

I saw these birds in considerable numbers during the breeding season, on the outlying islands off the East Coast, especially on the Morotiri group. The plumage of *Puffinus assimilis* (Gould), *Totorore*, adult, is: crown of the head, upper part, wing, and tail, sooty black; side of the face, throat, and under-surface, white; eyes, blueish black; tarsus, light flesh-colour, with a blueish tinge, yellowish at the webs. The measurement from tip of the bill to end of the tail is 11 inches; wings, from flexor, 7·5; tail, 2·75; tarsus, 1·38; middle toe, 1·75. From the foregoing it is obvious that this species differs in plumage and size from *Puffinus gavius*, also the egg. Seeing *Puffinus gavius* and *P. assimilis* in the distance on the ocean, they appear alike, but the flight of *P. assimilis* is more active. Another contrast between the two species is that while the down on the very young of *P. assimilis* is light grey, the throat, breast, abdomen, white, the down of *P. gavius* is altogether grey, of a darker colour. The measurement of skeleton of adults compared, show: *Puffinus assimilis* (Gould), *Totorore*, from tip of bill to vent, 9·1; wing, the whole length, 6·85; leg, 6·5; head, 2·6. *Puffinus gavius*, from tip of bill to vent, 11·5; wing, 8·5; leg, to tip of toe, 7; head, 3·1. The Natives call *P. assimilis* "*Totorore*," and *P. gavius*, "*Hakoakoa*." Having amassed the facts which I have given you, I placed them before Professor Thomas, F.L.S., and T. Cheeseman, F.L.S., and, after a careful examination of the specimens, they agreed with me that this is *Puffinus assimilis* (Gould), a new species to New Zealand, which I have the honour to add to the Ornithology of this country, raising the number to 177; I have also to acknowledge my indebtedness to the Right Rev. Dr. Cowie, Bishop of Auckland, who kindly lent me the illustrated part, fol. 7, Gould's "*Birds of Australia*," where there is a life-size coloured illustration of *Puffinus assimilis*, as you see here, with a series of specimens for examination.

ART. XVIII.—*Observations on the Habits of New Zealand Birds, their Usefulness or Destructiveness to the Country.*

By A. REISCHEK, F.L.S.

[Read before the Auckland Institute, 19th October, 1885.]

HIERACIDEA NOVÆ-ZEALANDIÆ, Lath.—Quail Hawk (*Kaiaia*).

Male and female of this species are similar in plumage, but the latter is larger in size. They prey on wild and domestic fowl, and are very destructive. I have often seen them swoop down on and kill wild pigeons, ducks, etc.

HIERACIDEA FEROX, *Peal.*—Sparrow Hawk (*Karewarewa*).

This hawk is similar in plumage to the former, but differs in habit, and is smaller in size, the female being the larger. It inhabits the mountains, where the forest is low and dense, and I found both species on the West Coast, South Island. In November, 1882, when encamped in the centre of Hauturu Island, I often heard the cry of young hawks, which I followed on one occasion, but a precipice prevented me getting near. I then climbed a tree, and soon saw at a short distance below me, in the crown of a bushy tree, a nest with three young birds; but, though I tried to descend at several places, I was unable to get any foothold, so, to my great disappointment, had to abandon the attempt to get any closer. The old birds flew about very excitedly, sometimes past my head, and I shot the female a few days afterwards in the act of darting at a kaka. This hawk is very bold, and commits much havoc. I saw them catch fowls within three yards from me; and a Mr. Silver and the Natives told me that they lost as many as 100 fowls, ducks, and young turkeys in one season. They also prey on rats, mice, and lizards. It is gratifying that these two species of hawks are not common.

CIRCUS GOULDI, *Bonap.*—Swamp Hawk (*Kahu*).

This hawk is common everywhere, especially in the swamps and plains. It is very destructive, catching anything it can master, such as poultry, game, rats, etc., and I have been told that they even attack young lambs. They also feed on carrion and eggs, and have frequently robbed me of birds which I had shot and hid, but found on my return half devoured or removed.

ATHENE ALBIFACIES, *Grey.*—Laughing Owl (*Whekau*).

Owls are more useful than destructive; but this species I never saw in the North, or outlying islands, and in the South it is extremely rare, and preys mostly on rats.

