

THE NORTH ISLAND KOKAKO (*Callaeas cinerea wilsoni*) IN THE WESTERN KING COUNTRY AND TARANAKI

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ABSTRACT

The distribution of the North Island Kokako (*Callaeas cinerea wilsoni*) in the western King Country and Taranaki was recorded during summer 1980-1981. The survey confirmed that the Kokako was widespread in the study area but showed that its range is continuing to shrink. The status of many populations is still uncertain. Kokako appear to have disappeared recently from large forest tracts in south-eastern and inland Taranaki and from large isolated forests in the north. Within large forest tracts Kokako were not recorded in some locations where they had been present before 1970.

Most Kokako were in unmodified rimu-tawa dominant forest and habitat deterioration appears to be an important factor in their decline.

INTRODUCTION

Although the North Island Kokako is still widespread in the northern half of the North Island (Lavers 1978, Falla *et al.* 1979), its populations are limited and localised, often being confined to fairly discrete forest areas (Crook *et al.* 1972). In a review of the distribution of the North Island Kokako, Lavers (1978) found that its range has changed markedly since European colonisation of New Zealand. Although the Kokako probably had a widespread distribution in pre-European times, its range has contracted since and populations have become isolated. Destruction of forest habitat is the most important factor in the decline of the Kokako (Imboden 1978). The species had already decreased greatly by 1880 (Falla *et al.* 1979) and populations have declined steadily since 1900 (Lavers 1978). Today the status of most populations is uncertain. The densest populations known now are in Puketi State Forest (SF) (Anderson 1979), Pureora Forest Park (Crook *et al.* 1972, Hay 1981) and Mapara Forest (Coker 1978, Hay 1981).

This report provides information on the distribution of the Kokako in the western King Country and Taranaki and discusses the status of various populations. The data in this report were collected by the Fauna Survey Unit (FSU) of the Wildlife Service between 14 October 1980 and 25 March 1981. Detailed studies of distribution

and ecology of the Kokako in the eastern King Country have been made by Hay (1981).

References in the literature to Kokako in the study area have been few and brief. Imboden (1978) summarised the distribution of the Kokako through the Raglan-Waitomo-Taranaki region as "frequent, widespread reports. Populations little known but said to be declining in northern part of the area associated with goat damage to the forests." Falla *et al.* (1979) gave locations as "near Raglan; Mt Pirongia, south of Kawhia; some parts of the King Country; North and South Taranaki;". Lavers (1978) stated that forests to the east and west of Te Kuiti have not changed much since before settlement and that sightings since 1960 show that Kokako still occur widely. In Taranaki, one of the largest areas of forest cover in the North Island remains in the Matemateaonga Range and mid-Wanganui River catchments. Kokako were once present throughout this area and Lavers' information indicated that Kokako were still widespread, although declining, in the 1960s.

STUDY AREA

The study area covered those parts of the western King Country, Waikato and Taranaki which are enclosed by dashed lines in Figures 2-4. More specifically, the study area was that land within the 19 NZMS 290 map sheets, P19, 20, 21; Q18, 19, 20, 21; R14, 15, 16, 17, 18, 19, 20, 21 and S15, 16, 17, 18. This land contains extensive forest remnants from Raglan through the Pirongia, Taumatotara, Waitomo and Whareorino districts, to the Mokau River and the Taranaki forests, including the Waitaanga, Whangamomona, Wanganui River and Matemateaonga tracts (Figure 1).

Forests in the east of the study area include areas of the Rangitoto and Hauhungaroa Ranges. Because extensive surveys have been made of these forests recently (Crook *et al.* 1971, 1972, Coker 1978, Imboden 1978, Hay 1981), no formal surveys were undertaken during this study. These forests will be briefly mentioned in the text.

METHODS

All forest tracts were visited by FSU personnel, often several times. Particular efforts were made to locate Kokako from line transects which, when practicable, followed leading ridges, tracks, roads, and other routes. Tape recordings were played, usually about every 500 m, to attract Kokako. The calls used included the apparently non-dialectal "mew" call, and also songs (Rotoehu and Puketi dialects). The "mew" call was used much more later in the survey, when its effectiveness had been proven. Several reliable reports were received from local residents. No quantitative assessment of population size was made; stated inferences about the Kokako's status depended on the wide experience of the observers. The survey was extensive rather than intensive and the assessments are preliminary only.

