

DESTRUCTION OF PRIONS BY STORM, AUGUST, 1946.

(WITH SPECIAL REFERENCE TO WELLINGTON PROVINCE.)

By K. A. Wodzicki, Department of Scientific and Industrial Research,
Wellington, New Zealand.

INTRODUCTORY.

The following is an account of the broad-billed prion (*Pachyptila vittata*) and other birds cast ashore by August gales, 1946. A large amount of information on this subject has already been published by Turbott and Sibson (1946), dealing in particular with the Auckland Province.

Major R. A. Wilson, Bulls, was the first to see, on August 13, a prion flying inland on the "main road just by Rongotea siding, about half-way between Sanson and Himatangi." Having noticed large numbers of petrels cast ashore on Himatangi Beach, Major Wilson notified the Ornithological Society of New Zealand. The Hon. Secretary (Mr. J. M. Cunningham) acted immediately, approaching the Dominion Museum, Wellington, the Wanganui and New Plymouth Museums, as well as the leading newspapers and the National Broadcasting Service. A Press statement was made by Dr. W. R. B. Oliver, Director of the Dominion Museum, and an appeal for specimens and information was broadcast to the general public on August 22.

AUGUST WEATHER IN WELLINGTON PROVINCE.

Weather conditions are no doubt of paramount importance and to a very great degree responsible for any large scale destruction of petrels, as was the case in August, 1946. For this reason it seems fit to enlarge on the weather description of the Auckland Province given by Turbott and Sibson (1946), and to emphasise some of the features peculiar to the Wellington Province.

According to information supplied by the Meteorological Office, Wellington, there was a persistence of bad rather than a period of extreme weather conditions between August 3 and 14, 1946. According to the Notes of the New Zealand Meteorological Office (1946), "August was a windy month, with frequent rain in most districts.. The westerly type of weather which set in early during July continued with only two brief interruptions. The average atmospheric pressure for the month was unusually low. Hence, except in very protected eastern localities, conditions have been very changeable, with many intensive showers. . . . A feature of the weather of July and August was the unprecedented persistence of rainy days, these continuing without a break for over 30 days at many stations. (e.g., New Plymouth 38 days, Tangarakau, Taranaki, 43 days.) A weak, cold front affected the South Island early on the 12th, and this was soon followed by a pair of fronts connected with a very deep depression travelling south of New Zealand, and giving a record low barometer reading of 948 mb. at Campbell Island at 9 a.m. on 13th. Squally westerly to north-westerly gales were widespread. The weather being showery except in very sheltered localities. . . ."

It is interesting to note that mean temperatures for the month were in the main above normal (Ohakea 1.8 deg.F., and Kapiti Island 1.2deg.

F. above). For the first half of the month, the lowest midday temperatures were for Wanganui, 46deg. on both 3rd and 5th, and for Kelburn, Wellington, 48deg. on the 10th.

Still more interesting are the records of winds off the west coast, North Island, with regard to both coastal reports and gradient winds (which is approximately that prevailing at 3,000ft.) as indicated by the synoptic weather charts. From the 3rd to 13th August, winds over the whole region were persistently from between W.N.W. and S.W. From the 5th onward they were at least moderate in force and often strong. Continuous autographic records at Ohakea show a mean wind speed for the period 3rd to 14th August of 18.6 m.p.h. and on the calmest day of the period there was one gust reaching 33 m.p.h., and the 13th was the windiest day, with a peak gust of 71 m.p.h.

RECORD OF SPECIMENS.

As in the Auckland Province, the majority of the petrels storm-wrecked during the August gales (1946) were broad-billed prions (*P. vittata*).

The following is a list of specimens recorded, arranged geographically:—

NORTH ISLAND.

August 30, 1946.—“Three miles from the Heads on south side of Manukau Harbour, about 20 to the mile were found. Some, but not a great number, were also found inland in gullies. Also inland was a diving petrel, a mutton bird and a dove petrel, a giant nelly, . . . and an albatross.”—(B. S. Irwin, Irwin's Road, Awhitu Central.)

August 26, 1946.—“A broad-billed prion found alive but exhausted a few days previously.”—(L. F. Hoppes, Te Puinga, R.D., Morrinsville.)