ATHENE NOVÆ-ZEALANDIÆ, *Gml.*—Morepork (*Ruru*).

This little owl is common everywhere. In the forests it prefers deep, dark gullies, hiding during the day in hollow trees, or between the thick foliage, and in caves; but in the evening, when it comes out to seek its food, its melancholy call, "morepork," or "*ruru*," is heard. We can forgive it for catching a bird now and then, on account of the great number of rats, mice, and insects it destroys. On returning to the house of Mr. Wilson, Northern Wairoa, one bright moonlight night in 1879, I saw a Morepork swooping down; then heard a squeak; when suddenly it flew upwards, and let something drop, repeating this action several times, ultimately remaining on the ground for a time, and then flying away. On examining the spot, I found the skin, head, legs, and tail of a rat. In April,

1880, I shot a very pretty and rare variety of this owl, near Castle Hill, Coromandel, which is now in the valuable collection of New Zealand birds of J. C. Firth, Esq., Auckland. On dissecting a series of these birds, I always found numerous remains of rats and insects in their crops.

STRINGOPS (*Kakapo*).

These birds are not destructive, as they feed on berries, moss, and Alpine vegetation. They have disappeared from the North Island and the northern portion of the South Island, and at present only inhabit a chain of mountains on the West Coast.

PSITTACIDÆ.—Parrots.

The four species in New Zealand are only destructive when they are too numerous. During the fire in Oxford Forest, large flocks of *Platycercus novæ-zealandiæ*, Red-fronted Parrakeet (*Kakariki*), then *Platy. auriceps* (Yellow-fronted Parrakeet), came to Christchurch, destroying the fruit of orchards. They were so numerous, I could shoot them from the Museum, where several pairs bred under the roof. On the northern portion of the North Island these birds are getting very rare, except on the outlying islets.

PLATYCERCUS ALPINUS.—Alpine Parrakeet.

This pretty little Parrakeet I never found near a habitation, only on the mountains near the Alps, in low thick scrub; it is a rare bird. Its food consists of berries and seed.

NESTOR (*Kaka*).

There are three species in New Zealand; two of them are more useful than destructive, as they destroy numerous insects and their larvæ, which they dig out of the ground or rotten wood with their strong bills; they also feed on berries and various seeds; but *Nestor notabilis* (*Kea*), which fed in former times on the same food as the previous one, has become now a bird of prey, and very destructive on sheep-stations. In the Province of Otago, the station-holders give a reward for the destruction of these birds. In 1878, a gentleman sent me a few Keas, just shot, to Christchurch, remarking, in his letter, they had destroyed several of his sheep. When I examined their crops, I found that they contained wool and fat. A Kea, which I had in confinement, preferred carnivorous to vegetable food. On several occasions I saw Keas sailing above sheep, and shot them on the carcase, from which I found they had extracted pieces of flesh. My opinion is that these birds became carnivorous through being numerous when sheep were introduced, and feeding on maggots, which soon appear on carcasses of sheep dying on the runs, and have thus probably acquired such a liking for the fatty matter that it has emboldened them to attack live sheep, which they pick on the back near the kidneys, and thus destroy.

This species is more active than the former two. The flight and cry of the Kea is similar to that of the European Stone Eagle (*Aquila fulva*). I saw them often at a great height, sailing about, and then swooping down to the ground, where their movements are very clumsy. These birds prefer the higher regions near the glaciers, but in the winter, during the severe snow storms, they come lower down.

ARDEA.—Heron (*Matuku*).

There are seven species in New Zealand, five of which feed mostly on fish. But *Ardea paciloptila* (Common Bittern) is very useful in destroying numerous vermin. Dissecting a series, I have found in their crops remains of rats; even as many as five in one bird.

OCYDROMUS.—Wood-hen (*Weka*).

There are four species in New Zealand, which are destructive to young domestic and wild birds, and their eggs; but they are useful in destroying vermin, as I have seen them often digging in the ground and rotten wood for insects. They also destroy rats, of which I have found the remains in their crops. Near Lake Brunner, a prospector had a rat and Maori hen as pets, which would come every evening at tea-time to get their share, and each one came when called by its name. Sometimes these two quarrelled over food, and at last the Maori hen gave the rat such a peck on the head that he tumbled over dead.