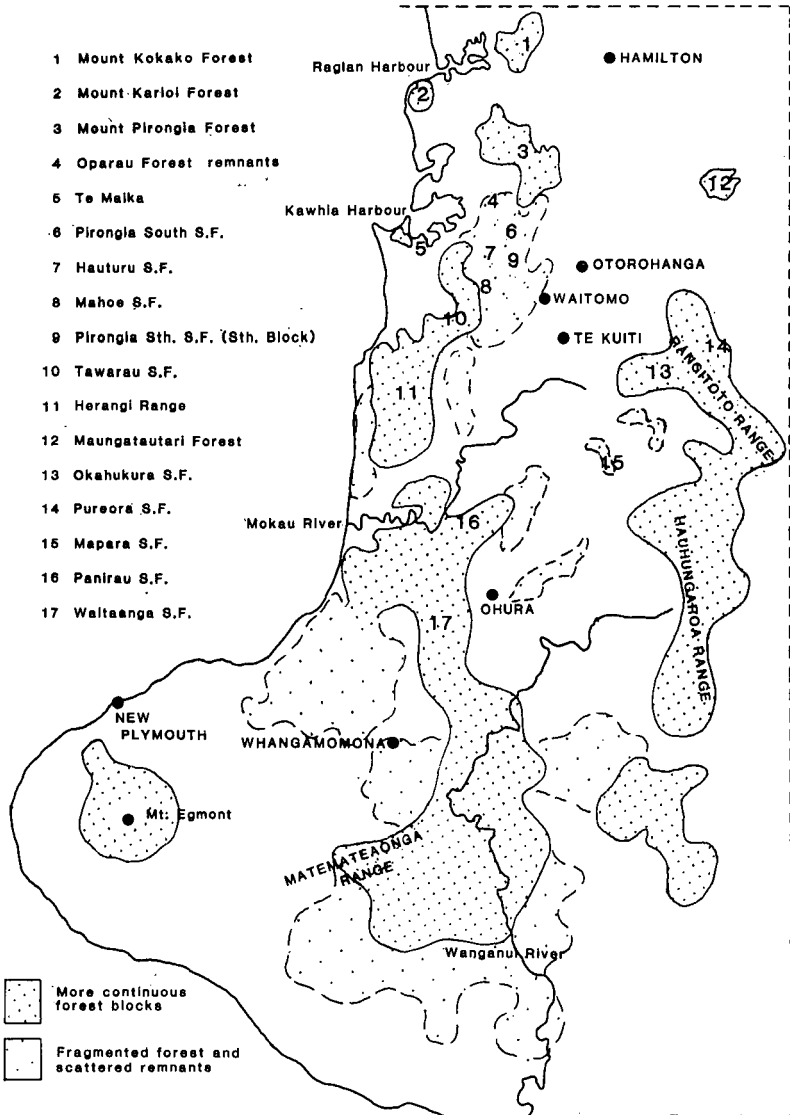


FIGURE 1 — Locality map showing general distribution of remaining forest in the King Country-Taranaki region.

