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## DISTRIBUTION OF THE NORTH ISLAND KOKAKO (*Callaeas cinerea wilsoni*)

### A REVIEW

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*"The crow . . . is sparingly dispersed over the North Island, being very local in its distribution."* — W. L. Buller (1882)

### ABSTRACT

The past and present distribution of the North Island Kokako is determined from reported observations for four periods: pre-1900; 1900-1939; 1940-1959; and 1960-1970. Changes in distribution are described for nine geographical districts. Since the late 19th century distribution has contracted in areas to the north and south of the central Volcanic Plateau. This is attributed mainly to the removal of suitable forest habitat. The Kokako is a weak flier and, with continued deforestation, populations are further isolated from one another and the survival of the species is threatened.

### INTRODUCTION

According to Maori tradition the Kokako was once common "on all the ranges of the North Island forests" (Reischek 1886) and sub-fossil remains indicate a widespread distribution before the arrival of European settlers. In the period immediately following settlement the bird was widely but irregularly distributed in many parts of the North Island (Buller 1882, 1892, 1905, Martin 1885, Reischek 1886, Medway 1968). By the turn of the century, however, it was thought to be "fast disappearing before civilization" (Anon. 1892); and where it was once considered common (e.g. Wellington province) Buller (1905) noted that "with the destruction of native bush, it has long since disappeared." Oliver (1955) recorded that in Northland the Kokako had gone by about 1900 and Best (1908) and M'Lean (1912) regarded it as rare in the Urewera in the early 1900s.

Although the distribution continued to shrink in the first half of the 20th century, reported sightings of Kokako in the last 30 years show that the bird has remained in many forests, especially those in the centre of the North Island (Falla *et al.* 1966, Fisher *et al.* 1969, MacDonald 1966, Turbott 1967). While the reduction in range has continued with the logging of indigenous forests, recent reports indicate that in extensive unmilled areas the remaining populations are possibly fairly stable. This paper examines the past and present range of the Kokako and summarizes all available records about its distribution up to 1970.

Information on early distribution was compiled from a literature search, from personal communication with local and overseas museums and institutions, and with people known to have observed Kokako. A list of museums holding specimens will be published separately (Lavers, in prep.).

Observations have been grouped according to the period in which they were made:— pre-1900; 1900-1939; 1940-1959; 1960-1970. Few reports give precise details of localities. Where it has been possible to place reports within a 10,000 yard square (on the national grid) this has been done (Figs 1-4). Less precise records are omitted from the maps but are included in the summary of distribution for a particular district (Appendix 1). Nine arbitrary districts are used (Fig. 1): Northland, Auckland, Great Barrier Island, Coromandel, Rotorua, South Auckland, Taranaki, Urewera-East Coast, and Wellington. Changes in the distribution pattern are described for each and are related to both the removal of forest and disturbance of its composition.

## DISTRIBUTION

### *Northland*

Subfossil remains are known from only three areas (Scarlett pers. comm.); one from a midden at Ocean Beach and the others were found in a part of the North Cape which was originally forested (Figs 1 & 5). Records before 1900 indicate a sparse distribution and Buller (1905) considered the bird to be extremely rare in the far north even before 1850.

The type specimen was obtained from the Hokianga River area about 1840 (Oliver 1955). Oliver believed the species to have disappeared from Northland by 1900. However, there have been a few sightings between 1949 and 1970 in the Tangihua and Tutamoe Ranges, and in the Puketi and Warawara forests (Figs 2 & 3).

In addition to the damage and destruction caused by earlier Maori fires, the Northland forests have been severely reduced since European settlement and are now in scattered pockets separated by scrub and farmland. Kokako numbers have been markedly reduced and only a few small, isolated populations exist.

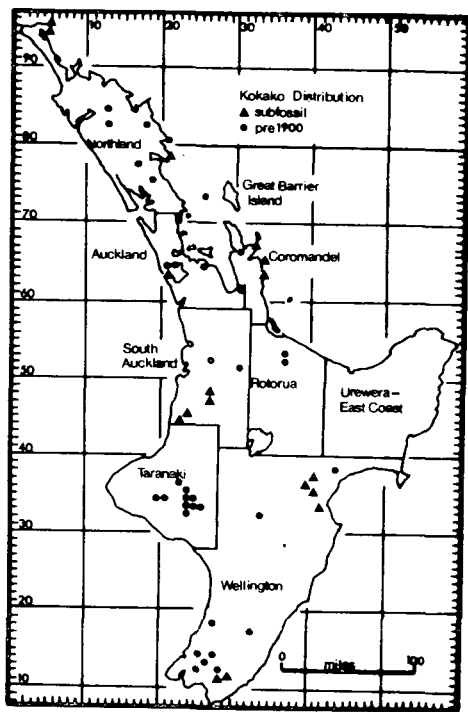


FIGURE 1 — Early records of Kokako and the location of the arbitrary districts for which changes in Kokako distribution are recorded.

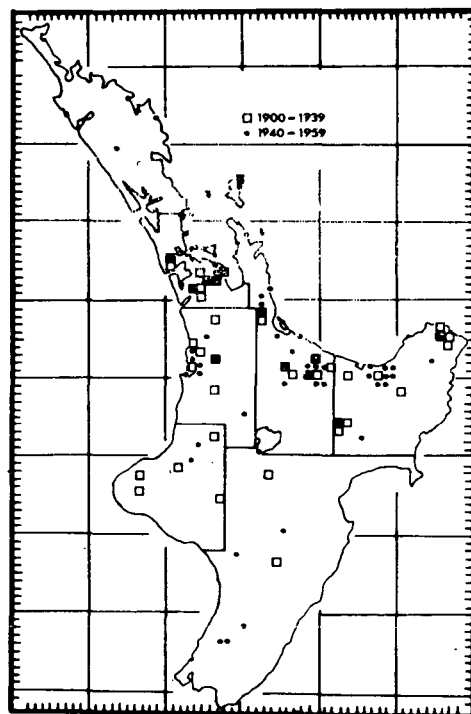


FIGURE 2 — Kokako distribution between 1900 and 1939, and 1940 and 1959.