PORPHYRIO MELANOTUS, *Temm.*—Swamp-hen (*Pokako*).

These birds are destructive to agriculturists, when too numerous. As soon as the grain makes its appearance, they pull up the young shoots and eat them; consequently the farmers in Canterbury gave a reward for their destruction.

STERNA.—Sea Swallows (*Tara*).

Five species in New Zealand, which are destructive to small fish; but *Sterna antarctica* (Common Tern) I found as far as forty miles inland, following the plough, picking up the vermin, or sitting on the fences watching for them. The two species of *Podiceps*, found on the fresh-water lakes, feed mostly on small fish and various insects; they are not destructive, or do little harm, if not too numerous, as the lakes will not become overstocked where fish are introduced.

DYSPORUS SERRATOR.—Gannet (*Takapu*).

These birds are very destructive to fish, which they devour in great numbers. It is amusing to watch a colony fishing near their breeding resorts, constantly swooping down and rising—they swoop with such force at their prey that the water splashes up several feet. I have often seen them catch so large a fish that they were unable to rise, and had to let it go.

PHALACROCORAX.—Shag (*Kawau*).

There are thirteen species in New Zealand, and all very destructive to fish, on which they prey, especially *Phalacrocorax nova-hollandiæ* (Black Shag), *P. melanoleucus* (Frisled Shag), *P. brevirostris* (White-throated Shag), *P. varius* (Pied Shag), and *P. punctatus* (Spotted Shag), which I have often found in the inland bays, rivers, and lakes. They are expert divers, and very few fish escape them. On my visit at Mr. Buckland's station at Kaipara, in 1885, on which there are some very pretty fresh-water lakes of considerable size, I inquired of Mr. Drew, the manager, if they contained any fish. He told me they had put carp in, but never could see any. On the banks of one of these lakes is a breeding-place of *P. varius*. Mr. Drew kindly rowed us across to it, and we shot a number of shags. Mr. W. Phillipps sent his dog after a wounded one, but biting him he let it go; the shag then dived, and took him by the front paw, and would have drowned him had we not come to his assistance. On skinning and dissecting, I found numbers of carp in these birds: one measured ten inches. In lakes or rivers where salmon, trout, or carp are introduced some trees or branches should be put into quiet water, to form a shelter and protect the fish from the shags.

EUDYPTES.—Penguin.

There are nine species in New Zealand, which all prey on fish and crustacea, but the injury they do is not much felt, as they avoid inhabited places, and are mostly to be found on the outlying islets and rocks. The sea-birds on the New Zealand coast are more useful than destructive. The Natives in former times subsisted mostly on certain species, and made large expeditions to the islands where these birds breed, taking the young and eggs of the numerous species of *Procellariidæ* (Petrel family—thirty-one in New Zealand); their feathers and down are also useful.

LARIDÆ.—Seagulls.

There are five species in New Zealand; most of them are useful in picking up the drift along the shore. It can be forgiven the *Larus dominicanus* if she spys now and then an egg of other birds and eats it. The usefulness of these birds should be known to agriculturists, as *Larus bulleri*, and *L. scopulinus* (Mackerel-gull) follow the plough from morning till night, picking up all vermin, and also search in the meadows with the same object. When dissecting, I found as many as forty different kinds of grubs, worms, etc., in one crop. This pretty little gull should be protected everywhere. I shall now turn to the birds which are very useful to the country besides those already mentioned above; as partially so, they ought to be protected,

except for scientific purposes. Parents and school teachers should instruct their children and pupils not to molest these useful birds during the breeding season, or to destroy their nests for the mania of collecting their eggs or young. There are the museums, where local and foreign collections are represented for instruction, free to public inspection; and if the New Zealand birds are not protected, or insectivorous birds imported, the country will suffer and the beautiful forests will only resound with the humming of insects, instead of the melodious songs of the feathered inhabitants. Already several species have disappeared from the mainland, especially on the northern portion of the North Island, or are extremely rare, such as *Pogonornis cincta*, Stich-bird (*Tiora*); *Anthornis melanura*, Bell-bird (*Korimako*); *Orthonyx albicilla*, White-head (*Popokatea*); *Petroica longipes*, Wood-robin (*Totowai*); *Petroica (Toitoti)*; Pied Tit (*Meromero*); *Creadion carunculatus*, Saddle-back (*Tieke*); *Turnagra hectori*, North Island Thrush (*Piopio*); *Stringops (Kakapo)*; *Coturnix novæ-zealandiæ*, Quail; *Athene albifacies*, Laughing Owl (*Whekau*).