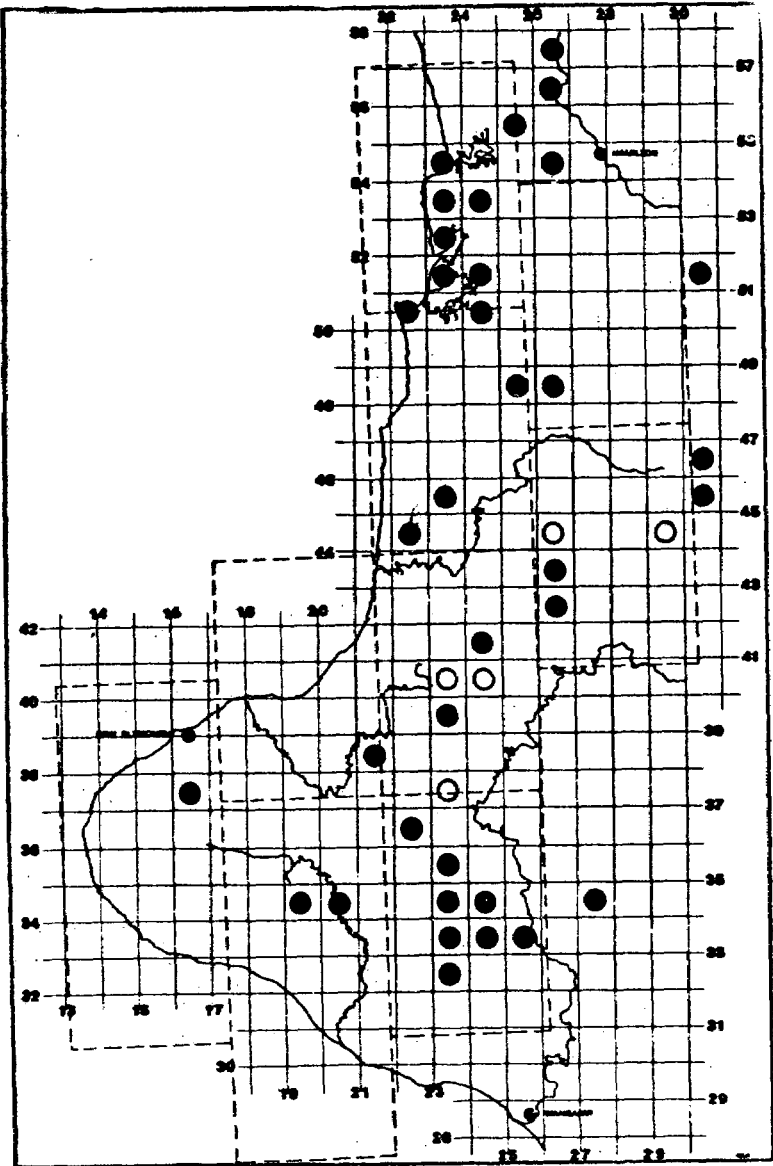


FIGURE 2 — Distribution of the Kokako in the western King Country and Taranaki before 1960
Closed circles: records from Appendix 1, Lavers (1978) pp. 179-181
Open circles: records from other sources

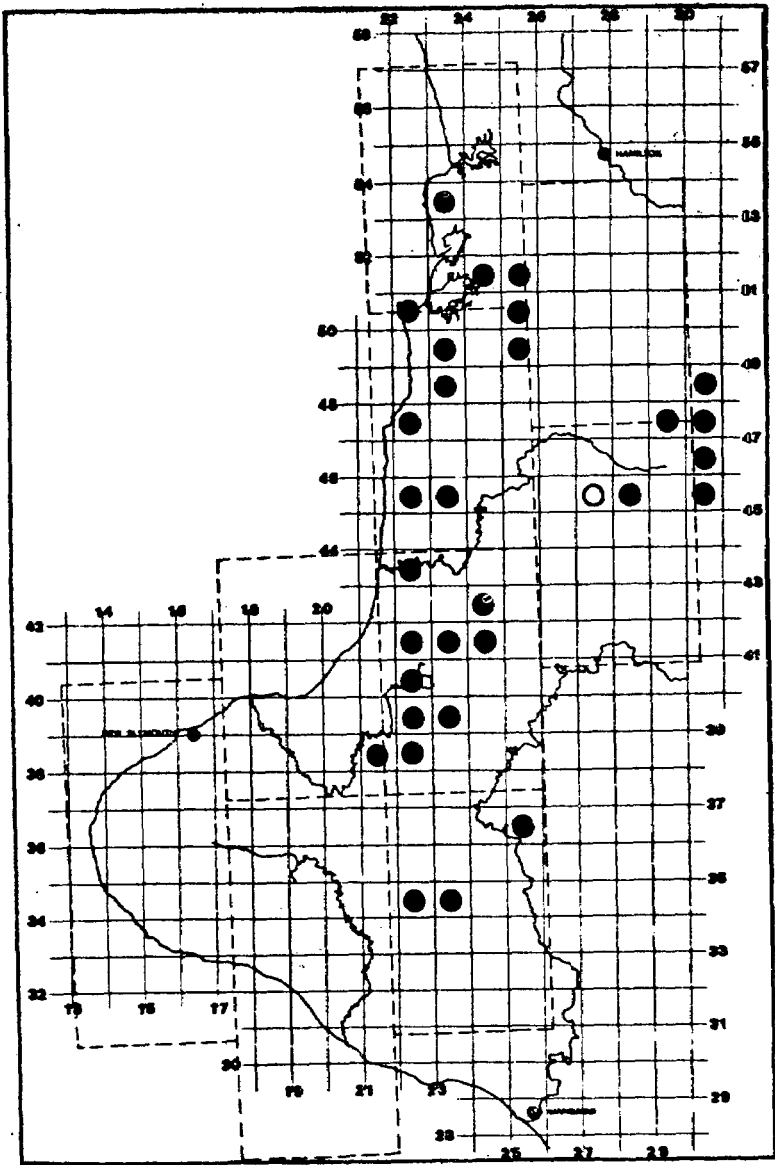


FIGURE 3 — Distribution of the Kokako in the western King Country and Taranaki, 1960-1970
Closed circles: records from Appendix 1, Lavers (1978) pp. 179-181
Open circle: record from other source

