

RELATIVE ABUNDANCE OF BIRDS ON KAPITI.

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A series of strip census counts of birds on Kapiti Island Bird Sanctuary was made over a ten-day period in November, 1942, with an idea of gaining an indication of the relative abundance of the various species, rather than the actual number. It appears much safer ground to concentrate on known, restricted areas of a particular type of country and try to assess the population of these areas and avoid a multiplication in which the basic factors may have a wide margin of error.

The basis of the respective counts was to take a known distance in chains and include an imaginary line about five chains on either side of the bisecting line, so that every chain in length represented an acre over which the count was made. Hence calculations are made as simple as possible. In order to allow for probable variations in the presence of birds at different times of the day, the counts were likewise varied; usually, for the smaller areas, they occupied half-hour periods at any time of the day. An analysis of counts follows, figures for each species relate to maximum number in one count, total number in all counts and average per 10 acres, given in that order:—

Area A.—Caretaker's house northward to Ngaio Patch, 10 chains, area 10 acres, eight counts: Whitehead, 8, 48, 6; starling, 9, 48, 6; native pigeon, 6, 25, 3; bellbird, 5, 23, 2.8; red-fronted parrakeet, 6, 23, 2.8; tui, 4, 18, 2.2; kaka, 3, 11, 1.8; goldfinch, 2, 7, .8; blackbird, 2, 6, .7; chaffinch, 2, 6, .7; long-tailed cuckoo, 2, 5, .6; pied fantail 2, 5, .6; kingfisher, 2, 4, .5; weka, 2, 4, .5; tomtit, 1, 3, .3; Californian quail, 1, 3, .3; robin, 1, 3, .3; pipit, 2, 2, .2; skylark 1, 2, .2; house sparrow, 1, 1, .1; hedge sparrow, 1, 1, .1. Little blue penguin, 3 nests.

Area B.—Caretaker's house southward to Chappie's Camp, 12 chains, area 12 acres; ten counts: Whitehead, 13, 75, 6.25; bellbird, 8, 47, 3.9; red-fronted parrakeet, 9, 45, 3.75; tui, 7, 31, 2.55; robin, 4, 22, 1.8; pied fantail, 6, 18, 1.5; native pigeon, 4, 16, 1.3; starling, 4, 12, 1; weka, 5, 10, .8; kaka, 3, 8, .65; blackbird, 2, 5, .4; long-tailed cuckoo, 2, 5, .4; goldfinch, 2, 3, .25; Californian quail, 1, 3, .25; house sparrow, 2, 2, .15; white-eye, 1, 2, .15; redpoll, 2, 2, .15; kingfisher, 1, 1, .08; skylark, 1, 1, .08. Little blue penguin, 7 nests alongside track.

Area C.—House to Te Rere, 27 chains; area, 27 acres; two counts: Whitehead, 6, 11, 2; tui, 5, 6, 1.1; red-fronted parrakeet, 2, 3, .5; bellbird, 1, 2, .3; starling, 1, 2, .3; weka, 2, 2, .3; long-tailed cuckoo, 1, 1, .18; blackbird, 1, 1, .18; robin, 1, 1, .18; kaka, 1, 1, .18; native pigeon, 1, 1, .18; kingfisher, 1, 1, .18.

Area D.—Te Rere to Webber's Stream; 92 chains; area, 92 acres. Six counts: Bellbird, 14, 43, .78; whitehead, 11, 40, .73; red-fronted parrakeet, 10, 30, .55; starling, 4, 10, .16; tui, 2, 5, .08; weka, 2, 5, .08; long-tailed cuckoo, 3, 5, .08; yellowhammer, 1, 3, .05; native pigeon, 3, 3, .05; blackbird, 1, 2, .03; kaka, 1, 2, .03; pied fantail, 1, 2, .03; hedge sparrow, 1, 1, .01; robin, 1, 1, .01; Californian quail, 1, 1, .01; kingfisher, 1, 1, .01; goldfinch, 1, 1, .01; tomtit, 1, 1, .01.