HALCYON VAGANS.—Kingfisher (*Kotare*).

This bird is very useful in destroying insects. It is very interesting to watch this bird in the breeding season, when boring its holes in rotten trees, which is accomplished with the bill, sitting on an opposite tree and darting at the place where it is intent on boring a hole, splint by splint, till he gets tired, when his mate begins to work. I saw them sometimes striking at a tree with such force that they got stuck, and had to twist about to extricate the bill. Near the nest they are very spiteful; anything passing the tree they dart at, and, owing to this habit, they sometimes kill young ducks or chickens if their nests are near a farm-house. I saw even dogs and cats with an eye destroyed by the Kingfisher's dart. I found their nests often several miles inland, away from any creeks or rivers, but during the winter they inhabit the seashore.

MELIPHACIDÆ.—Honey-eaters.

There are three species in New Zealand. Every old settler will remember the clear notes of the Bell-bird (*Anthornis melanura*), or the mocking of the Tui (*Prothemadera nova-zealandiæ*). These birds are very useful, as they destroy numbers of insects during the breeding season.

XENICUS.—Wren, two species.

These birds, which are becoming very rare, live entirely on insects; also *Acanthisitta*, Rifleman (*Titipounamu*), which I saw from early morning until late at night, climbing up and down trees and branches investigating every crevice for insects.

ORTHONYX.—New Zealand Canary, two species (*Popokatea*).

These birds live mostly on insectivorous food.

SPHENCEACUS.—Swamp-bird, two species (*Kotata*).

When passing a swamp one will often hear a peculiar whistle, and very soon these inquisitive birds come so near, that it could be sometimes caught with the hand, were it not so cunning in secreting itself in the rushes. They live mostly on insects.

GERYGONE.—Warbler, three species (*Riroriro*).

They are insectivorous birds, their thrilling notes and artistic nest are well known.

PETROICA.—New Zealand Robin.

The five species of *Petroica* (New Zealand Robins) live entirely on insects; they are very tame birds. I had them several times sitting on the barrel of my gun when watching other birds, or picking up insects at my feet when digging, or chopping wood. The song is very melodious, especially that of *Petroica longipes* (North Island Wood Robin).

ANTHUS NOVÆ-ZEALANDIÆ.—Ground Lark (*Pihoihoi*).

This bird lives mostly on insects, also the two species of *Turnagra* (Thrush), which are getting very rare.

RHIPIDURA.—Fantail (*Piwakawaka*).

Everyone admires the two species of these fly-catchers, and their graceful evolutions in catching their prey, in the act of which, a snap of the bill can be distinctly heard. On the West Coast Sounds, where the sandflies are in myriads, I saw in the little clearing near the hut as many as twenty of these fly-catchers in pursuit of sandflies, from early morn till late at night.

GLAUCOPIS.—Crow, two species (*Kokako*).

These birds feed mostly on berries and young leaves; their notes are very melodious, similar to those of a flute. In the pairing season, the movements of the male are most amusing, with spread wings and tail, and outstretched neck, performing most extraordinary evolutions similar to dancing.

CREADION.—Saddleback, two species (*Tieke*).

They are very useful in destroying insects, picking them out of rotten wood and between the bark, similar to the Woodpecker; they also suck honey out of the blossoms.

HETERALOCHA.—Huia.

These are also insectivorous.

CUCULIDÆ.—Two species.

They lay their eggs in the nests of the Robins or Warblers, which have to collect insects from early morn till late at night to

appease the hunger of their foster offspring. These Cuckoos live entirely on insects.

CARPOPHAGA NOVÆ-ZEALANDIÆ.—Wood Pigeon (*Kuku*).