*Great Barrier Island*

In 1868 Hutton recorded Kokako on Great Barrier Island but they were not very common. Reischek (1886) noted that this was the only off-shore island where the species was found. Between 1933 and 1963 Kokako have been reported from several localities in the north (Figs 2 & 3). Of the island's forest only a small central area has so far been cleared. Approximately 7,600 hectares have been designated State Forest and milling has been restricted to this area (P. Logan, pers. comm.).

*Coromandel*

Subfossil remains from Maori middens on the east coast and pre-1900 reports (Fig. 1) support Turbott's (1947) belief that Kokako were once common on the Coromandel Peninsula. Although there has been relatively limited deforestation in this part of the country, Kokako have declined markedly. There have been only three reported sightings between 1900 and 1939, ten from 1940 to 1959 and one between 1960 and 1970.

*Auckland*

The first recorded sighting of the North Island Kokako was made in this district in the forest on the banks of the Thames River some time prior to 1835 (Oliver 1955). From that time until 1900 reports were concentrated in the Waitakere Range to the west of Auckland city and the Hunua Range to the south-east (Fig. 1). There is one subfossil record from the Manukau Heads at the southern end of the Waitakere Range.

Reports since 1900 indicate that birds also occurred in lowland forests south of Auckland city, but as these were reduced to isolated stands the Kokako gradually declined and has not been reported in this area since 1944 (Fig. 2).

Kokako were observed on the Waitakere Range until 1932 (Falla pers. comm.), but the reports from the Hunua Range (McKenzie pers. comm.) indicate that this is the only area to have Kokako present from before 1900 until 1970 (Figs 1 & 2).

*Rotorua*

No midden or subfossil remains have been found in the Rotorua district. The earliest reports (by Buller 1877 and Potts 1882) are from the northern Mamaku plateau in the late 19th century (Fig. 1).

I know of no Kokako records in this area for the period between 1900 and 1920. However, since that period many observations have been made on the Mamaku plateau in the west and on the Kaharoa plateau in the north-east (Figs 2 & 3). Both of these places contain extensive native forest which, until recently, has not been significantly reduced in area (Fig 5). However, large plantings of exotic pines have been established in close proximity and the process is continuing.

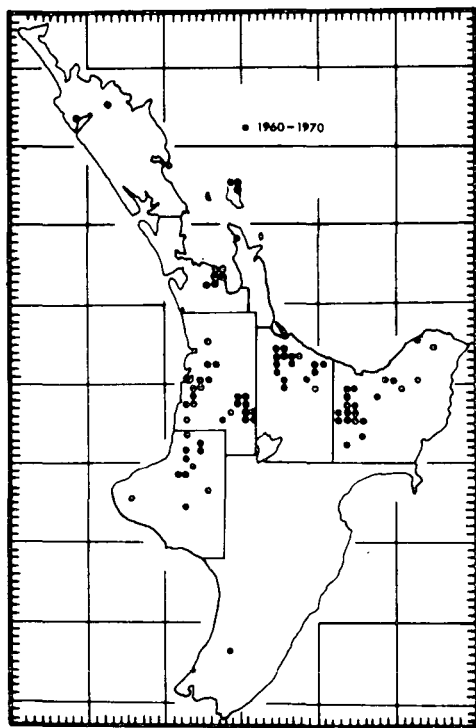


FIGURE 3 — Kokako distribution between 1960 and 1970.

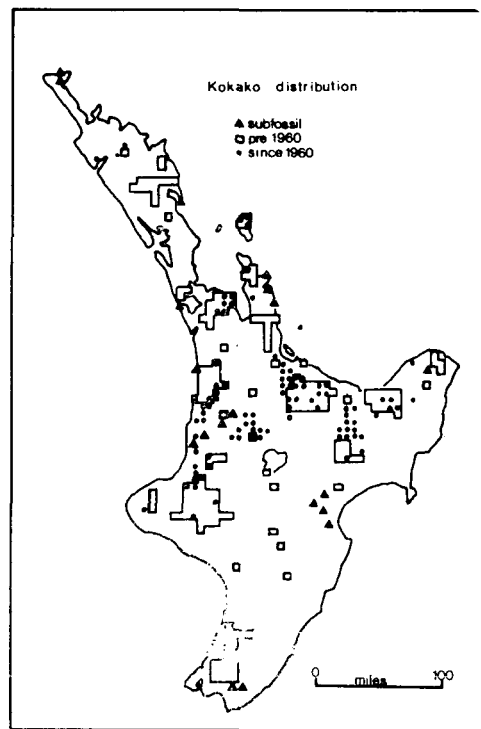


FIGURE 4 — Summary of the changes in Kokako distribution as shown by sub-fossil, pre-1960 and 1960 - 1978 records. Kokako have been recorded in an additional 13 grid squares since this survey was completed in 1970. These records are included here and details are given in Appendix 2.

Nicholls (1963) estimated that, by the middle of the 19th century, only a third of the Rotorua district was covered in forest. Maori fires and volcanic activity had greatly changed the vegetation pattern before European settlement. With the logging of accessible forests in the period following settlement, these factors have altered the type of habitat available to Kokako.

Although recent records show this to be an important area for Kokako, there is not enough information to show the past pattern of distribution.

#### *South Auckland*

The distribution of subfossil remains from Awakino to Raglan shows that in pre-European times Kokako occurred over most of the district (Fig. 1). Reports in the 19th century are few and Buller (1888, 1905) recorded that the species was rare near Taupo and in the Waikato. In the early 20th century reports again suggest a widespread distribution from Huntly to Te Kuiti (Fig. 2). The forest area to the east and west of Te Kuiti has not changed much since before settlement (Fig. 5) and reported sightings in these forests since 1960 show that Kokako still occur widely (Fig. 3).