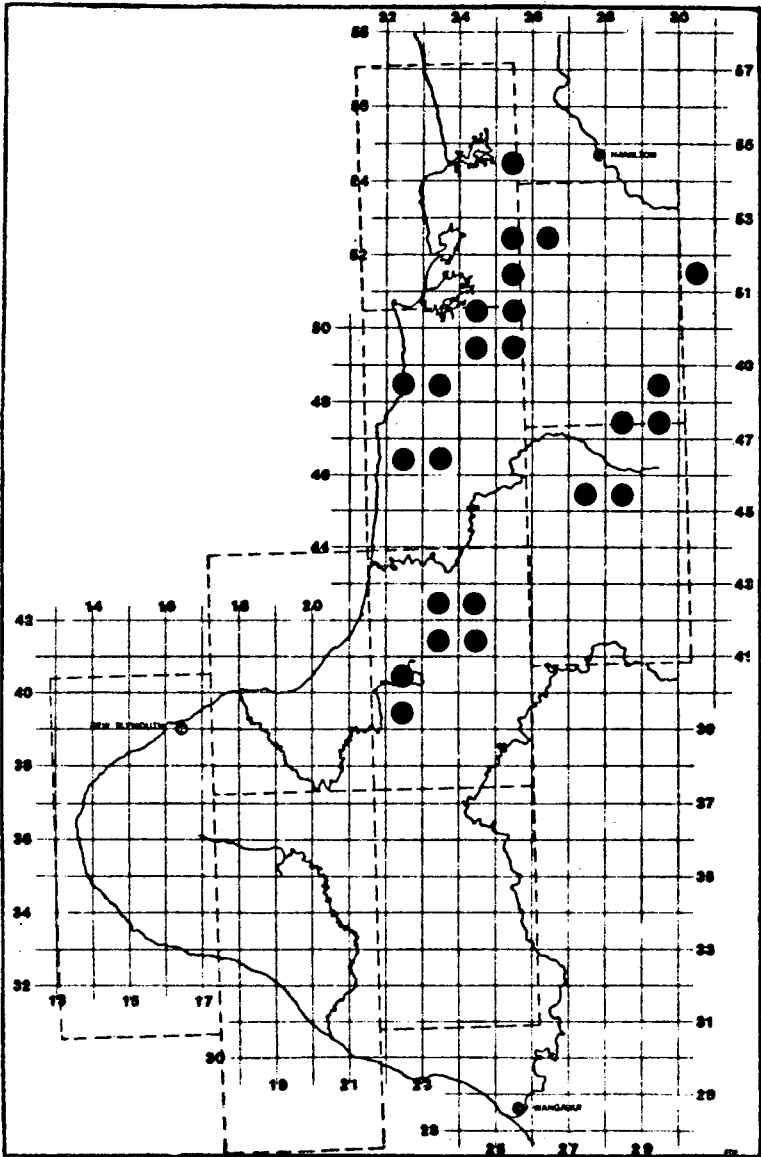


FIGURE 4 — Distribution of the Kokako in the western King Country and Taranaki, 1977-1981

Results are summarised for each 10 000-yard grid square (Fig. 4) and details of all sightings are given in Appendix 1.

DISTRIBUTION AND STATUS

Western King Country

Forests of this region comprise those west of the Waikato Plains, Otorohanga and Te Kuiti, from Raglan in the north to the Mokau River (Fig. 1), which extend to the western coast of the North Island.

Mount Kokako Forest

Before 1960, Kokako had been reported in various locations in forests on and about Mount Kokako, east of Raglan Harbour (Fig. 2), but there were no records between 1960 and 1970. (Five records cited by Lavers referring to Kokako Trig, supposedly from this area, actually refer to a trig of the same name near Ohura, much further south).

The presence of Kokako in unmodified forest was confirmed in 1978 and 1979 (Fig. 4) north of the Tumunui Stream (photographed by A. H. Grootegoed, Henderson). None was located in 1980. About 70% of the forest has been logged; the remaining 30% is unmodified podocarp-mixed hardwood forest. The Kokako population is of uncertain status but it is likely to be very small.

Mount Karioi Forest

Mount Karioi forms part of Pirongia Forest Park and is on the western coast between Raglan and Kawhia Harbours (Fig. 1). Kokako were present in the 1950s (Fig. 2) and 1960s (Fig. 3), but none was found in 1980 despite intensive searching. It is now either very rare or absent. In recent years, the forest (coastal podocarp-hardwood) has been seriously modified by logging, burning and browsing.

