

These animals inhabit plains, mountains, and forests, hiding in burrows or under stones or in thick hedges; and I also found them in farm-houses, where they had a dry place of concealment, and where they make a nest of grass and moss to sleep.

In the month of June, in Austria, the female brings forth after five weeks from four to eight young, which she protects with great bravery. The family stay together till the winter.

MUSTELA VULGARIS.—Common Weasel.

This pretty little animal has the same habits and habitats as its ally the stoat, and is not behind it in bloodthirstiness. If the larger carnivorous animals were as courageous and vicious as these, they would soon reduce materially the limits of animal life.

ART. XXII.—*The Protection of Native Birds.*

By HUGH MARTIN.

[Read before the Nelson Philosophical Society, 2nd March, 1885.]

BIRDS peculiar to New Zealand that should be preserved in island reserves:—

A.—BIRDS INHABITING THE MAINLAND.

4. *Athene albifacies*.—Whekau, Laughing Owl. South Island, and Kaimanawa Range in North Island.
9. *Pogonornis cincta*.—Hihi, Matakioke, Stitchbird. North Island.
10. *Prothemadera nova-zealandia*.—Tui. Both Islands; also, Auckland and Chatham Islands.
11. *Anthornis melanura*.—Korimako. Both Islands, and Auckland Islands. Rare in many parts.
32. *Turnagra crassirostris*.—Piopio, Southern Thrush. South Island. Now rare, and in many parts extinct.
33. *T. hectori*.—Piopio, Northern Thrush. Southern part of North Island.
37. *Glaucopsis wilsoni*.—Kokako, Blue-wattled Crow. North Island. Very irregular in distribution.
38. *G. cinerea*.—Kokako, Orange-wattled Crow. South Island. Very irregular in distribution.
40. *Creadion carunculatus*.—Tieke, Saddle-back. Both Islands. Flight feeble.
41. *Heteralocha acutirostris*.—Huia. South part of North Island, in Ruahine, Tararua, and Rimutaka Ranges.
42. *Stringops habroptilus*.—Kakapo. Both Islands and Chatham Islands. Incapable of flight. Very rare.
47. *Nestor meridionalis*.—Common Kaka. Both Islands.

49. *Nestor notabilis*.—Kea. South Island, in Alpine regions.
 52. *Carpophaga novæ-zealandiæ*.—Kereru, Kuku, Pigeon. Both Islands, and Chatham Islands.
 54. *Apteryx mantelli*.—Northern Kiwi.
 56. *A. oweni*.—Grey Kiwi. Both Islands.
 55. *A. australis*.—Southern Kiwi.
 57. *A. haasti*.—Roaroa, Kiwi, Karuai. South Island, in Alpine regions.
 85. *Ocydromus earli*.—Weka, Northern Wood-hen.
 86. *O. australis*.—Weka, Southern Wood-hen.
 87. *O. fuscus*.—Black Weka. West Coast of South Island.
 88. *O. brachypterus*.—South Island.
 93. *Ortygometra affinis*.—Koitareke, Water Crake. Both Islands. Extremely rare everywhere.
 95. *Notornis mantelli*.—Takahe; Moho. Resolution and Secretary Islands; and at Barepatch, between Maruia and Upokororo Rivers, east of Lake Te Anau.
 98. *Casarca variegata*.—Putangitangi, Paradise Duck. Both Islands.
 100. *Anas chlorotis*.—Pateke, Brown Duck. Both Islands and Chatham Islands. A very indifferent flier.
 102. *Fhynchaspis variegata*.—Kuruwhengi, Shoveller. Both Islands and Chatham Islands. Nowhere common.
 103. *Hymenolaimus malacorhynchus*.—Whio, Blue Duck. Both Islands.
 104. *Fuligula novæ-zealandiæ*.—Papango, Scaup, Black Teal. Both Islands. Flight very feeble.
 108. *Podiceps rufipectus*.—Totokipio, Dabchick. Both Islands.

B.—BIRDS PECULIAR TO THE OFF ISLANDS.

12. *Anthornis melanocephala*.—Korimako. Chatham Islands.
 83. *Gallinago aucklandica*.—Snipe. Auckland Islands.
 89. *Cabalus (Rallus) modestus*.—Mangere Islands, Chatham Islands.
 91. *Rallus dieffenbachii*.—Moeriki. Chatham Islands. Extremely rare, if not extinct. Perhaps identical with No. 89.
 92. *Rallus brachipus*.—Auckland Islands.
 106. *Mergus australis*.—Merganser. Auckland Islands. The only known Merganser in the Southern Hemisphere.

Cnemiornis calcitrans.—Tarepo. (Kaimanawa Range?)