#### *Taranaki*

The area of native forest in Taranaki was reduced by more than 400,000 hectares between 1893 and 1950 (Kirk 1895, Nicholls 1956), but some 283,000 hectares remain (Fig. 5) and this is believed to be one of the largest remnants of original forest cover in the North Island (Nicholls 1956). During the period of deforestation records of Kokako were few. However, available reports suggest that their early distribution covered most of the district (Figs 1 & 2).

Reports before 1900 are scarce except for those of an early surveyor, J. R. Annabell. Between 1880 and 1885 Annabell covered much of the forest inland from Wanganui and recorded precise localities where he either sighted or shot Kokako. These records have been summarised by Medway (1968), who lists 17 localities, covering ten different grid squares (Fig. 1). Although two recent sightings were made in the Matateonga Range neither of these can be placed in a particular square and so the present status of birds in areas where Annabell recorded them remains uncertain.

After 1900 records are mostly from areas north of the Matateonga Range (MacDonald 1966) and are centred on the Tangarakau River valley. Other reports in the early 20th century are from Mount Egmont and near Pipiriki, but most sightings have been made since 1954 (Fig. 2).

Recent observations indicate that Kokako are present in much of the remaining indigenous forest and it is likely that Kokako were widely distributed in the very extensive pre-European forests of this district.

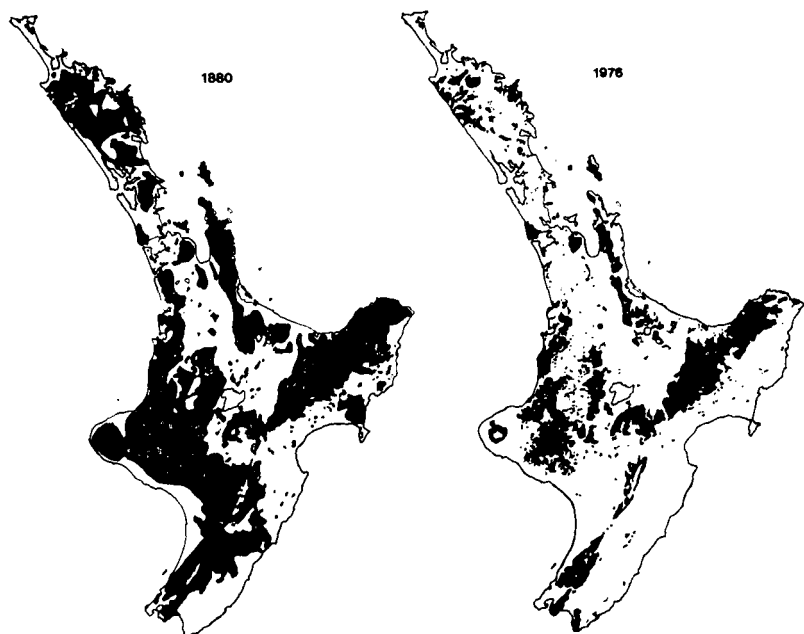


FIGURE 5 — Indigenous forest cover, North Island, 1880 and 1976 (after P. T. Royle 1976. Map of New Zealand forest cover. Wellington: Govt. Printer).

#### *Urewera - East Coast*

Between 1874 and 1903 Elsdon Best travelled extensively in the Ureweras and noted that Kokako, although scarce, were occasionally seen in the upper Parahaki and Waiau Rivers, near Opouriao, in the Waioeka area, and at Ruatahuna (Best 1908). Another early observer, J. C. M'Lean, made detailed notes on Kokako behaviour in the Maungahaumia forests, where he considered the bird to be common. Elsewhere M'Lean (1912) regarded the Kokako as rare.

There is little information on distribution before 1950. Reports since that time, however, indicate that the range of the bird covers much of the district. The few records prior to 1950 suggest a widespread distribution; though with a considerable reduction of forest in the eastern area Kokako have declined in certain places. Fleming (pers. comm.) found that between 1910 and 1935, birds in the watershed of the Kopuapounamu Stream were confined to successively smaller patches of forest. Since 1950 there have been no records from this area.

Most lowland forest was cleared in the early stages of settlement (Fig. 5) but the remaining forest, which is largely undisturbed with a

diverse flora, covers much of the district. The vegetation is mainly beech and sub-alpine scrub, with podocarp-hardwood forests on the lower slopes and in the valleys.

Recent sightings of Kokako have been restricted to the podocarp forests, mainly in the Whakatane River watershed. To the south of this, where beech forest predominates, there have been no reported sightings. Other reports since 1960 have come from the Raukumara Range to the north-east of the Urewera National Park (Fig. 3). Although distribution has become restricted in eastern lowlands, to the west it has been maintained during the present century at least (Figs 2 & 3).

### Wellington

The decline in the range of Kokako is most clearly seen in this district. Many subfossil remains have been found in southern Wairarapa and Hawkes Bay (Fig. 1) and early references to the presence of Kokako are numerous. Between 1900 and 1961 a few sightings were made — mainly in the Tararua Range (Figs 2 & 3) — but there have been no reports recently.

When Buller was in Wellington in 1854 he found that Kokako were not uncommon (Turbott 1976). Many were shot for specimens up until about 1890, but by 1892 Buller found the species "very rare where it formerly abounded" and considered that the destruction of native forest had caused the decline (Buller 1905).

Some of the lowland forest had been burned by Maoris prior to the arrival of Europeans. Their clearing activities were limited in the southern part of the district (Franklin 1967); but in Hawkes Bay most of the forest was destroyed by repeated burning before settlement (McIntock 1959). Several subfossil remains are recorded in Hawkes Bay where the Maoris indicated that the bird was plentiful before the forest was destroyed (Guthrie-Smith 1969). Virtually all the remaining lowland forest has been cleared since the time of settlement.

Large areas of forest remain on the Tararua and Ruahine Ranges but elsewhere only small patches occur. The absence of reports since 1961 suggests that the remaining (predominantly beech) forests are unsuitable for Kokako.

