, 1947) and Little Barrier (Turbott, 1947). However, Turbott (1961) considers the bird seen at the Mokohinau and Little Barrier was probably a young Rook. The Hen Island sighting, if accepted, is the only New Zealand record.

NORTH ISLAND SADDLEBACK (*Philesturnus carunculatus rufusater*)

Hen Island is the last stronghold of the N.I. Saddleback, a bird once abundant on the mainland. Saddlebacks were not present on the Chickens in 1880, though at that date they were probably still present on Great and Little Barrier Islands, Cuvier Island, and various places on the mainland. There have been two attempts to establish Saddlebacks from Hen Island on the Chickens. In July 1950 six Saddlebacks were released at South Cove, Big Chicken (Department of Internal Affairs files). At least two birds were still present in December 1953 (Chambers *et al.*, 1955), but there were no subsequent records. Wilson (1959) quotes the *Wanganui Chronicle*, 14 December, 1957, which stated that two pairs were seen in August 1955. This record is definitely incorrect (I. A. E. Atkinson, *pers. comm.*). In January 1964 23 birds were transferred to Middle Chicken, and some were still thriving five months later.



A POPULATION ESTIMATE OF THE NORTH ISLAND SADDLEBACK ON HEN ISLAND

By P. D. G. SKEGG

The North Island Saddleback was discovered on Hen Island "in abundance" in November 1880, and in February 1883 they were considered to be "still more numerous" (Reischek, 1887 b). In 1923 Mr. W. M. Fraser reported Saddlebacks "very plentiful" (Myers, 1923), and in the following year they occurred "in large numbers" (Hamilton, 1925). The first estimate made results from a "census" conducted on a day-visit in October 1925, the estimated population being 300 birds (Department of Internal Affairs Files). On his returning from Hen Island in December 1927, Mr. A. T. Pycroft stated that it was difficult