A large bird is mentioned in the Transactions of the N. Z. Institute by, I believe, Mr. T. Cockburn Hood, as having been killed by a settler's dogs; which bird, if I remember rightly, was supposed by the writer to be a Tarepo.

The birds that most need preservation may be included under the following heads :—

1. Rare birds, and those that are decreasing rapidly: *e.g.*, No. 4, Whekau; 32-3, Thrushes; 42, Kakapo; 54-7, Kiwis; 93, Water Crake; 95, Takahe; 102, Shoveller Duck.

2. Birds of local habitat, and those of irregular distribution: *e.g.*, Nos. 37-8, Kokako; 41, Huia; and those peculiar to the Auckland and Chatham Islands.

3. Birds that are incapable of flight, or whose flight is feeble: *e.g.*, No. 40, Saddle-back; 85-8, Weka; 100, Brown Duck; 104, Scaup.

As may be seen, these divisions run into one another, and include almost all the peculiar species enumerated here.

I have included the Kea, as I think it would be possible to preserve it in certain islands, such as the Aucklands, where it would be harmless, and useful to man. The Kaka, Pigeon, Paradise Duck, Brown Duck, Shoveller, Blue Duck, and Scaup, being peculiar to New Zealand, and also valuable game birds, merit preservation, even though abundant.

The thirty-six peculiar species of birds named in the above list are, of those enumerated in the "Handbook of the Birds of New Zealand, 1882," all that I believe it to be at once practicable and desirable to preserve in island reserves. I should have omitted the birds peculiar to the Auckland Islands, as being, from the nature of their habitat, in no danger of extinction, had I been certain that these islands are uninhabited, or likely to remain so. I omit the native Quail, as being probably extinct; but even if it still survives, the time and money that might be spent on it would be better employed in procuring specimens of the Takahe and other peculiarly New Zealand forms.

On the necessity of immediate and effectual measures for the preservation of all rare ground-birds, such as the Kiwis and Kakapo, I needly hardly remark; but two species, the Takahe (*Notornis*), and Tarepo (*Cnemidornis*), deserve particular notice. The Takahe measures 25 inches in length, the Tarepo, at least 5 feet in height; so that they are well worth preserving from any point of view. Generally speaking, experience proves that no one will refrain from killing any rare or strange bird, unless it can be made more to their interest to do so. As, with very few exceptions, rare birds, such as these, are always killed by the bird-hunters, miners, and others living in the back country, who alone have opportunities to obtain them, I would submit the following (especially to prevent their destruction), as being the only effectual means for obtaining live specimens of these and other rare birds:—a premium should be offered, in addition to whatever other means may be employed, for all specimens that can be procured of the rarer birds, especially of the wingless ones, payable only on the reception of the birds *alive and*

in good condition; the highest sum being offered for the largest species of birds. The same should also be offered for the discovery of new species, in order to save them from extinction. I suggest this in the belief that, if acted on without delay, it will ensure the preservation of various birds that otherwise will be lost; and particularly that, besides being in the end the cheapest as well as the most effectual way to procure the rarer species, (being made known to all throughout those parts where such birds do or may exist,) it is the only way to save the Takahe and other large birds, which would in every way be well worth all it might cost to preserve them. As there must be some delay in establishing reserves, it would perhaps be well for immediate measures to be taken to procure rare "wingless" birds, (lest when the reserves are ready it may be too late to procure them,) keeping them in confinement, under as natural conditions as possible. By the time the birds have been obtained the reserves should be ready for them. Very rare birds, such as the Takahe, should, however, be kept under special supervision (in islands), at least until they become abundant.

In regard to the nature of bird reserves, there can be no doubt but that islands isolated by the sea are most suitable for that purpose, as will appear from a consideration of the following points: The objects to be gained being the preservation *and increase* of curious and useful birds, to obtain this result it is obvious that they should be as much as is possible protected against the ravages of beasts of prey.

The beasts to which the destruction of the indigenous birds is chiefly due, are the rat, cat, dog, and pig, to which must now be added the ferret, stoat, weasel, and mongoose; and were it not for their ravages, it is not improbable that many birds now rare would be comparatively abundant, and that very few would be in imminent danger of extinction. As it is, any scheme for the preservation of native birds must provide against their intrusion into the bird reserves.