### DISCUSSION

The New Zealand wattlebirds (Callaeatidae) make up an endemic family which is thought to have survived from a larger group, developed by adaptive radiation in the New Zealand archipelago during the Tertiary (Fleming 1962). The Huia (*Heteralocha acutirostris*) occupied a range in the southern part of the North Island before the 20th century but is now considered to be extinct (Williams 1962, 1976). The North Island Saddleback (*Philesturnus carunculatus rufusater*) was once wide spread, but by about 1890 it could be found only on some northern offshore islands (Williams 1976). The range of the South Island races of the Saddleback (*P. c. carunculatus*) and the Kokako



(*C. c. cinerea*) also diminished rapidly early in the period of European settlement (Williams 1976). The South Island Saddleback is now found on only a few small islands off Stewart Island and the South Island Kokako is considered very close to extinction. Both originally occurred throughout the South Island.

The North Island Kokako may therefore be the only member of the wattlebird family still on the mainland of New Zealand. Nevertheless, since European settlement its distribution has been shrinking, although more slowly than that of some other species.

A contracting distribution of old endemic groups, often resulting in their extinction, is a notable feature of the New Zealand avifauna and of island avifaunas elsewhere. It appears that the higher their taxonomic level, the less adaptable they are to change and the more readily they become extinct. Most declines and extinctions are contemporary and are probably accelerated, perhaps even started, by factors associated with man (McDowall 1969). This is certainly the case with the Kokako. Its range may have started to contract before the large-scale deforestation at the turn of the century (Williams 1976). Introduced predatory and competitive mammals and disease could have accelerated the decline, yet the destruction of habitat since European settlement has clearly been the main cause (Williams 1976).

Climatic changes within the last 15 000 years have caused some major changes in forest composition (Nicholls 1956). Volcanic eruptions and fire within the last 2 000 years destroyed large areas, especially in the central North Island (McKelvey 1963). Before European settlement, and up to about the end of the 19th century, however, extensive areas of forest still covered much of the North Island (Masters *et al.* 1957). Between 1847, when the removal of forests had just begun, and 1923, forest area was reduced by 57% from 11.3 to 4.9 million hectares (Masters *et al.*). In 76 years 6.5 million hectares of lowland forest were destroyed. In some areas small, isolated stands often remained uncut for several years (e.g. south of Auckland city), but the general distribution of forest changed markedly and rapidly (Fig. 5). In addition, the technique of selective logging changed the composition and structure of many of the remaining forests.

With the destruction of forest, Kokako distribution changed accordingly. Some early observers, such as Buller, noted this at the turn of the century (Buller 1905). However, it was not until the 1960s that, with added concern for this rare bird, more people began to record sightings and the extent of this contracting distribution became evident. By 1960 the decline of the Kokako was particularly noticeable to the north and to the south of the central Volcanic Plateau (Fig. 4), where there have been extensive changes in the size and type of forest.

Forest in Northland and Auckland has been reduced to isolated stands separated by wide areas of urban, farm or waste land. Kokako

in remnant pockets of forest become confined there because they are unable to fly over any great distance (Crook *et al.* 1971). Often they are reported from these small pockets for several years but eventually they disappear (Sir Robert Falla & Sir Charles Fleming, pers. comm.).

South of Lake Taupo and throughout the Wellington district virtually all the podocarp/mixed hardwood forest of the lowlands was removed by Maoris and early settlers, and the remaining forest is predominantly beech. Kokako have not been reported since at least 1961, indicating that the high country forest no longer suits Kokako even though pre-1900 records suggest that it was common in the Tararua and Rimutaka Ranges. Records since 1960 from the Urewera National Park give a similar picture, as Kokako have been found only above the Murupara-Waikaremoana road (an area of mainly podocarp/broadleaf forest), whereas in the predominantly beech forest south of this road Kokako have not been seen recently.

From as early as Buller's time, it has been noted that Kokako are often restricted to certain parts only of the available forest and this suggests that they have definite habitat preferences. Buller observed in 1873 (Turbott 1967) that the North Island race was "sparingly dispersed over the North Island, being very local in its distribution though comparatively plentiful in certain localities." With much of the forest destroyed or grossly modified Kokako are now confined to either small, isolated pockets (where no long-term survival can be expected) or those parts of the more extensive podocarp/hardwood forests which contain suitable habitat.

Kokako occur in several of the central North Island forests where, in spite of repeated destruction and modification in the last 2 000 years, preferred habitat is found. Recent studies in these forests (Crook *et al.* 1971, Crook *et al.* 1972) have shown that Kokako are found mainly in two types of forest — mature hardwood forest (mainly Tawa, *Beilschmiedia tawa*) and predominantly podocarp forest in which tall Tawa are common. Further, it has been found that Kokako are more likely to occur close to canopy gaps or forest margins, and that their distribution is probably limited by slope and altitude, with low altitudes and gently sloping terrain being favoured (Crook *et al.* 1971). More research on this aspect of the birds' ecology is required to explain fully the present distribution pattern.

While it is important to protect present populations of Kokako by setting aside areas of different habitat types, small representative reserves may not achieve this. The long-term survival of this threatened species therefore depends on retaining large unlogged areas of forest where populations are not isolated from one another.