August 27, 1946.—“A bird apparently vittata, found dead on 15/8/46 after the storm of the previous night.”—(A. T. Rowe, Te Ko, Taranaki; 30 miles inland.)

September 9, 1946.—“Seven *P. vittata* and two ‘narrow-billed’ birds recorded, all within 500 yards west of the mole at the river mouth; large quantities of driftwood on beach hampering accurate counts. None found on opposite side of river near the airport.”—(W. P. Mead, 27 Cornfoot Street, Castlecliff, Wanganui.)

September 14, 1946.—“Two *P. vittata*: one found in a field behind Marton and another 20 miles inland in Taranaki. Reports received to the effect that 17 prions had been found in a mile stretch at Castlecliff.”—(J. Moreland, Curator, Wanganui Museum.)

August 25, 1946.—“Himitangi Beach; in one mile 12 *P. vittata* and two *Pelecanoides urinatrix*. They had been dead for a considerable time. For many years I have known that for some reason the sea coast fronting Makeraua and Tokomaru has been very destructive to bird life. It blows very hard in this area and on occasions the paddocks are just dotted with dead prions. It was there that mollymawks were found, and this is also where Australian spine-tailed swifts were found; apparently the hills seem to act as a funnel when a heavy westerly is blowing. They were more decomposed than the Morrinsville bird.”—(T. Andrew, Wellington Acclimatisation Society Ranger, 52 Pascal Street, Palmerston North.)

August 26, 1946.—“Three vittata and one turtur were sent from Himitangi Beach by Major Wilson. They were all normal specimens of the New Zealand breeding forms of both species, and were in a starved condition.”—(Dr. R. A. Falla, Christchurch.)

July 28, 1946 (presumably intended for August 28).—"Sixty-seven broad-billed and fairy prions were counted on a 2½ miles stretch of beach between Hokio Stream and Waitare township."—(C. H. Skuse, Hokio Beach School.)

The following inland records were supplied by Dr. W. R. B. Oliver, Wellington:—

TABLE I.

Date.	Located and Reported by	Distance from coast, miles.	Remarks.
7/8/46	Foxton, D. Y. Cole	12	Probably <i>P. vittata</i>
14/8/46	Sanson, T. M. Henson	8	<i>P. vittata</i>
14/8/46	Waitatapia, T. J. Wilson	3	<i>P. vittata</i>
14/8/46	Paraparaumu, K. Hoggard	2	Probably <i>P. turtur</i>
22/8/46	Tiakitahuna, P. Ampney	8	Probably <i>P. vittata</i>
22/8/46	Otaki Gorge, C. K. Arcus	10	<i>P. vittata</i>

As was mentioned above, three sectors of the beach between Plimmerton and Waikanae were inspected by parties of Wellington ornithologists with the following results:—

(i) A mile north of Te Rewa Rewa Point, between Plimmerton and Pukerua Bay, was inspected by Messrs. F. L. Newcombe and A. B. Dixon (on September 1, 1946). This piece of coast is directly exposed to the full force of westerly and north-westerly gales. The following species were recorded:—*Pachyptila vittata*, 16; *Pachyptila turtur*, 4; *Puffinus griseus*, 1; *Puffinus gavia*, 1; *Phalacrocorax varius*, 1; *Larus novaehollandiae*, 2; unidentified prions, 4; total, 29.

(ii) Dr. W. R. B. Oliver, on August 24th, 1946, searched six miles of the beach from the Waikanae River estuary to Paekakariki. The results of his inspection are given in Table II.

TABLE II.

Sector of Beach	Distance in miles	Pachyptila		Pelecanoides urinator	Eudiptula minor	No. of birds Per mile of beach
		<i>vittata.</i>	<i>belcheri. turtur</i>			
Waikanae to Paraparaumu	1	29	1	5	—	35
South of Paraparaumu . . .	1	7	—	—	—	7
Beach for 2 miles south . .	2	—	—	—	—	—
North of Paekakariki . . .	2	17	—	1	2	21
Total . . .	6	53	1	6	2	63

(iii) The writer investigated a sector of the Waikanae Beach on August 21, 1946, and the results of this inspection are given in Table III.

TABLE III.

