

sunrise and went into the burrow. After some time one came out, and again flew away. I then examined the burrow, and found a bird sitting on an egg; on dissecting the bird I found it was a female. I never found more than one egg, and always the female sitting on it; the male I have found not far off in a burrow by himself. When the young are hatched, male and female rear them together, and defend them pluckily; the young are full-grown in March, when the Natives collect them for food; the flesh of this species of petrel being the most esteemed by them.

When on shore, the habits of these birds are nocturnal; their breeding places are in the mountains in the interior, they do not breed in colonies as the previous species. When swooping through the air, they make a noise with their wings like the hiss of a bullet speeding through the air. On dissecting the crops of these Petrels I noticed a peculiarity: the absence of oily matter or remains of fish, which is common in most of the *Procellaria* family. I found animalculæ, minute seeds, and seaweed. In my opinion this Petrel is not destructive to fisheries.

The young of all the species of *Procellaria* could be made use of for food, if properly prepared. In former times the Natives had, to a great extent, to depend on these birds, and made long expeditions to collect them; the manner of which I have already described in a former paper read before this Institute. I am sorry to say I have found them every year decreasing. When I went on my seasonal researches on my last trip, 1885, on the Little Barrier, I could not see a single specimen of this Petrel; and of the other four species I found numerous on my first visit I found only a few, but plenty of remains such as wings, feathers, etc., destroyed by wild cats, Native dogs, and wild pigs. In former times the Natives protected their breeding places carefully; but now, as they have plenty of other food which is easier to be got, they are left to destruction in all the inhabited places. I procured a few specimens, as you see here: male, female, and egg.

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ART. XVI.—*Observations on Puffinus gavius (Forst.), Rain-bird, (Hakoakoa), their Habits and Habitats.*

By A. REISCHEK, F.L.S.

[Read before the Auckland Institute, 21st September, 1885.]

THIS Puffin frequents the coast of New Zealand, especially that of the South Island, where I have seen them plentiful, but in the North it is not so common. The plumage of the whole

upper part, including wing and tail, is glossy brownish black, each feather lighter shafted, which is especially noticeable in the larger wing covers; side of the face and neck is greyish brown; throat and under-surface, white; eyes, black; feet, flesh colour, darker on the edge; webs, yellowish; upper part of the bill, blackish brown, lighter at the edges and tip.

The measurement of adult bird, from tip of bill to the end of the tail, is 14 inches. Wing, from flexor to the tips, 8.5; tail, 2.5; bill, from the gape, 1.75; tarsus, 1.5; middle toe, 2.

In December, 1880, I shot a pair of these Puffins, between Morotiri and Taranga Islands, and in the same month I found young birds on the larger Morotiri Island. In October, 1882, on the north-eastern portion of Hauturu Island, I found a female of *Puffinus gavius* sitting on an egg, and, at the same place, towards the end of November and early in December, I found young birds.

*Puffinus gavius* come on shore in September, to clean out their burrows or make fresh ones, which they accomplish by digging with the bill and extruding the refuse with their feet; they work during the day, and after sunset they leave for their ocean haunts, returning before sunrise. These birds breed in single pairs. The entrance of the burrow is from 4.5 inches in diameter; the distance to the chamber, from 1 foot 6 inches to 3 feet. The chamber is 1 foot 6 inches long, and about 1 foot 8 inches high; in this there is a deepening with a few leaves, on which, in October, the female lays a white egg, which is 2.35 inches in length, by 1.75. She hatches during the day, when the male is generally out at the ocean, from which he returns after sunset, when the female leaves for the haunts, returning before sunrise, continuing this process till the young birds are a few days old, when both parents absent themselves during the day, but return after sunset to feed their young with an oily substance or matter which they disgorge into their bills. The young birds are covered with darkish grey down, and are full-grown in March, when they leave the breeding resorts for the ocean. The Natives procure and use them for food. The adult bird makes a noise resembling the cackling of a fowl, especially before bad or wet weather, from which the natives name them *Hakoakoa*; and at such times, when the Natives hear this bird, they never venture out at sea in their canoes or boats.

Their enemies, besides man, are cats, dogs, and pigs. I procured a series of specimens, as you see here, for observation and examination.

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