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# APPENDIX 1 † LOCALITY RECORDS OF KOKAKO

## 1. NORTHLAND

| Locality                             | Date      | Reference* | Grid    | Comment                         |
|--------------------------------------|-----------|------------|---------|---------------------------------|
| Maungaturoto                         | 1880      | Reischek   | 1875    |                                 |
| Hokianga River                       | 1840      | Galbraith  |         | Collection specimen             |
| Tangihua Range                       | 1850      | Buller     | 1677,78 |                                 |
| Tangihua Range                       | 1879      | Reischek   | 1677,78 |                                 |
| Tangihua Range                       | 1882      | Buller     | 1677,78 |                                 |
| Tangihua Range                       | 1949      | Rye        | 1677,78 |                                 |
| Whangarei Heads                      | 1965      | MacDonald  | 2078    |                                 |
| Ocean Beach dunes                    | Subfossil | Scarlett   | 2078    | Probably a midden               |
| Below Whangarei                      | 1926      | Moncrieff  | —       |                                 |
| Ranges near Whangarei                | 1892      | Buller     | —       |                                 |
| Wairoa & Whangarei                   | 1888      | Buller     | —       |                                 |
| Headwaters Wairoa & Whangarei Rivers | 1882      | Buller     | —       |                                 |
| Kaitara Ranges                       | 1882      | Buller     | —       |                                 |
| Kaitara Ranges                       | 1895      | Junge      | —       | Collection specimen             |
| Kaitara Ranges                       | 1898      | Junge      | —       | Collection specimen             |
| Tutamoe Range, Pakotai               | 1953      | Secker     | 1379    |                                 |
| Tutamoe, Range, Pakotai              | 1953      | Anon       | 1379    | Specimen found                  |
| Tutamoe, Range, Pakotai              | 1953      | Turbott    | 1379    | Collection specimen — Alexander |
| Tutamoe Range, Pakotai               | 1955      | Bell       | 1379    |                                 |
| Tutamoe Range, Pakotai               | 1955      | MacDonald  | 1379    | Specimen                        |
| Pakotai                              | 1950-56   | Oliver     | 1379    |                                 |
| East of Kaihu                        | 1950-56   | Oliver     | 1379    | Plentiful                       |
| Tutamoe Range, Waimatenui            | 1956      | Turbott    | 1379    |                                 |
| Near Ngunguru                        | 1882      | Reischek   | 2080    |                                 |
| Puhipuhi                             | 1898      | Pycroft    | 1282    | Specimens collected             |
| Warawara Forest                      | 1965      | MacDonald  | 0883    |                                 |
| 12 miles south Russell               | 1940      | Bell       | 1883    |                                 |
| Puketū forest                        | 1960      | Main       | 1285    |                                 |
| Puketū forest                        | 1962      | MacDonald  | 1285    |                                 |
| Puketū forest                        | 1964      | Fraser     | 1285    |                                 |
| Motukokako                           | 1888      | Buller     | —       |                                 |
| North Auckland                       | pre 1900  | Oliver     | —       |                                 |
| Waikuku Beach dune                   | Subfossil | Scarlett   | 0409    | Collection fossil               |
| Tom Bowling Bay dune                 | Subfossil | Scarlett   | 0409    | Collection fossil               |
| Bay of Islands                       | 1900      | Oliver     | —       |                                 |
| Okaihau                              | 1898      | Pycroft    | 1282    | Specimens collected             |

## 2. AUCKLAND

|                          |           |             |      |                                      |
|--------------------------|-----------|-------------|------|--------------------------------------|
| River Thames             | 1835      | Oliver      | —    |                                      |
| Auckland                 | 1870      | Hutton      | —    |                                      |
| Auckland                 | 1891      | Parkes      | —    | Collection specimen                  |
| Auckland                 | n.d.      | Rikitsansky | —    |                                      |
| Auckland                 | n.d.      | Amadon      | —    |                                      |
| Waikino                  | 1931      | Falla       | 3259 |                                      |
| Onswhero                 | 1918      | Falla       | 2460 |                                      |
| Mauku                    | 1917      | Falla       | 2361 | 50 acres remnant bush                |
| Patumahoe                | 1944      | Sibson      | 2361 |                                      |
| Pukekohe                 | 1916      | Falla       | 2461 |                                      |
| Whangarata               | 1920      | Falla       | 2461 |                                      |
| Manukau Heads            | subfossil | Scarlett    | 2063 |                                      |
| Near Drury               | 1858      | Von Pelzeln | 2463 |                                      |
| Papakura-Hunua district  | 1912      | Scarlett    | 2463 | Collection specimen                  |
| Papakura bush areas      | 1910-20   | Fleming     | 2463 |                                      |
| Hunua                    | 1932      | Falla       | 2563 |                                      |
| Waitakere Range          | 1885      | Reischek    | 2064 |                                      |
| Waitakere Range — summit | 1888      | Buller      | 2064 |                                      |
| Waitakere Range          | 1932      | Falla       | 2064 |                                      |
| Waitakere Range          | n.d.      | Turbott     | 2064 | Collection specimen — Reischek       |
| Waitakere Range          | n.d.      | Turbott     | 2064 | 2 Collection specimens — E. E. Vaile |
| Waitakere Range          | n.d.      | Turbott     | 2064 | 2 Collection specimens — Bathgate    |
| Titirangi                | 1878      | Turbott     | 2164 | 2 Collection specimens               |
| Titirangi                | n.d.      | Turbott     | 2164 | Collection specimen                  |
| Sth. Auckland            | 1955      | Oliver      | —    |                                      |
| Hunua Range              | 1887      | Oliver      | —    | Collection egg — Munroe              |
| Hunua Range              | 1937      | Rye         | —    |                                      |

\* See Appendix 3

† The cost of these appendices has been subsidised by Wildlife Service, Dept. of Internal Affairs