Area E.—Webber's Stream to Lake; 50 chains; area, 50 acres. Three counts: Starling, 18, 46, 3; Californian quail, 3, 9, .6; skylark, 4, 9, .6; yellowhammer, 3, 5, .32; red-fronted parrakeet, 3, 5, .32; chaffinch, 3, 5, .32; goldfinch, 3, 4, .26; redpoll, 2, 4, .26; tui, 2, 4, .26; blackbird, 2, 3, .2; song thrush, 3, 3, .2; hedge sparrow, 2, 3, .2; pipit, 2, 3, .2; greenfinch, 1, 2, .12; pied fantail, 1, 2, .12; harrier, 1, 2, .12; bellbird, 2, 2, .12; long-tailed cuckoo, 1, 1, .06; house sparrow, 1, 1, .06; weka, 1, 1, .06.

Area F.—Okupe Lake and neighbourhood. Three counts. (Average in this case for Lake and nearby area): Grey duck, 256, 687, 262.3; paradise duck, 41, 67, 22.3; shoveller, 25, 53, 17.6; pied stilt, 20, 49, 16.3; mallard, 18, 30, 10; banded dotterel, 6, 11, 3.6; black swan, 3, 7, 2.3; black shag, 1, 1, .3.

Area G.—Chappie's Camp to Trig, via Track (portion of return trip was made via old track through considerable area of manuka); 100

chains; area, 100 acres. Two counts (up and down); figures, total and average for 10 acres: Whitehead, 68, 6.8; bellbird, 26, 2.6; robin, 22, 2.2; red-fronted parakeet, 14, 1.4; yellow-fronted parakeet, 4, .4; tui, 16, 1.6; weka, 14, 1.4; kaka, 9, .9; long-tailed cuckoo, 6, .6; pied fantail, 5, .5; blackbird, 3, .3; tomtit, 3, .3; native pigeon, 3, .3; kingfisher, 1, .1; more-pork, 1, .1.

Areas A, B, C. and D comprise coastal fringe vegetation with some grass lands; area E is open grass land at the northern end of the island; area F is the Okupe Lake, and area G is nearly all heavily bushed with a belt of manuka on the lower hillsides facing the mainland. In the case of area D the count was made on the eastern side of the ten-chain strip; in all others the count included birds seen on both sides of the bisecting line.

The census showed that the whitehead was undoubtedly the most numerous bird on the sanctuary, there being about twice as many as the bell-bird and about three times more than the parakeet, robin and tui, all of which were about equal in numbers. Slightly lower down the list were the starling and the weka. Other notable features were the scarcity of the tomtit, the extreme scarcity of the silvereye and the complete absence of the grey warbler, a species, however, that has been recorded on Kapiti. It is noteworthy that out of 48 parakeets seen during the taking of the census (excluding additional birds heard) only four were the yellow-fronted species: all the others were red-fronted. The yellow-fronted birds were seen over the 1000ft. altitude line.

No attempt was made to assess the numbers of the mutton bird breeding on the island. Mr. A. S. Wilkinson has recorded (see appendix) an increase in the population of this species.

It must be emphasised that since 1924 a vast change has taken place in the conditions on Kapiti; one that has an important bearing on the bird population. In 1924 the sanctuary was overrun with sheep and goats so much so that considerable areas were denuded of undergrowth. Following the destruction of all goats and the removal of the sheep, the bush has regenerated vigorously and is reclothing former grass areas. This, no doubt, has contributed to an increase in the numbers of bush species.

It is more convenient to deal with the counts of the gulls in a separate section. On the shingle bank at the northern spit of the island there has been a black-backed gull colony for many years. A count of nests made in two successive years gave the following details:—

November 6, 1942: Empty, 12; one egg, 4; two eggs, 37; three eggs, 63; one young, 2 eggs, 3; two young, 1 egg, 1; two young, 1; total, 120.

November 9, 1941: Empty, 30; one egg, 12; two eggs, 29; three eggs, 59; one young, 1 egg, 1; total, 129.

Other counts made in 1941 were:—Rangatira Point, 2 nests; south to waterfall, 2; waterfall to Wharekohu, 16; around Wharekohu, 16; between Te Rere and Webber's Stream, 5; Tokomapuna Island, 54 (most of them empty, only five with three eggs and five with one or two eggs). This gives a total of 95 nests on the eastern side of the island and Tokomapuna Island, plus 129 at the northern spit; a grand total of 224.

