

I was fairly sure I heard a snatch of song from another direction, but just then a falcon screamed down near the river and, apart from an occasional call from that, I heard nothing more. The position was NZMS 1 Map S107 Grid 968687.

The following year (April 1967), I was within 400 metres of the previous sighting, and close to a patch of "ploughed" ground which I had seen on my way up the valley about six days before. It was a fine afternoon, no wind, the only sound being the roar of the river just below. I had stopped to listen, propped against a tree for only a few minutes, when a Kokako appeared walking along a log which protruded from a thick patch of fern beside a patch of "ploughed" ground. I think it saw me immediately because it quickened its pace, flew from the end of the log to a sloping tree trunk a short distance below, and began to climb the trunk in a most peculiar way. With each rather ungainly step upwards, it appeared to hold on to the bark with its beak, look in my direction, take another step, hold, look, and so on until it reached the branches, when it hopped rapidly out of sight. I was fairly certain I saw two largish birds moving in the canopy nearby, but as a small flock of parakeets was moving through just then, I could not be sure. I had to hurry on then, as it is not a place one would care to be benighted in.

The following day I took Mrs Quaife up to the spot, but in 3-4 hours we saw and heard nothing except the inevitable falcon.

I had informed the resident park ranger at Wanaka of my sighting the previous year, and again jogged his memory. The Park Board eventually flew in a hut to a nearby clearing, and spent some time in an unsuccessful search.

My next and last trip (1968) was also without sighting except of the falcon.

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SOUTH ISLAND KOKAKO (*Callaeas cinerea cinerea*) IN *Nothofagus* FOREST

By M. N. CLOUT and J. R. HAY

The location of a 1967 sighting of South Island Kokako (*Callaeas cinerea cinerea*) in beech (*Nothofagus*) forest at Mount Aspiring National Park was searched, without success, in May 1981. Early literature on South Island Kokako shows that they commonly inhabited beech forest and had ground-feeding and low-nesting habits which made them vulnerable to introduced mammalian predators. It is suggested that the dramatic irruptions of rodents and stoats (*Mustela erminea*) that occur after beech 'mast' years in the South Island may have contributed to the rapid decline of *C. c. cinerea*.

The sightings of South Island Kokako (*Callaeas cinerea cinerea*) by K. McBride at Teal Creek (44°14'S, 169°11'E) near Makarora came to our attention recently (McBride 1981), confirming the existence of this subspecies as late as 1967.* The Teal Creek area was further investigated between 16 and 18 May 1981.

The party consisted of R. P. Buckingham, NZ Forest Service, Southland, M. N. Clout, Ecology Division, DSIR, Nelson, J. R. Hay, Royal Forest & Bird Protection Society, Rotorua, E. Kennedy, NZ Wildlife Service, Invercargill, K. McBride, Kaikoura, and R. J. Pierce, University of Otago.

Two days were spent at Teal Creek searching for Kokako in the 2 km stretch of forested valley where K. McBride had observed the birds over 14 years ago. Dawn listening watches were made, tape-recordings of North Island Kokako (*Callaeas cinerea wilsoni*) 'mew' calls were played and the area where the birds had been seen was thoroughly traversed by members of the party. Unfortunately no Kokako were heard or seen and there was no sign of the patches of torn-up moss and litter on the forest floor, which McBride (1981) noted on his previous visits.

Bird numbers at Teal Creek were low in May 1981, with the exception of Rifleman (*Acanthisitta chloris*). Other species encountered were Kea (*Nestor notabilis*), Hedge Sparrow (*Prunella modularis*), Brown Creeper (*Finschia novaeseelandiae*), Grey Warbler (*Gerygone igata*), Fantail (*Rhipidura fuliginosa*), Yellow-breasted Tit (*Petroica macrocephala*), Song Thrush (*Turdus philomelos*), Blackbird (*Turdus merula*), Silvereye (*Zosterops lateralis*), Bellbird (*Anthornis melanura*), Chaffinch (*Fringilla coelebs*) and Redpoll (*Carduelis flammea*). Apart from Kokako, the only notable absences from our list are the New Zealand Falcon (*Falco novaeseelandiae*), which McBride (1981) observed several times near Kokako, and parakeets (*Cyanoramphus* spp.), which K. McBride (pers. comm.) recalls having seen in flocks of over 100 birds in the area during the 1960s. Other changes since the 1960s have included colonisation of the valley by possums (*Trichosurus vulpecula*) and a marked decline in the abundance of red deer (*Cervus elaphus*).