| Locality                                  | Date    | Reference | Grid | Comment                    |
|---|---------|-----------|------|----------------------------|
| Orere to Mt. London,<br>Pararimu to Hunua | 1900-40 | St. Paul  | —    |                            |
| Moumoukai bush                            | 1940    | McKenzie  | —    |                            |
| Moumoukai Otau, Clevedon                  | 1942    | St. Paul  | —    |                            |
| Mt. London                                | 1942    | Sibson    | 2763 | 2300' ASL                  |
| Otau hills                                | 1943    | St. Paul  | —    |                            |
| Kaiaua to Clevedon, Orere & Hunua         | 1943    | St. Paul  | —    |                            |
| Moumoukai & Mt. London                    | 1943    | St. Paul  | —    |                            |
| Clevedon                                  | 1943    | St. Paul  | —    |                            |
| Mangatangi Valley                         | 1943    | St. Paul  | —    |                            |
| Otau hills & Hunua                        | 1943    | St. Paul  | —    |                            |
| Moumoukai                                 | 1943    | McKenzie  | —    |                            |
| Moumoukai                                 | 1943    | Mead      | —    |                            |
| Mt. London                                | 1943    | Mead      | 2763 |                            |
| Clevedon                                  | 1944    | Turbott   | —    | Collection nest — McKenzie |
| Moumoukai                                 | 1944    | McKenzie  | —    |                            |
| Moumoukai                                 | 1945-46 | St. Paul  | —    |                            |
| Pukapuka peak near<br>Mangatangi Rise     | 1946    | Rye       | —    |                            |
| Mt. London                                | 1948    | St. Paul  | 2763 |                            |
| Moumoukai                                 | 1947    | St. Paul  | —    |                            |
| Kohukohunui trig                          | 1948    | St. Paul  | —    |                            |
| Moumoukai                                 | 1948    | St. Paul  | —    |                            |
| Moumoukai                                 | 1947-48 | St. Paul  | —    |                            |
| Main ridge to Kohukohunui                 | 1948    | St. Paul  | 2763 |                            |
| Main ridge to Kohukohunui                 | 1949    | St. Paul  | 2763 |                            |
| Moumoukai                                 | 1950    | St. Paul  | —    |                            |
| Moumoukai                                 | 1950    | McKenzie  | —    | Nest                       |
| Mt. Kohukohunui trig                      | 1951    | St. Paul  | 2763 |                            |
| Hunua bush                                | 1951    | St. Paul  | —    |                            |
| Hunua Range                               | 1952    | Newcombe  | —    |                            |
| Moumoukai                                 | 1952    | McKenzie  | —    | Nest                       |
| Moumoukai                                 | 1952    | Turbott   | —    | Collection nest — McKenzie |
| Moumoukai                                 | 1953    | St. Paul  | —    |                            |
| Moumoukai                                 | 1953    | St. Paul  | —    |                            |
| Manganese mine, Mangatawhiri              |         |           |      |                            |
| Headwaters                                | 1955-56 | Manning   | 2663 |                            |
| Manganese Mine                            | 1955    | Bell      | 2663 |                            |
| Moumoukai                                 | 1956    | St. Paul  | —    |                            |
| Moumoukai                                 | 1957    | St. Paul  | —    |                            |
| Moumoukai                                 | 1957-58 | St. Paul  | —    | Usual numbers              |
| Moumoukai                                 | 1959-60 | St. Paul  | —    |                            |
| Moumoukai                                 | 1961-63 | MacDonald | —    |                            |
| Hunua Range                               | 1962    | St. Paul  | —    |                            |
| Moumoukai                                 | 1965    | McKenzie  | —    |                            |
| Moumoukai                                 | 1966-67 | McKenzie  | —    |                            |
| Mangatangi water supply                   | 1966    | Merton    | —    |                            |
| Kohukohunui track                         | 1967    | McKenzie  | 2763 |                            |

### 3. GREAT BARRIER ISLAND

|  |        |                      |      |  |
|--|--------|----------------------|------|--|
| Great Barrier Island                     | 1868   | Hutton               |      |  |
| Great Barrier Island                     | 1882   | Reischek             | —    |  |
| Great Barrier Island                     | 1947   | Turbott              | —    |  |
| Katherine Bay Bush                       | 1945   | Sheet                | 2874 |  |
| Great Barrier Island                     | 1949   | Bell                 | —    |  |
| Range between Katherine Bay —<br>Topuwai | 1949   | Bell                 | 2874 |  |
| Mt. Hobson                               | 1949   | Bell                 | 2974 |  |
| Mt. Hobson                               | 1960's | MacDonald            | 2974 |  |
| Gorge near Miners head                   | 1960's | MacDonald            | 2875 |  |
| Ahuriri catchment                        | 1963   | MacDonald            | 2875 |  |
| South of Ahuriri Point                   | 1963   | Merton               | 2875 |  |
| 3 miles north Whangapoua Bay             | 1933   | Bell &<br>Brathwaite | 2975 |  |
| 3 miles north Whangapoua Bay             | 1955   | Bell &<br>Brathwaite | 2975 |  |
| 3 miles north Whangapoua Bay             | 1957   | Bell &<br>Brathwaite | 2975 |  |
| Rangiwahia Bay                           | 1963   | Merton               | 2975 |  |

### 4. COROMANDEL

|  |        |          |      |  |
|--|--------|----------|------|--|
| Waitawheta, Waihi                            | 1941   | McKenzie | 3258 |  |
| Colville Ranges, behind Waitekauri           | 1949   | McKenzie | 3259 |  |
| Ranges near Paeroa                           | 1954   | Oliver   | —    |  |
| Komata to Waihi Ranges                       | 1960's | Kendrick | —    |  |
| Colville Ranges, 2 mls above<br>Golden Cross | 1959   | Hamerton | 3260 |  |

| Locality                            | Date      | Reference  | Grid | Comment                           |
|-------------------------------------|-----------|------------|------|-----------------------------------|
| Wentworth Valley, behind Whangamata | 1958      | MacDonald  | 3361 |                                   |
| Tairua                              | Subfossil | Scarlett   | 3363 | Moa hunter midden specimens       |
| Hot Water Beach                     | Subfossil | Scarlett   | 3365 | Moa hunter midden specimens       |
| Tokatea Range, Castlehill           | 1880      | Reischek   | —    |                                   |
| Tokatea Range, Castlehill           | 1880      | Rikitansky | —    | 3 collection specimens — Reischek |
| Tokatea Range, Castlehill           | 1880      | Oliver     | —    |                                   |
| Castlerock                          | n.d.      | Darby      | —    | 2 collection specimens            |
| Above Papaaroa Bay                  | 1959      | McKenzie   | 2967 |                                   |
| Opito                               | Subfossil | Scarlett   | 3267 | Moa hunter midden specimens       |
| Behind Amodeo Bay                   | 1960's    | Kendrick   | 2968 |                                   |
| Kennedys Bay area                   | 1957      | Hunt       | 3068 |                                   |
| Kennedys Bay                        | 1958      | Anon       | 3068 |                                   |
| Coromandel                          | 1947      | Turbott    | —    | "once common"                     |
| N.E. Coromandel                     | 1949      | Bell       | —    |                                   |

