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## NOTES ON THE HEIGHT REACHED BY SOME SPECIES OF BIRDS ON THE MOUNTAINS OF THE NORTH ISLAND

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These notes are mainly the outcome of observations made since 1954 in the National Parks of Tongariro and Egmont. I have also thought it worthwhile to include jottings from Waikaremoana, and from Tauhara, the isolated volcanic cone situated near the northern end of Lake Taupo.

During three visits to the Tongariro National Park, January 10-20, 1954, January 21-23, 1955, January 20-26, 1957, I have covered by walking much of the country between 3,000 and 5,000 feet on the northern slopes of Ruapehu. In 1955 I stayed at the Dawson's Falls Hostel on the south-eastern side of Egmont from January 9-13; and on 9/5/56 a hasty visit was paid to the mountain immediately above the North Egmont Hostel, when a howling southerly was blowing. In 1956 I was at Waikaremoana from January 26-31; and on 19/1/57 I climbed Tauhara.

A.A. maps have been most helpful in obtaining the height above sea-level of conspicuous features of the landscape; and for the south-east sector of Egmont a splendid little map is issued by the Dawson's Falls Hostel. In estimating how high different birds go on the mountains of the North Island, I have found the following fixed points most useful.

(a) Tongariro: Junction of Mountain Road with National Park - Turangi Road, 2,900 feet; The Chateau, 3,710 feet; Salt Hut, 5,080 feet.

(b) Egmont: Dawson's Falls Hostel, 3,100 feet; Hooker Hut, 3,850 feet; Kapuni Lodge, 4,700 feet.

(c) Waikaremoana: Lake Waikareiti, 2,900 feet; Ngamoko trig, 3,644 feet.

(d) Tauhara, 3,608 feet.

In the Tongariro National Park between approximately 3,000 and 5,000 feet, great stretches of the northward-facing slopes of Ruapehu are open 'steppe' or moorland, where the scrub which may reach a height of three or four feet is a mixture of stunted manuka, *Dracophyllum*, *Hebe* (*buxifolia* and *tetragona*), *Olearia nummularifolia*, *Senecio bidwilli*, etc, with more open patches of tussock and bog.

Pipit, Skylark, Dunnock and Lesser Redpoll are the only birds which have a general distribution on these open slopes. The valleys of the mountain streams, e.g. the Wairere, below the Taranaki Falls and the numerous streams to the west of the Chateau are filled with forests in which beech (*N. cliffortioides*) is dominant, and there is a sprinkling of sizable toa-toa (*Phyllocladus alpinus*), Kaikawaka (*Libocedrus bidwilli*), pink pine (*Dacrydium biforme*), papaumu (*Griselinia littoralis*), five-finger, etc. The upper edge of the beech forests is at about 4,200 feet. Lower down they may end sharply at the rims of the valleys, so that the abrupt change from beech forest to open country is a characteristic feature of this landscape. Rifleman, Pied Tit and Grey Warbler are plentiful throughout the beech forest in summer, and the Chaffinch has made itself thoroughly at home. Are they still there in winter when the snow on the mountain comes below the 4,000-foot level? In the shelter of the gully-heads above the beech-line there is often a dense scrub, including bog-pine (*D. bidwilli*), which harbours the hardiest of the

arboreal passerines, Grey Warbler, Redpoll, Dunnock, Chaffinch and Blackbird. Above 4,500 feet, except in a few sheltered niches, the vegetation quickly thins out till by 5,000 feet there is little but bare rock. Here are found the highest Pipits.

The mixed forest of the lower levels, e.g. at Ohakune, Erua, Waimarino, does not come within the scope of this paper.