Mount Pirongia Forest

Kokako have been reported since the 1800s in the unmodified lower-altitude forest surrounding Mount Pirongia (Pirongia Forest Park). In 1980, birds were recorded north of the mountain (Kaniwhaniwha Track) by R. Schoefield (NZFS Ranger) and in the south by FSU (Fig. 4). The population is probably small to moderate and scattered. It is believed to have declined steadily during the last 25 years.

Oparau Forest Remnants

Large forest remnants are immediately east of Kawhia Harbour, including Te Rauamoia, Te Kauri Reserve, Te Kauri Park and private forests surrounding the Te Awaiti Stream. These remnants are south of Mount Pirongia. Kokako were recorded throughout the 1970s

(OSNZ Recording Scheme 1974, 1977, 1978, 1979). High numbers were present in the mid-1960s, when breeding birds were studied (McKenzie 1975). Kokako were not recorded in Te Kauri Reserve by FSU in October 1980, and the last bird was seen in the reserve by the ranger, R. Vale, at the beginning of 1980. The population has been declining slowly for some time. Only two birds were recorded in the whole area by FSU, on a ridge near Te Awaiti Stream.

Te Maika

In this large forest remnant immediately south of Kawhia Harbour, Kokako were recorded in the past (Fig. 2 and 3) but not since 1962. In searches in 1980 none was found.

Pirongia South SF, Hauturu SF and surrounding private forest

These are large but fragmented forests between Mount Pirongia and Waitomo (Fig. 1). Kokako have been recorded in these forests since the 1800s (Fig. 2 and 3) but the importance of these Kokako populations was not realised until this survey. In our 1980 survey seven Kokako were recorded in Pirongia South SF (north block) and eight in Hauturu SF (east block). These sightings indicate the presence of moderate to large populations. Small numbers were also located in private forests north of Mahoe SF and in Pirongia South SF (south block). In Pirongia South, the seven birds were recorded on nine listening stations, a density comparable with that in some West Taupo and Rotorua forests.

Tawarau SF

Three Kokako were recorded here, a forest from which Kokako were not known previously. These sightings indicate a small or moderate population in the least-modified forest to the east of the Puaroa River. The rest of the forest is highly modified by goat and possum browsing and some logging.

Herangi Range (Whareorino Forest)

This very large forest block north of the Mokau River includes Whareorino SF. Kokako used to be throughout the forest (Fig. 2 and 3), but our survey found them only in unmodified forest in the north and central areas (Fig. 4). They seem to have disappeared from the south, where the forest has been highly modified by logging. Areas peripheral to the whole block are being cleared steadily. Populations seem to be small to moderate and localised. Single birds have been reported from the north (immediately south of Marakopa), for example, by R. Shaw in 1980. Kokako seem more numerous in the headwaters of the Awakino River than in other parts of the Herangi Range, but there too they are restricted to several leading ridges.

Eastern King Country

Mangatautari Forest

This large isolated forest is just outside the study area in the north-east. Kokako were found in three parts of it in 1977 (Johnson & Saunders 1977), but none was found in 1980.

Rangitoto Range

This lies east of Te Kuiti on the boundary of the study area and includes Okahakura SF and margins of Pureora SF. This area was intensively surveyed by the Wildlife Service in the 1970s and more recently by Hay (1981). A brief survey by the FSU in December 1980 showed that Kokako were still widespread, and in one area (Okahakura SF) the population seemed to be dense as seven birds were recorded in two hours of survey. The numbers recorded may have given a false picture of abundance because large areas of forest have been, and still are being, logged and converted to farmland about Rangitoto and the headwaters of the Waipa River, while the State Forest has had much of its tawa (*Beilschmiedia tawa*) and podocarps removed. Kokako may have retreated into the area as a result of surrounding habitat destruction. This population needs to be watched closely.

Mapara state and private forest

This forest has been surveyed in recent years (Coker 1978, Hay 1981) and has been shown to have a moderately dense Kokako population. A brief visit in February 1981 revealed five Kokako in a small area of unmodified forest margin. High numbers remain throughout (Hay 1981). Kokako were found at two stations where they had not been recorded by Coker.

Taranaki

Mokau River forests

Kokako were recorded during the 1960s (Fig. 3) but not during the 1981 survey. Logging continues in some parts.

Mangakara catchment

One Kokako was recorded in this catchment, north-west of Ohura near the edge of Panirau SF. An extensive area was searched in some detail in January 1981 but no other birds were found. In recent years, the forest area has been logged extensively.