## 5. ROTORUA

|                                     |          |                    |         |                                     |
|-------------------------------------|----------|--------------------|---------|-------------------------------------|
| Rotorua                             | 1921     | Evans              | —       | Collection specimen — Wardlaw       |
| Rotorua                             | 1926     | Moncrieff          | —       |                                     |
| Rotorua                             | 1937     | Evans              | —       | Collection specimen — Plowden       |
| Bay of Plenty                       | 1933     | Turbott            | —       | 3 collection specimens — C. Cameron |
| Rotorua                             | 1954     | Bell               | —       | Increase in numbers                 |
| 12 mls south Mamaku town            | 1953     | Rawston            | 3549    |                                     |
| Horohoro                            | 1956, 59 |                    | 3549    |                                     |
| Sth Mamaku plateau                  | 1970     | Hall               | 3549    |                                     |
| Sth Mamaku plateau                  | 1970     | Lavers             | 3549    |                                     |
| Mamaku plateau                      | 1928     | Johnson            | —       |                                     |
| Mamaku                              | 1934     | Fleming            | —       |                                     |
| Paradise, near trout hatchery       | 1936     | Phillips & Lindsay | 3650    |                                     |
| Mamaku                              | 1939     | Phillips & Lindsay | —       |                                     |
| Mamaku                              | 1940     | Buddle             | —       |                                     |
| Railway near Mamaku                 | 1965     | Jackson & Lyall    | 3550    |                                     |
| Nth side Rotorua-Tirau Road         | 1932     | Fleming            | 3551    |                                     |
| 14 mile peg Rotorua-Tirau Road      | 1954     | Tattersal          | 3551    |                                     |
| Mamaku plateau - scenic reserve     | 1970     | Lavers             | 3551    |                                     |
| Brakes bush                         | 1930's   | Tong               | 35,3651 |                                     |
| Lake Tarawera, east side            | 1949     | Tong               | 3949    |                                     |
| Matahina block                      | 1955     | Bell               | 40,4149 |                                     |
| Mt Tarawera                         | 1967     | Sheppard           | 3949    |                                     |
| Okataina Lodge                      | 1934     | Fleming            | 3850    |                                     |
| Okataina                            | 1944     | White              | 3850    |                                     |
| 3 mls from Rotoiti to Okataina      | 1970     | Hadden             | 3850    |                                     |
| 3 mls S.E. Lake Rotoiti             | 1939     | Rye                | 3950    |                                     |
| Waione block                        | 1940     | Bell               | 3851    |                                     |
| Waione block                        | 1940-44  | Phillips & Lindsay | 3851    |                                     |
| Waione block                        | 1956-59  | Hamlett            | 3851    |                                     |
| Lake Rotoiti                        | 1950     | Secker             | 38,3951 |                                     |
| Lake Rotoiti                        | 1962     | Vercoe             | 38,3951 |                                     |
| Piritangi, Lake Rotoiti             | 1956-59  | Hamlett            | —       |                                     |
| Between Hongis Track & Maniatutu Rd | 1940     | Dickenson          | 3951    |                                     |
| Hongis Track to L. Rotoehu          | 1939     | Dickenson          | 3951    |                                     |
| Hongis Track                        | 1946     | McKenzie           | 3951    |                                     |
| Nth of Hongis Track                 | 1953     | Mitchell bros.     | 3951    |                                     |
| Mt. Matawhaura                      | 1951     | Falla              | 3951    |                                     |
| Mt. Matawhaura                      | 1956-59  | Hamlett            | 3951    |                                     |
| N.E. Lake Rotoiti                   | 1959     | Tanfield           | 3951    |                                     |
| Hongis Track                        | 1960's   | Jackson            | 3951    |                                     |
| Hinehopu northwards                 | 1960's   | Kendrick           | 3951    |                                     |
| Rotoiti eastwards                   | 1964     | Lyall              | 3951    |                                     |
| South of Rotoiti                    | 1960's   | Jackson            | 3951    |                                     |
| Lake Rotoma                         | 1956     | Secker             | 4051    |                                     |
| Rotorua Scenic Reserve              | 1957     | Hamlett            | 4051    |                                     |
| Rotorua Scenic Reserve              | 1956-59  | Hamlett            | 4051    |                                     |
| East end Lake Rotoma                | 1946     | McKenzie           | 4051    |                                     |
| Hill from Rotorua to Te Teko        | 1932     | Fleming            | 4151    |                                     |
| Lake Rotoma                         | 1946     | Odey               | 4051    |                                     |