The difference between the mixed forest of Egmont at 3,000 feet and the beechwoods of Ruapehu at the same height is quickly discernible even to the veriest amateur among botanists. On Egmont, towai (*Weinmannia racemosa*) and Kotukutuku (*Fuchsia excorticata*) are abundant up to, c. 3,500 feet, and probably account for the abundance of Tuiss, Bellbirds and Silvereyes above 3,000 feet as contrasted with their scarcity even in the lower fringes of the Ruapehu beechwoods. But Rifleman, which are lovers of the beech and are common up to 4,000 on Ruapehu, are scarce at 3,000 feet on Egmont. As one ascends through the upper Egmont *Weinmannia-Fuchsia* forest, with its sprinkling of totara, kaikawaka, papaumu, etc, and the height of the trees declines, one reaches a distinct zone of tangled vegetation, 15-20 feet in height, in which, evidently attracted by the konini, Bellbirds are still common in summer. Above this is a well-marked zone of six-foot scrub dominated by woody *Senecio eleagni-folius*, *Hebe buxifolia* and *Cassinia fulvida* also being plentiful. This is the realm of the Dunnock and the Lesser Redpoll, whose breeding population between 3,500 and 4,000 feet on Egmont must be considerable. Grey Warbler, Chaffinch, Blackbird and Songthrush also breed in this scrub.

The track to the top of Ngamoko leads through mixed forest, which includes podocarps; nectar-producing trees such as rata and tawari (*Ixerba brexioides*) and many fine beeches. This rich variety is missing from Tauhara, on which there is no beech, podocarps are inconspicuous and the dominant tree is kamahi or towai. For help in the identification of plants, my thanks are due to Mr H. R. McKenzie.

In *Birds and Men* (1951) E. M. Nicholson mentions some heights in Britain and on the continent of Europe up to which he has found some of the species which are among the introduced birds of New Zealand. It is interesting to compare his figures with mine. In Britain he comments upon Skylarks at 2,000 feet in the Cheviots and Blackbirds at 1,400 feet in the Scottish Highlands. It is sometimes said that above 1,000 feet in Britain the Blackbird is replaced by the Ring Ousel (*Turdus torquatus*). Nicholson describes the Greenfinch as a lowland bird, his highest record being at 780 feet on the South Downs; Goldfinches are 'not much met with above the 1,000-foot contour', and of the Yellowhammer he says that he has never found it above 1,000 feet in England and Scotland. However, in the French Alps Goldfinch and Chaffinch went all the way from 2,370-5,300 feet, stopping lower than the Yellowhammer, which went up to 5,500 feet. In the High Pyrenees I have myself found Chaffinches just below 6,000 feet. In the Tirol and Switzerland, Dunnocks were present in conifer scrub at 6,500 feet.

These notes are only a beginning and make no claim to completeness. A critical reader will easily find gaps which he may be able to fill. There is no mention of certain species of which I have no personal experience, e.g. Kiwi (*A. australis*), which has a widespread, if discontinuous, distribution, Piopio (*Turnagra capensis*) and Bush Wren (*Xenicus longipes*), both of which have recently been reported from Waikareiti. Even petrels of one or more species qualify for inclusion, for there are old 'muttonbirding' sites on Ruapehu, Pihanga, Panekiri Bluff and probably elsewhere.

It is hoped that other observers will be spurred to make similar notes elsewhere, not only in the North Island, where Hikurangi (5,606 feet), near the East Cape, and the tops of the Kaimanawas, Ruahines and Tararuas should prove interesting; but also in the South Island, where the scope is unlimited.

## NOTES ON VARIOUS SPECIES

**NEW ZEALAND DABCHICK.** The lakes of the volcanic plateau at c. 1,000 feet are a stronghold of this bird, which reaches its greatest height at Waikareiti. On 28/1/56 I was taken over much of this lake, but only noted one pair and a single bird. In 1946 K. M. Sorby saw a pair on Roto-pounamu under Pihanga. The Dabchick ought to be on Rotoaira; but there are no recent records.

**BLACK SHAG.** Visits Waikareiti and Rotoaira. Reported from Dawson's Falls by Mr and Mrs J. Prickett.

**WHITE-THROATED SHAG.** Present on Rotoaira.

**PARADISE DUCK.** I have never seen any in the Tongariro National Park, but am told that a pair breeds every year near The Chateau golf course.

**GREY-DUCK (and GREY-MALLARD CROSS).** Present on Waikareiti and Rotoaira.

**BLUE DUCK.** I have failed to find any on the higher streams among the beech forests of the National Park. There are said to be some lower down in the gorges.

**NEW ZEALAND SCAUP.** A flock of 26 and two separate pairs on Waikareiti on 25/1/56, where they evidently breed. These must be the highest Black Teal in the North Island. Another high lake where they breed is Rotoaira, where on 26/1/57 in one bay I saw c. 40, including three broods of four, three and two ducklings.

