

May 25: 150 on mudflats. Since March 10th the numbers have been fairly constant at about 120. All are in "eclipse," and apparently non-migratory. (P.C.B.)

Whangapoua Harbour:

May 13: About 30 on harbour side of Matarangi Peninsula; all seemed in eclipse and apparently non-migratory. (P.C.B.)

Muriwai:

March 10: 140 birds; a few in red plumage, apparently migration not yet occurred.

May 24: 25, all in eclipse. (P.C.B.)

Muriwai to South Kaipara: (Figures in brackets indicate that only part of the beach was covered.)

21 Feb.	350	7 April	Nil
10 March	228	21 April	35
23 March	(11)	5 May	35
31 March, 100 (many in red breeding plumage)		24 May	37
		9 June	41
			(C.A.F.)

Okarito Lagoon: Some hundreds present Dec.-Jan., 1939-40. (R.B.S.)

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10. WHITE-FRONTED TERN (*Sterna striata*).

The following observations were made by C. A. Fleming:

The tradition that Chatham Island population of this species leaves the group in winter was the incentive to counting and observation of mainland birds in winter of 1939. After breeding season, young and old congregate on sandy coasts often some miles from breeding ground, and spend time at high tide sitting on shell banks. This behaviour apparently covers moulting. Waikanae R.: January 1939, mob of about 200 birds—young and old (Kapiti breeders?). A single Arctic tern was with them—see elsewhere. 8th April, 1939, between Milford and Waiwera (N. Akld.) several mobs (200, 250, and smaller numbers). Fair percentage of young. No adults had streamers.

15/4/39—Tapu, Coromandel, 240 birds on beach—only 4 showed dark backs of immature birds—some in adult plumage (judged young already moulted—very doubtful). None with streamers; all with broad white foreheads—a few with flecks on black heads. Flock joined by parties of few birds from sea, with fish. Others left periodically. General habit of preening and dropping moulted feathers.

3/6/39.—75 birds only present; still moulting. 2 or 3 showing juvenal backs. No streamers.

(In July, 1936, an adult was washed up with streamers fully grown.)

7/7/39. 12 birds present.

29/7/39. No flocks present; a few seen at sea and a dead bird (wounded at breast) found near creek with moulted feathers and droppings indicating that flock was present at some time of day (night). The dead bird had small but adult testes (male), fine fish bones in proventriculus; moult conspicuous on breast, where new feathers were suffused with pink glow. Streamers were quite conspicuous (new feathers). Head with few white flecks.

18/8/39. No flock on beach.

16/9/39. Again no flock on beach but a dead bird—immature male with adult plumage except for slight brownish mottling on wing border, and dark tail without streamers. Testes small but light coloured as if developing. No flocks in October.

Two birds found dead in June, 1937, had already developed streamers and one had lost the white-flecked head. Apparently casualties are due to cats or dogs which catch the birds, gorged or resting at night, but do not maul the bodies.

There is thus little evidence for migration away from coasts, but indication of more pelagic habits, possibly resting ashore at night. Mangowai: 24/11/39, one colony of 20 pairs, all with eggs, was adjoining a Caspian tern colony. A second colony, of about 170-200 birds with eggs, was about $\frac{1}{4}$ mile distant and isolated from others.

Additional Observations.

The trips from Muriwai to South Kaipara Heads begun in February, 1940, are a much more satisfactory index of tern movements than the 1939 records:

Feb. 21	March 10	March 23	March 31	April 7	April 21	May 5
662	7	(19)	350	(80)	300	800

The population is larger than that which the only breeding colony at present known within 30 miles could support. Variation in numbers present on the beach seems somewhat dependent on weather conditions. Strong westerlies appear to force larger numbers of birds on to the beach than are present in calm weather. As before () indicate incomplete counts. (C.A.F.).

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11. PUKEKO (*Porphyrio melanotus*).

The following study was made by P. C. Bull:

Mangere: 30 acres swamp and 20 acres rush-covered flat. Whole swamp practically dry in January.

Population before shooting season: 1939, about 24; after shooting, 16.

Population before shooting season: 1940, about 35; after shooting, 22.

Another small swamp a mile to the west often has about 12 birds not included in above figures though birds probably move from one to the other. When swamp dries in summer many leave and spread over countryside, many to rushes bordering the harbour, others frequently seen along hedgerows.

Food: Gizzards of birds shot in May, 1939, invariably contained vegetable matter—mainly roots of swamp plants, some young grass, and grass roots.

Nesting: Dates and clutches:

Aug. 24, 1938	5 eggs	Dec. 21, 1938	1 egg
Dec. 18, 1938	5 eggs	Dec. 21, 1938	4 eggs
Dec. 18, 1938	2 eggs	Feb. 15, 1940	9 eggs

Adaptation to Open Shooting Season: Before May are in open paddocks and wander to edge of swamp if approached. If followed, fly up in ones and twos from the swamp at close range. Since shooting started they cannot be approached within 200 yards and when surprised in the swamp run rather than fly. Also the population has become more scattered.

12. HEDGEHOGS AND GROUND-NESTING BIRDS.

From observations made by P. C. Bull.

The hedgehog was unknown in Mangere before 1932, but since then has become very numerous throughout the district. During December, 1938, I located about 12 lark's nests in my immediate neighbourhood to see if hedgehogs destroyed any appreciable number. Of the 12 nests for which I have complete results:—

- 1 was destroyed by a hedgehog (I actually discovered the animal eating the eggs, in mid-afternoon).
- 6 were raised successfully
- 2 fell victims to their situation,
- 3 were destroyed by unknown agencies.

As rats are numerous in the district these last cannot be all attributed to hedgehog depredations.