Waitaanga Forest

This very large mainly unmodified forest block immediately west of Ohura contains state and private areas. Kokako were once widespread throughout the district (Fig. 2 and 3) and, despite shrinkage of range in 1970-81 period (Fig. 4), the most dense Kokako population found during the whole survey was on the Waitaanga Saddle near Kokako Trig. A total of 23 birds was found here on two days of

survey. On one occasion, eight birds were recorded from a single survey station. Kokako were present in unmodified podocarp-tawa forest. The population seemed to be localised because only single birds were found in other parts of the forest (the Mohakatino Catchment and forests extending southwards to, but not including, Tangarakau Gorge). Kokako were present in the Tangarakau Gorge 40 years ago but now seem to be in very small numbers or absent.

Forests north-west of Whangamomona

Kokako once seemed to be widespread in this region (Fig. 2 and 3) but very few birds were found during this survey (Fig. 4). No Kokako have been seen in forests close to Whangamomona since 1976. Localised populations of uncertain status still exist near the Rerekapa Track and Skinners Hill, Tahora. The species may be more widespread but, if so, numbers are probably very low. These forests have been fragmented gradually by both logging and farm development.

Matemateaonga Range, Wanganui River forests

Kokako were once widespread in these forests (Fig. 2) but seem to have declined this century (Fig. 3). Today, Kokako seem to be either very rare or absent (Fig. 4). The last confirmed report from this region was of a bird near the Tangahoe Stream (grid ref. 2480-3590) in 1974 (J. Ombler, Department of Lands and Survey, pers. comm.). A total of c.34 man-days were spent searching the forest proper, and additional days on the forest margins, but no Kokako was found. Most of the forests in the Matemateaonga Range remain unmodified by logging and seem to be suitable Kokako habitat. Forests of the mid-Wanganui River (e.g. Mangatete Stream and near Pipiriki), where Kokako were known in the past, are now in poor condition because of intensive goat browsing and erosion.

Mount Egmont

Kokako once inhabited Egmont's forests but the last probable record is from 1938 on the Mangorei Track in the Pouakai Ranges. It is unlikely that the species still occurs (D. Medway, pers. comm.). Records by Lavers (1978) citing the occurrence of Kokako in the 1960s have not been confirmed. They were of calls only suspected of being from Kokako.

TABLE 1 — Habitat of Kokako

Forest Type	n	%
Unmodified rimu-tawa dominant	71	69.6
Unmodified tawa dominant	4	3.9
Unmodified mixed podocarp	18	17.7
Cutover tawa	8	7.8
Secondary kamahi-tawheowheo	1	1.0
Total	102	100.0

HABITAT

Habitat type was recorded (Table 1) for 102 of the Kokako found by the survey. Most Kokako (91.2%) were in unmodified rimu-tawa dominant forest. None was found in beech forest (black and hard beeches, *Nothofagus solandri* and *N. truncata*, widespread in the Taranaki forests). Typical Kokako habitat was characterised by dominant emergent rimu (*Dacrydium cupressinum*), miro (*Podocarpus ferrugineus*), Hall's totara (*P. hallii*) and northern rata (*Metrosideros robusta*), and canopy plant species included tawa (dominant), hinau (*Elaeocarpus dentatus*), kamahi (*Weinmannia racemosa*), tawheowheo (*Quintinia* spp.), rewarewa (*Knightia excelsa*), pukatea (*Laurelia novae-zelandiae*) and mangeao (*Litsea calicaris*); and in the north, kohekohe (*Dysoxylum spectabile*), puriri (*Vitex lucens*), tanekaha (*Phyllocladus trichomanoides*). All Kokako were found on ridges and valley sides, mainly ridges. Records ranged in altitude from 175 m to 850 m a.s.l., but most were between 300 and 500 m (Table 2, Appendix 1). Thus Kokako were normally restricted to low-altitude forest.

TABLE 2 — Altitudinal range of Kokako records

Altitude (m)	n	%
100 - 299	3	2.8
300 - 499	48	44.9
500 - 699	53	49.5
700 - 899	3	2.8
Total	107	100.0

As was discussed for the Rangitoto Range, the presence of Kokako in cutover forest may be misleading. Kokako still survive in remnants of tawa and rata forest as small as 0.5 ha in Okahakura SF, where gaps of 10-20 m were often present between the remnants. A survey of Okahukura in October 1980 (Hay 1981) located 13 Kokako. Eleven of these birds were in undisturbed forest along stream edges, not in logged areas. Kokako have poor flight and thus poor dispersal ability (Imboden 1978). Whether the Okahukura population will breed or remain stable in this apparently suboptimal habitat is open to question.