**HARRIER.** Widely distributed but not numerous in the Tongariro National Park, where it ranges up to c. 5,000 feet. On Egmont one was seen just below Fantham's Peak.

**BUSH-HAWK.** My only record of this bird above 3,000 feet is of one near the top of the Desert Road on 12/5/52. I had expected to find the Bush-hawk near The Chateau; but it seems that the beech forest is too sparsely populated with the larger forest birds on which it prefers to prey.

**BANDED DOTTEREL.** Though Oliver (*New Zealand Birds*, Ed. 2, 261) reports them from 4,500 feet on Mt Tongariro, I have not been able to find any; but I have not visited the shingle fan of the River Wangaehu to the east of Ruapehu. Dr O. F. Lamb was surprised to find a loose flock of about 20 birds daily during the third week of November, 1957, on the Chateau golf-links. In January, 1957, D. H. Binney saw a pair of Banded Dotterels, evidently breeding, in a bleak wilderness of bare rock near the top of Mt Tarawera at c. 3,600 feet.

**RED-BREASTED DOTTEREL.** According to Oliver (*New Zealand Birds*, Ed. 2, 258) this species 'has been observed at a height of 6,000 feet on Mt Egmont'. This is very puzzling, for such a habitat is so very different from the coastal dunes and beaches where this fine dotterel continues to thrive in the far north and the far south of New Zealand.

**BLACK-BACKED GULL.** c. 10 drifting over Rotoaira on 26/1/57 are the highest I have seen. This gull breeds on Lake Taupo; and may well do so at Rotoaira. I once wrote (Bulletin of the O.S.N.Z., II, 1941-1942, 8) 'I have been told that there is a small and rather inaccessible lake on Tongariro where "small" gulls nest. These might well be *L. bulleri*.' Black-billed Gulls and Red-billed Gulls visit Taupo. I have yet to find either species on or near Tongariro.

**BLACK-FRONTED TERN.** Reported (Buller: *History of the Birds of New Zealand*, 2nd Ed., 1888) formerly to have bred in some numbers on the upper reaches of Wangaehu; and seen by Stead (*Life Histories of New Zealand Birds*, p. 25) on the 'Waiouru plains'. Both authors may be referring to the same locality, the shingle fan and the Rangipo desert, east of Ruapehu. No recent records.

**NEW ZEALAND PIGEON.** Though the Pigeon is well distributed in the forest at c. 2,500 feet, e.g. near Erua and Pokaka, I have been unable to find it in the beech forest near The Chateau. On Egmont a few may be found in the mixed forest immediately above Dawson's Falls, two at c. 3,200 feet being the highest. Pigeons were seen near the top of Tauhara at c. 3,500 feet, but could not be found above c. 3,000 feet in the Waikaremoana bush.

**N.I. KAKA.** I have not been able to find the Kaka either in the Ruapehu beech forests or on Egmont. They are not uncommon in the bush around Waikareiti and have recently been reported by J. C. Clarke from the top of Tauhara.

**YELLOW-CROWNED PARAKEET.** The common Parakeet of the forest above Waikaremoana is the Yellow-crowned (*C. auriceps*); but according to G. E. Sopp the Red-fronted (*C. novaezelandiae*) also occurs, but is very rare. All the Parakeets which I could positively identify around Waikareiti, up the old Gisborne road and on Ngamoko were Yellow-crowned. In the Tongariro National Park I have seen only a single Parakeet. It was in flight above an isolated patch of bush near the Tawhai Falls at c. 3,100 feet.

**SHINING CUCKOO.** I have not heard a single Shining Cuckoo in the beech forest of the Tongariro National Park, where, in view of the abundance of the Grey Warbler, it is a surprising absentee. On Egmont it was frequently heard above 3,000 feet; and from one in the six-foot scrub at c. 3,500 feet came both the characteristic whistle and also the 'tsiu' call notes. Singing continued to the end of January at Waikaremoana.