Sector of Beach	Distance in miles	Pachyptila		Eudiptula minor	No. of birds Per mile of beach
		<i>vittata.</i>	<i>turtur. unidentfd.</i>		
From River Mouth to base of spit	1	11	1	—	12
North of above—					
First mile	1	31	2	—	33
Second mile	1	9	—	—	10
Third mile	1	16	1	1	20
TOTAL	4	67	4	3	1

SOUTH ISLAND.

From August 23 to 29, 1946.—Mr. Charles Fleming inspected several beaches between Port Elizabeth and St. Kilda, and also a mile of beach south of Greymouth mole, not a single bird being found.

A fresh *P. vittata* specimen was picked up, on August 25, 1946, on Carter's Beach, Westport, and sent to the Canterbury Museum. Dr. R. A. Falla informs me that it was a mature bird, possibly three years old, in a very fat condition; it seems unlikely that this bird was cast ashore by the August gales which destroyed so many petrels in the North.

This seems to confirm the theory that very few, if any, birds are cast ashore on the West Coast of the South Island during occurrences of this nature.

OTHER BIRDS.

Other species were cast ashore in relatively small numbers:—Slender-billed prion (*P. belcheri*): one on August 24, fresh, Paraparaumu Beach. Fairy prion (*P. turtur*): the record of specimens cast ashore in different localities of the Wellington Province has been given above. We find also (Tables I.—III.) that for 172 *P. vittata* specimens there were only 16 *P. turtur* (i.e., approximately 9% of the number of *vittata*). This is in full agreement with the figures given by Sibson and Turbott for the Auckland Province. Table IV. places on record some data on *P. turtur* collected at Waikanae on August 21.

TABLE IV.

No.	Weight (grammes)	Culmen (millimetres)		Remarks
		Length	Width	
1.	96.0	23	11	Fresh
2.	141.5	20.6	10.8	Fresh, female
3.	98.0	21.6	10.6	
4.	87.0	20.6	10.5	

The bill measurements fall within the measurements of *P. turtur* from New Zealand grounds. (Falla, 1940.)

Other sea birds found dead since the gale began are:—Little Blue penguin (*Eudyptula minor*), mutton bird (*Puffinus griseus*), fluttering shearwater (*P. gavia*), pied shag (*Phalacrocorax varius*), and red-billed gull (*Larus novaehollandiae*). All these species, like the fairy prion, were found in small numbers and seem to represent a cross section of the winter coastal population of birds along the southern part of the west coast of the North Island.

DISCUSSION.

As stated before, the aim of the present paper is to give a picture of the effects of the August, 1946, storm on birds (in the southern part of the North Island). This may contribute to a better knowledge of "their winter feeding range, of which so little is accurately known." (Falla, 1940.) It is hoped that a full account of this occurrence compared with those of 1918 and 1932, will be ultimately compiled and a comparison with overseas records, especially Australian, made. Such an account may also show to what extent weather conditions and other factors are possibly responsible for taking, at times, such a heavy toll of the prion population.

Before concluding this report I would like to present and discuss some conclusions arising from an examination of prions collected mainly on Waikanae Beach. These facts may throw some light on both the systematics and the physiological state in which the birds died.

The range of variation of different body measurements of a sample of birds collected mainly on Paraparaumu Beach is presented in Table V. These body measurements fall within the dimensions of *P. vittata* from New Zealand breeding grounds:—

TABLE V.—Measurements in Millimetres.

Date Aug. 1946	Locality	Length	Wing	Tail	Tarsus	Toe	Culmen		Collected by
							Length	Width	
24	Beach between	330	211	98	36	42	37.5	22.2	W. R. B. Oliver
24	Waikanae	340	216	103	34	36	36.5	20.4	"
24	and	335	215	108	32	37	31.5	21	"
24	River mouth	330	206	100	35	39	34.2	19.5	"
24	and	320	200	97	33	37	34.2	21.4	"
24	Parapara-	325	217	104	35	38	35.8	21.4	"
24	umu	330	207	97	33	38	37	21.4	"
26	Morrinsville		214	111	35	45	35	21	L. F. Hoppes
	Foxton Bch	330	210		40		32	21	F. H. Robertson
Averages		330	210.66	102.25	34.77	39			

Table VI. supplies us with some information on the more significant dimensional differences in the bills of the broad-billed prion. The majority of these birds were collected on Waikanae Beach. (See also Table III.) It presents an interesting example of a rather extensive range of variation which seems to be much more pronounced in males than in females:—

TABLE VI.
Bill Measurements (in millimetres) of *P. Vittata*.