DISCUSSION

Because Kokako populations seem to be very localised, surveys have to be intensive searches. Furthermore, although birds respond quickly to tapes on one day, they may not on the next (as was found in Waitaanga and Rangitoto forests). In some areas surveyed in 1980 the presence of Kokako was strongly suspected but not confirmed. Subsequent visits in 1981 did confirm their presence, e.g. Pirongia

South SF (south block). For these reasons a lack of Kokako records for a forest cannot be taken to mean that Kokako are not present.

This survey confirmed that Kokako are widespread in the western King Country and North Taranaki. However, the trend of shrinking distribution and declining numbers of Kokako reported by Lavers (1978) seems to be continuing. Kokako seem to have disappeared over the last 10-15 years from large tracts of forest in south-eastern and inland Taranaki (Matemateaonga Range) and from large insular forests in the north (Te Maika, Mount Kariori and perhaps Mangatautari). Within the large forest blocks in the north, Kokako were not recorded from many of the places where they had been known up to the 1960s.

The status of most of the observed populations is uncertain, but most seem small and are probably declining. Lavers' (1978) suggestion that remaining populations in extensive unmilled areas may now be fairly stable seems unlikely, in the light of the species' apparent disappearance from South Taranaki. Kokako populations outside the study area in the Hunua Ranges, Rotoehu SF and Horohoro SF have declined steadily over at least the past 10 years (Imboden 1978) and probably longer.

Historically, the Kokako has been steadily declining in numbers and contracting in range since European colonisation. Birds persisted in many of the smaller bush remnants in the King Country until the 1940s but gradually disappeared. For example, one pair was present for many years in a 15-ha remnant surrounded by farmland (K. Sinclair, pers. comm.). Populations may persist for a long time because the birds themselves are long lived, but productivity is very low

Reduction in range has been attributed to habitat loss and the decline in habitat quality from intensive browsing damage, mainly by goats (Imboden 1978). Certainly goats are modifying forest structure throughout the study area. Hay (1981) found considerable overlap in foods eaten by Kokako and possums and suggested that important competition may occur. In addition, continued fragmentation and isolation of bush areas, especially on privately owned land, are destroying the continuity of forest tracts in the study area. Breeding success is very low, probably because of predation by mustelids and cats and competition from possums (Hay 1981).

The continuing decline of the Kokako over its range gives cause for concern. Positive steps such as habitat protection are needed before numbers reach such low levels that they may not recover, even with the best available management practices.

APPENDIX 1 — Locations of N.I. Kokako in the western King Country and central Taranaki, 1977-1981