**LONG-TAILED CUCKOO.** In mid-January a few Long-tailed Cuckoos are usually present in the Ruapehu beech forest on a level with the highest Whiteheads, i.e. 3,700-4,000 feet. In 1954 I located only one bird. In 1955 and 1957 calls were heard more frequently, but it is likely that they were made by only two or three birds, the highest being at Tirohanga Pai. On Egmont it was difficult to find Whiteheads at 3,000 feet; and I had to go as low as 2,600 feet to locate a Long-tailed Cuckoo. Both Whiteheads and Long-tailed Cuckoos were present near the tops of Ngamoko and Tauhara in mid-January.

**MOREPORK.** Occasionally heard on Ruapehu at 3,800 feet and up to 3,000 feet in Egmont.

**NEW ZEALAND KINGFISHER.** The highest birds I have seen have been near Pokaka and Erua at c. 2,500 feet.

**RIFLEMAN.** Plentiful in the beech forest to its upper limit on Ruapehu at c. 4,200 feet, probably outnumbering any other native passerine. Occasionally they may be seen in the scrub outside the beech forest. On Egmont they are not common above 3,000 feet. In mid-January, 1955, I saw only three family parties near Dawson's Falls, the highest being at 3,200 feet. There are a few on Tauhara and they reach the top of Ngamoko.

**FANTAIL.** Apparently not common anywhere above 3,000 feet. On my first two visits to The Chateau I was struck by the scarcity of Fantails in the beech forest, through which it is possible to walk for miles without seeing or hearing one. During several visits to the woods below the Taranaki Falls, I have seen only one Fantail in them. On my third visit to The Chateau, the only two Fantails I found were at 3,700-3,800 feet. On Egmont my first impression was that Fantails were scarce above Dawson's Falls, and this was confirmed as I walked the numerous tracks on subsequent days. The highest was at c. 3,500 feet in the sub-alpine scrub. Both on Tauhara and Ngamoko, Fantails are inconspicuous, at least in mid-January when I have visited them.

**PIED TIT.** One of the three commonest native passerines in the beech forest of Ruapehu. In mid-January as one comes down the mountain, the

'wheedle' song of the Pied Tit is heard as soon as the forest is entered, so that many Pied Tits must breed as high as 4,000 feet. On Egmont Pied Tits are plentiful at 3,000 feet and just reach into the 15-20-foot zone of bush; but though Fleming (T.R.S.N.Z. 78; 35, 1950) allows it up to 4,000 feet in Egmont National Park, I have not seen one above c. 3,500 feet on the south side of the mountain. On the north side P. W. Law recently recorded one at 4,000 feet. On Tauhara and Ngamoko Pied Tits are generally distributed all the way to their tops.

N.I. ROBIN. The beech forest at 3,000 feet is evidently unsuitable for this bird. The highest localities where, according to Fleming (T.R.S.N.Z. 78; 133, 1950), it may be found in the mixed forest to the west and south of Ruapehu are at c. 2,000-2,500 feet.

N.I. FERNBIRD. In the Tongariro National Park there is a flourishing colony of Fernbirds just above 3,000 feet in the swampy ground, now much overgrown with Ling (*Calluna*) and Bell-heather (*Erica*) to the west of the Tawhai Falls. I heard a Fernbird calling here on 19/1/54, and my wife and I located several on 24/1/57.

WHITEHEAD. Not a common bird in the beech forest, but a few may usually be found in mid-January near The Chateau at c. 3,700 feet and occasionally up to c. 4,000 feet. Thus on a walk westwards to Tirohanga Pai on 25/1/57, Whiteheads were seen in four places, but the total number of birds was only 10-12. As they are so noisy, there is no excuse for missing them; yet I have only once met with Whiteheads in the pleasant beechwoods which fill the valley below the Taranaki Falls. On the south-east slopes of Egmont, Whiteheads scarcely reached 3,000 feet in mid-January, 1955. The highest I could find were along Cossey's Track. They were noisily present at the tops of both Tauhara and Ngamoko when I climbed them.

GREY WARBLER. This small hardy bird has a strong claim to be recognised as the most successful of the native arboreal passerines. It is one of the three commonest indigenous birds in the beech forest of Ruapehu and is present up to 4,500 feet in nearly every sheltered gully-head where bog-pine and mixed scrub reach a height of c. six feet. On Egmont it is not uncommon in the sub-alpine scrub, dominated by *Senecio eleagnifolius*. Below Warwick Castle, Grey Warblers were singing in sheltered gullies not far below 5,000 feet.