The valley of Teal Creek is steep-sided, cold, and over 600 m in altitude. Below the subalpine scrub zone (c. 1000 m), it is clad in almost pure silver beech (*Nothofagus menziesii*) forest. The forest is structurally very simple, with a mossy, bouldery forest floor and an open understorey containing *Blechnum discolor*, small-leaved *Coprosma* species, *Carmichaelia* sp., *Griselinia littoralis*, *Hoheria glabrata*, *Pseudopanax crassifolium*, and *Coprosma foetidissima*.

* A search of the Teal Creek valley for Kokako was made without success in November 1970 by Peter Child (1981, *Birdlife of Mount Aspiring National Park*, Dept of Lands and Survey, Wellington), who also found none during surveys of the Park up to 1976 — Ed.

For those familiar with typical habitat of Kokako in the North Island, this sort of forest appears at first to be unsuitable for the species. Experience with the North Island subspecies has shown that a high diversity of plant species and structurally complex vegetation are indicators of good Kokako habitat (Hay, pers. obs.). Pure beech (*Nothofagus*) forest has a relatively low plant species diversity and is simple in structure, with few lianes or epiphytes. There is, however, ample evidence of the previous occurrence of South Island Kokako in this general forest type. Potts (1873) described Kokako prying in moss on branches in "some of the gloomy alpine valleys" and later (Potts 1882) referred to their occurrence on the upper flats of the Rakaia River, in areas fringed by beech forest. A partial albino shot at the foot of Mt Franklin (Kirk 1881) was probably in this habitat, and Reischek (1885) referred to Kokako at Arthur's Pass. Travers (1871) put the case beyond doubt, stating: "The *Glaucoptis cinerea*, or crow, of the Middle Island, is rarely found below an altitude of two or three thousand feet, and indeed, is found in greatest numbers at and above the higher of these altitudes, in the glens of the *Fagus* forest."

The rapid decline of the South Island Kokako seems strange when compared with the persistence of the North Island bird, which has lost so much more of its lowland forest habitat. A likely explanation is that South Island Kokako were more vulnerable to introduced mammalian predators. The fact that Kokako in the South Island commonly inhabited beech forest (unlike those in the North Island) may have heightened the vulnerability of the South Island subspecies to predation.

An important feature of beech forest is the occurrence at irregular intervals of 'mast' years, during which unusually large quantities of beech seed are produced, with subsequent effects on the abundance of small mammals, as was shown by events following the mast year of 1971. In the autumn of that year very heavy seeding of all beech species occurred in both the North Island (Fitzgerald 1978) and South Island (Franklin 1974, Manson 1974, Wardle 1974). House mice (*Mus musculus*) are known to increase greatly in numbers after heavy seeding (Fitzgerald 1978), and in South Island beech forests (where beech seeds lie dormant over winter) the numbers of both house mice and ship rats (*Rattus rattus*) reached plague proportions in late 1971 and early 1972, following the 1971 mast year (R. H. Taylor, pers. comm.). Stoats (*Mustela erminea*) are known to respond in turn to such rodent irruptions with a marked increase in their numbers (King 1978). The effect of this whole sequence of events on vulnerable birdlife is likely to be heavy losses from increased predation following a beech mast year (Riney *et al.* 1959). There is some evidence for such an effect in the Nelson Lakes area, where there were marked reductions in the numbers of robins (*Petroica australis*) and parakeets after the 1971/72 irruption of rodents and their predators (R. H. Taylor, pers. comm.).

South Island Kokako, with their tendency to nest in the understorey or subcanopy (Potts 1873, Smith 1888, Fulton 1907), their limited powers of flight and their habit of foraging on or near the ground (Travers 1871, Potts 1873, Smith 1888, Fulton 1907), are likely to have been particularly vulnerable to mammalian predators. After the penetration of New Zealand forests by ship rats (Atkinson 1973) and stoats (Thomson 1927) late last century, the birdlife of South Island beech forests would have been exposed to episodes, in the wake of beech mast years, when these predators were very abundant. Although South Island Kokako inhabited some regions without any beech (e.g. Stewart Island, South Westland), beech forest seems to have been a major habitat throughout most of their range. This predisposed them to occasional very intense predation pressure from ship rats and stoats, which they were ill-adapted to withstand, and was probably an important factor in the rapid decline of the subspecies.

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