Granting that it is possible to effectually fence out dogs and pigs, there yet remain other beasts that are even more destructive, and which it is practically impossible to keep out by any artificial barriers. The rat, it is true, is everywhere, but, as I have elsewhere observed, it would be kept under in island reserves by the owls and wekas, there being only the natural increase to contend against, the water being an effectual barrier against the ingress of more, save by the agency of man; whereas on the mainland there can be no such protection. Similarly, the water would bar the ingress of cats, weasels, and ichneumons, which could not be done otherwise, except at the expenditure of very much time and money. Islands, on the other hand, have in their favour both economy and efficiency,

such as cannot be attained otherwise, besides the saving of time, which is of great importance. In regard to Resolution and Secretary Islands, there are three possible faults in them, which would impair or nullify their value for reserves: 1st, their roughness and size may preclude the exercise of due supervision over them; 2nd, their shores may be too close to that of the mainland, so that they may not have a sufficient breadth of water to keep out noxious beasts; 3rd, pigs, dogs, or cats may have run wild in them. This seems the strongest objection that could be raised, and would be conclusive against the choice of them for reserves; but the two former might be overcome. Apart from this last objection, these islands are peculiarly suitable for birds, such as pigeons, kakas, ducks, and particularly kiwis, that require a wide range. I have omitted certain sea-fowl from the foregoing list, as they would be better protected throughout New Zealand against all excessive and wanton destruction, particularly in the breeding places. The birds referred to are the Penguins, Puffins (*Shearwaters*), Gannet, and some species of Petrel.

Protection for these birds is desirable, because, like the Fulmar, Guillemot, and other sea-birds of the British Islands, they are of value for their flesh, skins, feathers, and eggs. The Penguins, some of which are peculiar to Campbell and Macquarie Islands, may be taken as the southern representatives of the Auks, one species (167, *Aptenodytes pennanti*), being comparable in size to the Great Auk (*Alca impennis*), which was formerly extremely abundant in the North Atlantic, but is now believed to be extinct, having been extirpated for the sake of its flesh and eggs.

I have not disregarded the possible change involved in the removal of birds from the mainland to islands, having indicated in a previous paper several points bearing on this question. These, however, may all be said to be reducible to one, that of the vegetation; and if this is in character and luxuriance like that of the parts from whence the birds are taken, there would probably be no further difficulty.

The presence or absence of various birds, named in this list, would be a good test of their fitness for this purpose. I may mention some reasons for preserving indigenous birds, to show that this is not a question of sentiment only. They are as follows:—

First, the preservation of the birds under conditions that will enable their habits to be studied, as could not otherwise be done.

Second, the increase of rare birds, so as to enable museums, etc., that could not otherwise obtain them, to be supplied with specimens. This use of reserves would have to be guarded with extreme care to prevent any abuse of it, lest any birds should be unduly reduced in numbers or exterminated thereby.

Third, the preservation of birds that are useful as game, or capable of domestication, particularly such as the Takahe, which

are extremely rare, and must without it become extinct. Many native birds, though but little regarded here, would be valued in other countries, having much more to recommend them than sundry English ones that have been introduced. It will, of course, be necessary to take precautions against trespassing and poaching, the worst poachers being the professional bird-collectors, (who are doing their best at present to exterminate the Kiwi,) sealers, and whalers. All birds being strictly preserved, except where over-abundant or otherwise detrimental to the increase of those which it is especially desired to preserve, the reserves would serve as refuges to many sea and shore birds, as well as to Herons and other birds of wide range.

Although, strictly speaking, beyond the scope of this paper, it will not, I hope, be deemed altogether out of place to say a few words on behalf of the Tuatara. This curious and unique lizard is quite extinct on the mainland, only surviving in certain islands, and being a rare and singular lizard it is well worth preserving.

Although reiterating previous remarks, I would again call attention to the necessity of immediate action, on account of the opening up of the back country, the rapid increase of population, and last, but by no means least, the introduction of the weazel and other vermin, which must on the mainland certainly lead to the destruction of all ground-birds, and probably water-fowl also, as these nest in places easily accessible to them.

The supplementary list includes certain birds which, for reasons before stated, are well worth preserving in reserves; but not being peculiar to New Zealand, are, therefore, of less importance:—

SUPPLEMENTARY LIST.

Birds not peculiar to New Zealand.

90. *Rallus philippensis*.—Mohopereru, Striped Rail. Both Islands; Australia, Polynesia, Celebes, and Philippines.
94. *Ortygometra tabuensis*.—Putoto, Swamp Crake. Both Islands; Australia, Tasmania, Polynesia. Sparingly dispersed throughout New Zealand.
96. *Porphyrio melanotus*.—Pukeko. Both Islands; Chatham Islands, Australia, Tasmania, New Caledonia.
99. *Querquedula gibberifrons*.—Tete, Little Teal. Both Islands; Australia, New Caledonia, Indian Archipelago.
101. *Anas superciliosa*.—Parera, Grey Duck. Both Islands; Chatham Islands; Australia, Tasmania, and Polynesia.
105. *Myroca australis*.—Karakahia, White-winged (white-eyed?) Duck. Both Islands; Australia.
107. *Podiceps cristatus*.—Crested Grebe. South Island; Australia, S. Africa, Asia, North America, Europe.