NEW ZEALAND PIPIT. Widely distributed in the open country up to c. 5,000 feet and perhaps sometimes higher, the New Zealand Pipit has shown remarkable ability in adapting itself to a variety of habitats from sea-level to the snowline in the mountains, so that it is quite at home as a breeding bird in the different ecological niches which in Europe are occupied by Rock (*A. petrosus*), Meadow (*A. pratensis*), Tree (*A. trivialis*), Alpine (*A. spinoletta*) and Tawny (*A. campestris*) Pipits. The New Zealand Pipit freely perches. I have seen one alight 30 feet up in a dead tree, and in the sub-alpine scrub Pipits often perch, chatlike, on bushes of hebe, senecio and olearia.

BELLBIRD. On Ruapehu I have occasionally found them up to c. 3,800 feet, but they are uncommon above 3,000 feet in the beech forest. In mid-January, 1957, I did not hear a single Bellbird near The Chateau, though I thought they might be attracted by the prolific flowering of the Red Mistletoe on the beeches. On Egmont, Bellbirds are plentiful above 3,000 feet, where their upward range extends into the 15-20-foot zone of mixed forest at c. 3,000 feet, where the Fuchsia (*F. excorticata*) is still abundant. The calls of Bellbirds were often heard in the crater at the top of Tauhara.

TUI. Rare on Ruapehu above 3,000 feet. I have twice located single birds just above the Tawhai Falls, where the attraction seems to be a small quantity of Flax (*P. tenax*) growing in a swamp. From the beech forest

proper they seem to be entirely missing. On Egmont, Tuis are much more in evidence at 3,000 feet than on Ruapehu; but they are outnumbered by the Bellbirds. I did not find any Tuis in the 15-20-foot zone. When I was on the top of Tauhara two Tuis flew overhead.

**WHITE-EYE.** Scarce in the beech forest, where a few may occur up to 3,800 feet. The biggest flock I saw in January, 1954, was 10; there was a small flock by the Chateau tennis courts on 23/1/55; but in mid-January, 1957, no such flocks were seen and Silvereyes were generally very scarce, and none was seen feeding at the flowers or the Red Mistletoe. On Egmont, White-eyes are plentiful above 3,000 feet and up into the sub-alpine scrub at 3,600 feet. One party was seen in stunted *Senecio eleagnifolius* at c. 4,000 feet. On 9/5/56 hundreds were seen in cold, wet weather at 3,200 feet above the North Egmont Hostel. White-eyes were plentiful on Tauhara and Ngamoko to their tops.

### INTRODUCED SPECIES

**SKYLARK.** Generally distributed in the open country on Ruapehu up to about 4,500 feet. On 18/1/54 I was surprised at the number singing between the Taranaki Falls and the Tama Lakes. I have no note of Skylarks high on Egmont, but feel they must occur in the tussock country, e.g., near Warwick Castle.

**SONGTHRUSH.** The volume of song in mid-January indicated a flourishing population along the edge of the Ruapehu beechwoods up to c. 4,000 feet. On Egmont they are plentiful in the mixed forest at 3,000-3,500 feet. I have heard one singing at 3,800 feet and once saw a single bird in open country not far below 5,000 feet.

**BLACKBIRD.** Outnumbers the Songthrush both on Ruapehu and Egmont and generally goes higher. On Ruapehu they extend into the scrub of sheltered gullies up to c. 4,500 feet. I have seen one feeding on the open steppe above Silica Springs, probably on the berries of *Podocarpus nivalis*. On Egmont they are not uncommon in the six-foot scrub zone. On 11/1/55 I heard full song at c. 4,200 feet.

**DUNNOCK.** Widely distributed on Ruapehu, where the scrub reaches a height of a few feet. Above Silica Springs I have found them in sheltered gullies nearly up to 5,000 feet. On Egmont the Dunnock is one of the common birds of the six-foot scrub zone at 3,500-4,000 feet. At their highest I have heard them near Kapuni Lodge (4,700 feet) and a little below Warwick Castle. On Tauhara, Dunnocks have reached the summit crater.