No. of Birds.	LENGTH				CULMEN.		WIDTH		Standard Deviation
	Longest.	Shortest.	Mean.	Standard Deviation	Widest.	Narrowest.	Mean.		
72 sexed and unidentified	38	31.5	34.595	*†1.532	23.8	19	21.256		*†0.935
16 male	36.6	32	34.544	*†1.352	23.8	20.2	21.681		*†0.906
15 female	36.5	32.5	34.393	*†0.923	22.5	19.5	20.866		*†0.841

*† Indicates plus minus.

Forty-five birds (including all those sexed) were collected at Waikanae Beach on August 21st, 1946, by K.A.W.

The specimens of *P. vittata* collected on Waikanae Beach afforded an opportunity of considering the weight of a number of emaciated birds and also the stage of their gonads. Forty-five birds were examined, of which thirteen could not be sexed and sixteen each were males and females. The standard deviation of all 45 birds was 154.52gms., plus minus 16.85, while the average weight of unsexed birds was 160.73gms., that of a male 148.03gms., and that of a female 155.96gms..

According to Falla (1940) throughout the whole "known breeding range the annual laying date is early in the month of September." Measurements (the greatest length of testes and the diameter of the largest follicle) have been taken in 15 males and 13 females.

The average greatest length of the testis was as follows:—3mms., 1 bird; 4 and 5 mms., 3 birds each; 6 and 8 mms., 1 bird each; 9 mms., 5 birds; 10 and 11 mms., 1 bird each. Eight females had very small ovaries, in four the diameter of the largest follicle was 3 mms., and in one bird, 4 mms.

Little is known about the seasonal increase in size of the gonads of *P. vittata* in the pre-laying period. It seems, however, likely that the birds from the Wellington Province compared with those from Auckland

were in a less advanced breeding condition, or alternatively, most of the birds cast ashore were sexually immature.

I wish to record the kind assistance of the Meteorological Office, Wellington, and especially Dr. C. J. Seelye, for providing and discussing the meteorological data, and of Miss Nancy Cooper, B.Sc., for compiling the statistical part, and last, but not least, my thanks are due to all who have contributed to this paper by providing valuable information and material.

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NOTES ON THE BIRDS OF MOKOHINAU.

By Major G. A. Buddle, Auckland.

The following birds were observed during a visit to the Mokohinau group, extending from November 23 to 28, 1945. Burgess Island, on which the lighthouse stands, is the largest; to the west of Burgess Island lie two other smaller ones and a number of rocky islets. Fanal Island, which lies about three miles to the south, was not visited. All these islands are covered with a very stunted vegetation consisting chiefly of pohutukawa, ngaio, veronica, flax, tussock, etc.

Red-fronted parakeet (*Cyanorhamphus novaeseelandiae*).—Not plentiful; seen mostly along the cliff faces.

Tui (*Prothemadera novaeseelandiae*).—Three were seen on West Island, probably temporary visitors from Little Barrier or Hen Island; they were seen only on one occasion, and the resident caretaker said he had not seen tuis there before.

Pipit (*Anthus novaezealandiae*).—Fairly well distributed on all the islands.

Harrier (*Circus approximans*).—Two pairs frequented a red-billed gull colony and kept a perpetual state of alarm among the gulls as they passed to and fro.

Starling (*Sturnus vulgaris*).—In fair numbers.

Blue penguin (*Eudyptula minor*).—A nest with two chicks in dark brown down was placed behind an oil drum in a shed on the beach; several burrows were seen on the western islands.

White-fronted tern (*Sterna striata*).—About six pairs were nesting on the cliffs below one of the red-billed gull groups.

Red-billed gull (*Larus novae-hollandiae*).—A large colony estimated at 18-20,000 (including unemployed birds). This figure is considerably larger than Fleming's preliminary census of 1944. (See separate article