In November, 1941, a breeding colony of the red-billed gull was located on a rock at Te Rere. A count on November 10, gave a minimum of 203 birds, and at that date there were 21 nests with one egg, and eight with two eggs. The next day there were 20 nests with one egg and 12 with two. On November 17, 39 nests had one egg, 39 two eggs, and two nests had three eggs.

On rocks off the northern end of the island in 1941 both the red-billed gull and the white-fronted tern were breeding. One rock had 26 nests of the tern (12 with one egg, 14 with two eggs), and six nests of the gull (two with two eggs, one with one egg). A second rock had three terns' nests; a third had 52 terns on it, with 14 nests; two con-

tiguous rocks had another 12 terns' nests; a total of 55 terns' nests and six red-billed gulls' nests. There was a single terns' nest at the gull colony at Te Rere, with one egg.

In an appendix I give the leading points of previous references relating to the number of birds on Kapiti and published in reports that may be overlooked.:

APPENDIX I.

In October, 1906, Dr. L. Cockayne (Report on a Botanical Survey of Kapiti Island, 1907) stated: Pigeon, "in great numbers"; tui and bell-bird, "heard everywhere"; robin, "quite numerous"; whitehead, "by no means rare"; muttonbird, "breeds at two places on summit."

All the tuis left Kapiti on March 18, 1918, stated Mr. J. L. Bennett, caretaker (Scenery Preservation, Annual Report, March 31, 1919) and returned on August 24. Though still numerous they were not as plentiful as they were before they left. On May 24, Mr. W. H. Field, M.P., spoke of reappearance of tuis in the Waikanae district. Mr. Bennett said that no doubt they went to Waikanae from Kapiti. After August, it was reported that there were very few at Waikanae. In the following year, Mr. Bennett reported the tuis to be greatly reduced in numbers, also the whitehead and the fantail. A few years ago the robin was seldom seen; at present it was everywhere.

In the 1924 Scenery Preservation report, Mr. Johannes C. Andersen, at one place in Waterfall Valley, in less than half an hour, stated that he saw 20 to 30 whiteheads, six bell-birds, two tuis, one fantail, one kaka and a flight of finches, while other birds were heard. He mentions seeing for the first time on the island the grey warbler, at three localities.

Mr. A. S. Wilkinson, who took up duty on Kapiti Island as caretaker in 1924, has included in his annual reports to the Department of Lands, published in the Scenery Preservation Report, 1925-1941, records which include references to the fluctuations in the numbers of birds on Kapiti. Notable among these is a scarcity of the fantail in the 1930-31 breeding season, when there were only three or four pairs in different parts of the sanctuary, whereas in earlier years he knew of six or eight pairs handy to his house. It increased again each succeeding year until it reached its usual numbers in the 1934-35 season. Similarly, a decrease in the numbers of the tomtit was recorded in the 1935-36 season, a state of affairs that continued until the 1938-39 breeding season, after which it became more numerous again. He recorded during his 18-year period on the island a definite increase in the numbers of the robin, which was to be seen in places where previously there were none, and in his 1939 report he stated that there were "twice as many as in 1924." In January and February, 1933, he saw more grey warblers than during his previous eight years on the island and one was seen with a young shining cuckoo. He recorded many fluctuations in the numbers of the long-tailed cuckoo. Kakas were more numerous in the 1933-34 season than in previous years. He recorded no increase in the numbers of the blue heron (four pairs) except that a pair bred for the first time on Tokomapuna Island in the 1930-31 season and had continued to do so since then. In the Emu, Vol XXVI, 237-258 (1927), Mr. Wilkinson recorded the whiteeye, kaka and pigeon as flying to and from the mainland. Species which he recorded as having increased during his period on the island (Scenery Preservation Report) included the whitehead, robin, kiwi (*Apteryx australis* and *A. oweni*), bellbird, red-fronted parakeet, mutton bird, pigeon, white-fronted tern, red-billed gull and black shag.

APPENDIX II.

SPECIES BREEDING ON KAPITI.

Brown Kiwi (*Apteryx australis*) and Little Grey Kiwi (*Apteryx oweni*).

Five introduced in 1912; 7 in 1923; species not differentiated; increasing.

Little Blue Penguin (*Eudyptula minor*).—A common breeding bird.