**GREENFINCH.** Breeding in some numbers near Lake Rotoaira at c. 2,000 feet in January, 1957.

**GOLDFINCH.** I have not found this bird in the Tongariro National Park, nor in the vicinity of Dawson's Falls in January. A single wind-blown bird was seen above Stratford House at c. 3,200 feet on Egmont on 9/5/56.

**LESSER REDPOLL.** Thinly distributed on Ruapehu up to c. 4,500 feet. A common bird high on Egmont, breeding in the six-foot scrub at 3,500-4,000 feet. A small flock was seen at c. 5,000 feet.

**CHAFFINCH.** Undoubtedly the most successful of the introduced birds both in the beech forest of Ruapehu and in the mixed forest of Egmont. The frequency of song is a sure guide to its abundance; and at some times of the day in mid-January it is the dominant singer above 3,000 feet. Around The Chateau it is not confined to the beech forest, but occurs in small isolated pockets of stunted trees, e.g. near the Tama Lakes and in the scrub of gully-heads at c. 4,500 feet, some hundreds of feet above the upper level of the beechwoods. On Egmont it is still plentiful in the six-foot scrub zone at c. 3,500-4,000 feet. Needless to say, there are Chaffinches at the tops of Tauhara and Ngamoko.

**YELLOWHAMMER.** Does not appear to be common above 2000 feet, i.e. above Rotoaira, though I have found it breeding at c. 2,700 feet near National Park. On 12/5/53 I noted a small flock on the Desert Road at c. 3,000 feet. On Egmont I have not found it above c. 1,700 feet. On 27/1/56 Yellowhammers were singing up the old Gisborne Road, Wai-karemoana, at c. 2,200 feet.

**HOUSESPARROW.** A colony is attached to The Chateau village. Some breed in the beech forest nearby, but they do not wander far. There were none at Dawson's Falls in mid-January, 1955.

**STARLING.** A few pairs breed near The Chateau. In January, 1954, the greatest number seen together was six; but on 25/1/57 I counted 15 homing to roost in a beech copse just behind The Chateau. None noted near Dawson's Falls in January, 1955.

**MYNA.** In recent years I have several times travelled over the Mamaku. It was not till January, 1957, that I saw Mynas along the highest stretch of the road at a little over 2,000 feet.

**WHITE-BACKED MAGPIE.** A few have frequented the golf course at The Chateau for some years. They do not increase. I saw four on 17/1/54 and two on 23/1/57.

## **THE DISTRIBUTION OF *DIOMEDEA* IN EASTERN AUSTRALIAN WATERS: NORTH OF SYDNEY**

*By L. AMIET*

It would appear that there is some scope for field observations on the movement of oceanic birds during the different seasons; especially those species breeding in high latitudes and wandering far from their breeding islands after rearing their young.

Between April, 1954, and October, 1956, I made some 22 return voyages between Sydney and Mackay, Townsville or Cairns, and during that period a comprehensive log was kept of all oceanic birds identified through 7X binoculars. For many months of each year the different species of albatross following the ship were a feature, and as for the most part they were readily identified, detailed notes were taken on their distribution.

Some four species of *Diomedea* were identified with certainty, and on the description of D. L. Serventy and H. M. Whittell (1951; 112) it was considered that a fifth, *D. chrysostoma*, was seen on two occasions. Though it is difficult to differentiate between this species and *D. chlororhynchos* in the field, the two birds observed differed from the normal adult Yellow-nosed Mollymawk to such a degree that it seems highly probable that they were Grey-headed Mollymawks.

The northern distribution of the species under consideration seems to be primarily controlled by the general weather conditions, air and sea temperatures and the breeding season. It is doubtful if natural food would be a governing factor of those birds ranging farthest north as they followed and fed on the ships' refuse.

Marshall Laird (1956; 226) advances from his own observation, the highest tolerated sea and air temperatures of 71° and 70° respectively, for both *D. exulans* and *D. melanophris*. Except for isolated instances in the case of the former species, this air temperature is roughly in accordance with my findings, while the sea temperature would be some two to four degrees higher in the present case. The air temperature toleration of *D. chlororhynchos* would be five degrees below Laird's reading for the previous species, and that of *D. chrysostoma* and *D. cauta* apparently lower by a further three to five degrees. All species were sighted farthest north during strong south-easterly or south-westerly winds, usually during or immediately