WHITE ISLAND — VOLCANIC ACTIVITY AND BIRD LIFE

By KAZIMIERZ WODZICKI

White Island has recently been subject to increased volcanic activity. A major eruption began in December 1976 and ash has been emitted since then. Lava bombs were ejected in mid March 1977 and especially severe tephra eruptions have occurred several times, the most recent being on 25 August.

The kind invitation of Professor Robin H. Clark of Victoria University of Wellington and Mr Graeme Wilson, Producer at the Natural History Unit, Television One, Dunedin, to accompany the television team, provided an opportunity to visit the island on 28 August, 1977.

The surprisingly large number of 26 bird species has been recorded on White Island (Wodzicki, 1956; Wodzicki & Robertson, 1959), consisting of 11 seabirds, one shore bird and 14 land bird species. The distribution of the gannet colonies has been studied and a census of the White Island gannets *(Sula bassana)* was also carried out (Robertson & Wodzicki 1948; Fleming & Wodzicki 1952).

Very few seabirds were observed while sailing from Crater Bay to Ohauora gannetries. They included a few White-fronted Terns *(Sterna striata)* and Red-billed Gulls *(Larus novaehollandiae)* in Crater Bay. Also about a dozen Red-billed Gulls were seen at each gannet nesting colony.

As described in some detail by Wodzicki and Robertson (1959), there are on White Island three groups of nesting colonies of gannets on the south and south-west sides of the island: Otaketake, Ohauora and Te Matawiwi. Ohauora was the only place where it was possible to land and count the gannets, but Mr Wilson flew over the island the day after our visit and in the course of his work was able to observe all the gannetries. Mr Wilson's account was compared with the

TABLE 1 — STATUS OF GANNETRIES ON WHITE ISLAND IN 1949 AND 1977

Gannetries	Otaketake		Ohauora				Te Matawiwi						Total areas nesting
	a.	b.	c.	d.	e.	f.	g.	h.	i.	j.	k.	l.	
1949	B	B	B	B	B	R	B	B	B	B	B	B	11
1977	B	B	B	B	B	B	B	B	B	B	B	B	12

B = Nesting colony; R = Roost

observations by Wodzicki and Robertson (1959), which were carried out in November 1949, i.e. approximately in the middle of the nesting season. The present records were made in late August, that is, at the beginning of the nesting season, when most of the birds were old birds, the young birds arriving at the colony later in the nesting season.

Table 1 records the numbers of discrete nesting areas in 1949 and 1977. During these 29 years a roost at Ohauora has become a nesting area so that there are now 12 nesting areas compared with 11 in 1949.

We are reasonably well informed about the gannet population of White Island. Robertson and Wodzicki (1948), counting on the ground, assessed the gannet population to be 3,062 pairs in January 1947. Counts from aerial photographs (Fleming & Wodzicki 1952) gave a total of 5,227 pairs, while Wodzicki and Robertson's count on the ground in November 1949 gave an estimated number of 5,376 pairs. Finally, our total estimate in 1977 (Table 2) amounts to 2,755 pairs, i.e. only about 50% of the number counted 28 years before.

Two factors which may have affected the numbers of gannets are the earliness of the 1977 counts — two months or more before the

TABLE 2 — THE GANNET POPULATION ON WHITE ISLAND IN 1949 AND 1977

Year	Gannetry		Year	Gannetry	
	Otaketake			Otaketake	
1949	a. 2171 (est.)		1977	a. 1540	
	b. 479			b. 130	
	Total	2650		Total	1670
	Ohauora			Ohauora	
	c. 361			c. 217 (counted)	
	d. 110			d. 30 ,,	
	e. 888			e. 256 ,,	
	f. –			f. 130 ,,	
	Total	1359		Total	633
	Te Matawiwi			Te Matawiwi	
	g. 378			g. 12	
	h. 160			h. 130	
	i. 694			i. 30	
	j. 49			j. 30	
	k. 60			k. 130	
	l. 26			l. 120	
	Total	1367		Total	452
	Grand total	5376		Grand total	2755

Note: The 1949 population was counted on the ground except at a. With the exception of Ohauora gannetries the 1977 populations have been estimated.

peak time of the nesting season — and a fluctuation from year to year in the number of gannets. However, the decrease in numbers between the 1949 and 1977 counts is so large that an effect of increased volcanic activity on gannets cannot be dismissed.

Considering the kind of vegetation on White Island (Hamilton 1959), a surprisingly large number of landbirds has been reported. Among the 14 species recorded, six species are very scarce or rare visitors such as the Black Shag *(Phalacrocorax carbo)*, Australasian Harrier *(Circus approximans)*, New Zealand Kingfisher *(Halcyon sancta)*, Grey Warbler *(Gerygone igata)*, Bellbird *(Anthornis melanura)* and New Zealand Pipit *(Anthus novaeseelandiae)*. The following eight species were all observed by Wodzicki and Robertson (1959) and were considered not uncommon; Song Thrush *(Turdus ericetorum)*, Blackbird *(T. merula)*, Hedgesparrow *(Prunella modularis)*, Tui *(Prosthemadera novaeseelandiae)*, Silvereye *(Zosterops lateralis)*, Chaffinch *(Fringilla coelebs)*, House Sparrow *(Passer domesticus)* and Starling *(Sturnus vulgaris)*. Most of these birds were observed in or round the pohutukawa *(Metrosideros excelsa)* forest.

The only observations that could be carried out on 28 August 1977 were to walk through the pohutukawa forest round the Ohauora gannetries and to listen for bird calls during most of the day. There was complete silence in the forest and not a single bird was heard. A thick layer of volcanic ash was found on the leaves, limbs and branches of pohutukawa trees. Although still alive, many pohutukawa trees looked unhealthy and *Histiopteris incisa* on the forest floor was dead. The prevailing impression was that ash may have killed insects and other invertebrates and that this had led to the disappearance of bird life.

It is likely that with reduced volcanic activity, the recovery of the vegetation will be followed by the return of insects and other invertebrates and, at a later stage, of birds. Further observations on the effect of the volcanic activity on the gannets and their numbers and on the re-colonisation of the island by passerine birds would be of considerable interest.

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