Location	Grid Ref.	Date	Number	Dominant Forest Type (u.m.=unmodified) 2°=secondary	Altitude (m) a.s.l.
Bunt Kokako	2550 - 5585	1978,1979	-	u.m. rimu-tawa	175
Pirongia Forest Park	2595 - 5265	1980	3	u.m. rimu-tawa	300
Pirongia Forest Park	26 - 52	1979	-	u.m. rimu-tawa	-
Pirongia Forest Park	2589 - 5197	30.10.80	1	u.m. rimu-tawa	850
Pirongia Forest Park	2580 - 5195	30.10.80	1-2	u.m. rimu-tawa	800
Mangatautari	3047 - 5199	Jan. 1977	1	u.m. rimu-tawa	500
Mangatautari	3048 - 5198	Jan. 1977	1	u.m. rimu-tawa	500
Mangatautari	3049 - 5196	Jan. 1977	1	u.m. rimu-tawa	500
Te Kauri Reserve	2520 - 5130	1980	-	u.m. rimu-tawa	-
Te Kauri Park	2477 - 5110	1980	-	u.m. rimu-tawa	-
Te Awaiti Stream	2495 - 5070	2.11.80	2	u.m. tawa	275
Pirongia South	2570 - 5043	1.11.80	2	u.m. rimu-tawa	450-550
Pirongia South	2560 - 5039	1.11.80	1	u.m. rimu-tawa	"
Pirongia South	2553 - 5036	1.11.80	1	u.m. rimu-tawa	"
Pirongia South	2548 - 5053	1.11.80	2	u.m. rimu-tawa	"
Pirongia South	2549 - 5047	1.11.80	1	u.m. rimu-tawa	"
Pirongia South	2554 - 4975	March 1981	2	u.m. tawa	500
Hauturu	2514 - 5014	22.11.80	1	2° kanahi-tawheowheo	350
Hauturu	2485 - 5015	22.11.80	1	u.m. mixed podocarp	300-480
Hauturu	2485 - 5010	22.11.80	1	u.m. mixed podocarp	"
Hauturu	2495 - 5010	22.11.80	1	u.m. mixed podocarp	"
Hauturu	2503 - 5020	22.11.80	1	u.m. mixed podocarp	"
Hauturu	2510 - 5020	22.11.80	1	u.m. mixed podocarp	"
Hauturu	2527 - 5018	22.11.80	1	u.m. mixed podocarp	"
Hauturu	2541 - 5016	22.11.80	1	u.m. mixed podocarp	"
Hauturu	2515 - 4997	June 1981	2	u.m. mixed podocarp	500
Hauturu	2514 - 5027	June 1981	2	u.m. rimu-tawa	500
Hauturu	2523 - 5022	June 1981	2	u.m. rimu-tawa	500
Mahoe forest	2500 - 4955	20.11.80	2	u.m. rimu-tawa	550
Tawarau	2382 - 4816	17.11.80	2	u.m. rimu-tawa	300
Tawarau	2379 - 4810	17.11.80	1	u.m. rimu-tawa	275
Otuatakahi	c.2505 - 4985	15. 1.79	11	mixed podocarp	300-480
Whareorino	2273 - 4810	4.12.80	-	u.m. rimu-tawa	200
Whareorino	2299 - 4809	May 1980	-	u.m. rimu-tawa	550
Whareorino	?	19 April 1980	-1	u.m. rimu-tawa	?
Whareorino	2275 - 4688	5.12.80	2	u.m. rimu-tawa	500
Whareorino	2266 - 4683	5.12.80	3	u.m. rimu-tawa	500
Whareorino	2304 - 4678	Feb. 1980	2	-	450
Whareorino	2304 - 4678	Feb. 1980	3	-	450
Rangitoto	2916 - 4742	11.12.80	1	tawa cut-over	550
Rangitoto	2926 - 4743	11.12.80	1	tawa cut-over	550
Rangitoto	2926 - 4742	11.12.80	1	tawa cut-over	550
Rangitoto	2933 - 4737	11.12.80	1	tawa cut-over	550
Rangitoto	2935 - 4734	11.12.80	1	tawa cut-over	625
Rangitoto	2945 - 4738	11.12.80	1	tawa cut-over	575
Rangitoto	2939 - 4745	11.12.80	1	tawa cut-over	600
Rangitoto	2942 - 4771	12.12.80	1	tawa cut-over	650
Rangitoto	2895 - 4865(?)	1980	-	u.m. rimu-tawa	-
Rangitoto	29 - 48	1980	-	-	-
Mapara	2748 - 4580	Feb. 1981	2	u.m. rimu-tawa	300
Mapara	2749 - 4573	Feb. 1981	1	u.m. rimu-tawa	300
Mapara	2749 - 4564	Feb. 1981	2	u.m. rimu-tawa	300
Mangakara	2427 - 4287	13. 1.81	1	modified rimu-tawa	500
Mohakatino	c.2385 - 4275	1980, 1981	-	u.m. rimu-tawa	500-700
Waitangi	2425 - 4131	14. 1.81	1	u.m. rimu-tawa	500
Waitaanga	2395 - 4194	14. 1.81	1	u.m. rimu-tawa	500
Waitaanga	2441 - 4180	14. 1.81	1	u.m. rimu-tawa	545
Waitaanga	2411 - 4185	14. 1.81	1	u.m. rimu-tawa	475
Waitaanga	2405 - 4195	14. 1.81	11	u.m. rimu-tawa	550-575
Waitaanga	c.2405 - 4195	21. 1.81	8	u.m. rimu-tawa	550-575
Waitaanga	2447 - 4103	15. 1.81	1	u.m. rimu-tawa	450
Rerekapa Track	2257 - 4074	11. 1.81	2	u.m. rimu-tawa	400
Skinner's Hill	c.2290 - 4095	1980, 24.8.81	-	u.m. rimu-tawa	450
Marco Road	c.2280 - 3995	1980	-	mixed hardwood	400
Whanganomara	22 - 38	1976	-	rimu-tawa	-

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SHORT NOTE

LONG-TAILED CUCKOO FLIGHT SPEED

On 30 December 1983, while driving on State Highway 5 about 12 km south of Rotorua, I had the opportunity to measure the ground speed of a Long-tailed Cuckoo (*Eudynamys taitensis*) in flight. The time was 10.30 a.m. and the weather sunny and calm. The cuckoo was in open country flying at the side of the road 15-20 metres up. The bird flew parallel to the road and beside my car for 5 seconds before the road curved away from its flight path. The speed of my vehicle was exactly 80 km/h, and the cuckoo appeared untroubled in matching my speed for the 5 seconds.

How long the Long-tailed Cuckoo spends in transit to and from its winter or summer quarters may always be a matter for conjecture, but perhaps my brief observation may hint at its capabilities.

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