This pretty bird is getting scarcer every year, and is esteemed for its delicious flesh; it feeds on berries and young leaves.

APTERYX.—Kiwi.

The four species, which are getting very rare, especially *Apteryx australis* and *A. haastii*, as they have no defence against their numerous enemies, except by running and hiding in burrows. Their food consists of various insects and berries.

THE WADERS.

All the Waders—such as *Charadriade*, *Hematopi*, *Limicola*, *Tringa*, *Gallinago*, etc., which form a numerous family, there being twenty-two species in New Zealand—are esteemed for food when in season. Their food consists of *Crustacea* and *Mollusca*.

RALLIDÆ.—Land-rails, five species.

ANATIDÆ.—Ducks, nine species.

These are all useful for their flesh, down, and feathers. Their food consists of different plants, seeds, grass, growing in the water or on the edges; also of insects and vermin of all kinds which they can overpower.

If the insectivorous birds are not protected, the result will be disastrous, as I have seen on several occasions during my travels. On a first visit to a certain district everything looked nice and green, but on visiting six weeks later the same place, I was astonished to see only patches of sward here and there, and thousands of caterpillars, which destroyed the vegetation. In another place, besides the destruction of vegetation, the paper and paint on the walls in the house, even blankets and clothes, were gnawed by crickets. The numerous dogs, and even cats, of itinerant travellers and Natives, let at large, (the poor brutes often being obliged to procure their own subsistence, and sometimes being abandoned,) become wild, and prey on birds; but if stoats, ferrets, weasels, mongoose, and cats are turned out to destroy rabbits, it will be difficult to protect the birds, as these creatures destroy them, especially ground birds, such as kiwis, kakapos, wrens; and many other of these interesting birds peculiar to New Zealand must disappear, even from the solitudes. It should be remembered that some of these animals prefer their abode near a habitation, where they make much havoc amongst poultry, as they just kill as many as they can get hold of, without eating them. In the Old Country, I remember as many as over twenty fowls in one night were destroyed, and the eggs taken away from the brood hens, which were killed first; and in Austria we destroy these animals at every opportunity. They are very cunning,

and will not take poison while they can get live prey. Rabbits are much easier destroyed by shooting, netting, or bagging with ferrets, when the land becomes more closely settled. I feel sorry that in this colony there is not more interest taken in nature and its resources; I do not mean that people should follow it as a pursuit, but more as a recreation, in leisure time. Through the extermination of forests, birds are forced to disappear; and it is a waste of timber, where the soil is too poor for agriculture and pasture, to burn and destroy the young trees for the purpose of getting a few large ones, or kauri gum, all of which might be secured without this wanton destruction, and thus save the bush and its useful inhabitants, of which we could learn a great deal by observation.

Looking at the building of nests, how artistically some are made, as that of the *Gerygone* (Warblers), through which rain cannot penetrate! When building, the male of most birds carries the material, and the female builds the nest; and if not contented they pull it to pieces, and begin afresh. In hatching they assist each other, and as soon as the young are out of the eggs, the parents show great pleasure and anxiety. From sunrise to sunset they collect insects to feed their brood, and they destroy a vast number in a single day. Then, their language: each sound has a different meaning. When the young in the nest chirp, hearing the warning sound from their parents, they are immediately quiet; and when out of the nest, at the approach of danger, the old birds hide their young, which remain quiet and still till the parents decoy their enemies away. I noticed this to be often the case with *Anthornis* (Bell-bird). When the young are able to feed, the parents show them how to procure food. Birds of prey take their young, and teach them various evolutions in the air, how to swoop on their prey, and make them very precautions against enemies. I saw old birds often punishing their young, if they did not listen to their call. Insectivorous birds show their young how to procure insects, by investigating every crevice, turning over refuse on the ground to procure grubs, or picking them out of rotten wood. As soon as the young are old enough, they have to look out for themselves. They all have to work for their existence, and are not selfish. I saw, often, over a hundred birds, of four or five different species, feeding together, and very seldom noticed one deprive another of its food. In conclusion, I should respectfully urge the necessity of effort to preserve the useful birds of New Zealand, which are of so much importance to the colony; and if this paper is the means of inducing anyone to interest himself in that direction, I shall be well pleased.