Mutton Bird (*Puffinus griseus*).—Common on main ridge; increasing.
 Black Shag (*Phalacrocorax carbo*).—In small numbers, increasing.
 Paradise Duck (*Tadorna variegata*).—Introduced in 1930; increasing.
 Grey Duck (*Anas poecilorhyncha*).—In small numbers; many visitors.
 Shoveller (*Anas rhynchotis*).—Bred 1929-30 season. (A. S. Wilkinson.)
 Grey Teal (*Anas gibberifrons*).—Bred in 1929-30 season. (A.S.Wilkinson.)
 White-fronted Tern (*Sterna striata*).—Common.
 Black-backed Gull (*Larus dominicanus*).—Common.
 Red-billed Gull (*Larus novaehollandiae*).—Fairly common.
 North Island Oystercatcher (*Haematopus reischeki*).—Bred one year on Tokomapuna Island. (A. S. Wilkinson.)
 Banded Dotterel (*Charadrius bicinctus*).—Near Okupe Lake.
 Pied Stilt (*Himantopus himantopus*).—Near Okupe Lake.
 Weka (*Gallirallus greyi*).—Fairly common.
 Blue Heron (*Demigretta sacra*).—Scarce; no increase.
 Californian Quail (*Lophortyx californica*).—Scarce.
 Native Pigeon (*Hemiphaga novaeseelandiae*).—Fairly common.
 Harrier (*Circus approximans*).—Scarce.
 Morepork (*Ninox novaeseelandiae*).—Scarce.
 Kaka (*Nestor meridionalis*).—Scarce.
 Red-fronted Parrakeet (*Cyanoramphus novaeseelandiae*).—Common.
 Yellow-fronted Parrakeet (*Cyanoramphus auriceps*).—Scarce.
 (?) Kakapo (*Strigops habroptilus*).—Three introduced in 1912; last seen 1936. (A. S. Wilkinson.)
 Shining Cuckoo (*Chalcites lucidus*).—Extremely scarce.
 Long-tailed Cuckoo (*Eudynamis taitensis*).—Fairly common; numbers fluctuate.
 Kingfisher (*Halcyon sanctus*).—Scarce.
 Pipit (*Anthus novaeseelandiae*).—Fairly common.
 Grey Warbler (*Pseudogerygone igata*).—Very scarce.
 North Island Tomtit (*Petroica m. toitoi*).—Numbers fluctuate.
 Robin (*Miro australis*).—Common; increasing.
 Pied Fantail (*Rhipidura fuliginosa*).—Common; numbers fluctuate.
 Whitehead (*Mohoua o. albicilla*).—Very common.
 Whiteeye (*Zosterops lateralis*).—Scarce breeder; sometimes very common winter visitor.
 Tui (*Prosthemadera novaeseelandiae*).—Common; numbers fluctuate.
 Bellbird (*Anthornis melanura*).—Common; increasing.
 (?) Saddleback (*Creadion carunculatus*).—Introduced in 1925; bred 1926; last seen 1932. (A. S. Wilkinson.)
 Greenfinch (*Chloris chloris*).—Scarce.
 Chaffinch (*Fringilla coelebs*).—Scarce.
 Redpoll (*Carduelis cabaret*).—Fairly common.
 Goldfinch (*Carduelis carduelis*).—Scarce.
 House Sparrow (*Passer domesticus*).—Scarce.
 Yellowhammer (*Emberiza citrinella*).—Rare.
 Song Thrush (*Turdus ericetorum*).—Scarce.
 Blackbird (*Turdus merula*).—Scarce.
 Hedge Sparrow (*Prunella modularis*).—Scarce.
 Skylark (*Alauda arvensis*).—Scarce.
 Starling (*Sturnus vulgaris*).—Fairly common.

OYSTERCATCHER SWIMMING.—Reference is made in this journal (Vol. 2, No. 5, page 124) to the swimming of the oystercatcher. In 1928 I photographed a young black oystercatcher (*Haematopus unicolor*) in its kelp nest on the beach on the south coast of Stewart Island—a perfect example of protective mimicry, for my companions watched me take the photograph, and, though they were not four yards from the bird, they had not seen it, till I lifted it up and showed it to them. When I put it down again it made for the water and swam strongly across the bay with the parent birds screeching above it. This bird was only partially fledged and, of course, lacked the webbed toes of the swimming birds.—(W. Martin, Dunedin Naturalists' Field Club.)