| Locality   | Date      | Reference          | Grid    | Comment                         |
|--|-----------|--------------------|---------|---------------------------------|
| Mangorewa forest                                     | 1877      | Buller             | 3652    | Comparatively plentiful         |
| Mangorewa forest                                     | 1888      | Buller             | 3652    |                                 |
| Mangorewa gorge                                      | 1960      | Moresby            | 3652    |                                 |
| Mangorewa  | 1970      | Lavers             | 3652    |                                 |
| Lake Rotoehu   | 1940      | Secker             | 39,5152 |                                 |
| Bush behind Rotoehu                                  | 1940      | Phillips & Lindsay | 39,4052 |                                 |
| Pongakawa Valley                                     | 1943      | Tong               | 3952    | Four groups seen                |
| Pongakawa district                                   | 1952      | Watson             | 3952    |                                 |
| Rotoehu State Forest 88                              | 1951-59   | Hamlett            | 3952    |                                 |
| Near Pongakawa Road                                  | 1953      | Newcombe           | 3952    | Same report                     |
| Near Pongakawa Road                                  | 1953      | Secker             | 3952    |                                 |
| Rotoehu State Forest 88                              | 1962      | Beveridge          | 3952    |                                 |
| Rotoehu State Forest 88                              | 1965      | Beveridge          | 3952    |                                 |
| Rotoehu State Forest 88                              | 1969      | Hellyer            | 3952    |                                 |
| Pongakawa-Hannon Road                                | 1970      | Hall               | 3952    |                                 |
| Rotoehu block west of Hannon Rd                      | 1970      | Lavers             | 3952    |                                 |
| Above Soda Springs                                   | 1960's    | Lyall              | 4052    |                                 |
| Manawahe   | 1956-59   | Hamlett            | 4052    |                                 |
| Manawahe   | 1946      | McKenzie           | 4052    |                                 |
| Rotoehu-east of Hannon Rd.,<br>Nth. of Hamiltons Rd. | 1970      | Lavers             | 4052    |                                 |
| N.W. Opuiaki Stream:                                 |           |                    |         |                                 |
| Mangorewa Stream                                     | 1964      | Jackson            | 3652    |                                 |
| Mayors Waterfall                                     | 1962      | Kendrick           | 3453    |                                 |
| N.W. Mamaku  | 1970      | Lavers             | 3453    |                                 |
| 2 miles east Kaimai Youth Lodge                      | 1970      | McLintock          | 3553    |                                 |
| N.E. Mamaku  | 1970      | Lavers             | 3553    |                                 |
| N.E. Mamaku  | 1970      | Hall               | 3653    |                                 |
| Oropi gorge-Glue pot & Burd Rd.                      | 1970      | McLintock          | 3653    |                                 |
| Mangatoi Rd. area                                    | 1970      | Lavers             | 3653    |                                 |
| Oropi-Otanewainuku Reserve                           | 1958      | Williams           | 3653    |                                 |
| No. 3 Road Te Puke                                   | 1963      | Tong               | 3753    |                                 |
| Mangatoi Rd. area                                    | 1970      | Lavers             | 3753    |                                 |
| Ngamuwahine Stream                                   | 1966      | Easton             | 3454    |                                 |
| McLarrens Lake                                       | 1960      | Smith              | 3554    |                                 |
| Kaimai Range (Mamaku end)                            | 1967      | Walker             | —       |                                 |
| Kaimai Range   | 1960's    | Pracy              | —       |                                 |
| Lower Kaimai & Mamaku Ranges                         | 1939-40   | Fleming            | —       |                                 |
| Woods at Oropi, Tauranga                             | 1882      | Potts              | 3654    |                                 |
| Oropi area   | 1958      | Anon               | 3654    |                                 |
| Oropi bush   | 1960      | McLintock          | 3654    |                                 |
| Oropi-Tauranga district                              | 1960's    | Kendrick           | —       |                                 |
| Tauranga   | n.d.      | Turbott            | 3655    | Collection specimen             |
| Tauranga   | 1951      | Wilkinson          | 3655    |                                 |
| Whakamarama  | 1948      | Anon               | 3455    |                                 |
| Papamoa  | 1944      | Secker             | 3755    |                                 |
| <b>6. SOUTH AUCKLAND</b>                             |           |                    |         |                                 |
| Mt Pihanga   | 1948      | Phillips & Lindsay | 3240    |                                 |
| Otagiwai   | 1920      | Falla              | 2643    |                                 |
| Kopaki behind Tihoi                                  | 1960's    | Kendrick           | 3144    |                                 |
| Kopaki, Te Kuiti                                     | 1969      | Turbott            | 3144?   | Collection specimen             |
| Pureora forest                                       | 1944      | Beveridge          | 30,3145 |                                 |
| Pureora forest                                       | 1958      | Beveridge          | 30,3145 |                                 |
| Pureora forest                                       | 1964      | Beveridge          | 30,3145 |                                 |
| Pureora forest                                       | 1968      | Drower             | 30,3145 |                                 |
| Pureora forest                                       | 1968      | Turbott            | 30,3145 | Collection specimen —<br>Drower |
| Nth. of Pureora S.F. Headquarters                    | 1970      | Cragg              | 3045    |                                 |
| Mt. Titiraupenga                                     | 1960's    | Kendrick           | 3145    |                                 |
| Mt. Titiraupenga northern slopes                     | 1970      | Cragg              | 3145    |                                 |
| Ranginui bush, Mangakino                             | 1966      | Cragg              | 3046    |                                 |
| West of Pouakani Reserve                             | 1969      | Cragg              | 3046    |                                 |
| Pureora S.F. 96, Ranganui Rd.                        | 1970      | Cragg              | 3046    |                                 |
| Whareorino Peak                                      | 1961      | Kendrick           | 2247    | 2130' ASL<br>2832' ASL          |
| Rangitoto trig                                       | 1960's    | MacDonald          | 2947    |                                 |
| North end of Ponakani forest                         | 1964      | Beveridge          | 3047    |                                 |
| South east of Te Anga                                | 1960's    | Kendrick           | 2348    |                                 |
| Herangi Range  | 1960      | Pracy              | 2345    |                                 |
| Fred Cave, Waitomo                                   | Subfossil | Scarlett           | 2548    |                                 |
| Cut Throat Cave, Te Kuiti                            | Subfossil | Scarlett           | 2648    |                                 |
| Upper Waipa Valley                                   | n.d.      | Turbott            | 3047    | Collection specimen             |
| Ngaroma, Headwaters of<br>Waipa River                | 1959      | Bashford           | 3046    |                                 |
| Ngaroma  | 1964      | MacDonald          | 3048    |                                 |
| Kinohaku to Te Anoa                                  | 1960's    | Kendrick           | 2349    |                                 |

| Locality   | Date      | Reference   | Grid     | Comment                                |
|--|-----------|-------------|----------|--|
| Te Anga vicinity                                 | 1964      | MacDonald   | 2349     | 1500' ASL                              |
| Peak near Hauturu                                | 1960's    | Kendrick    | 2549     |  |
| Te Maika   | 1954      | McKenzie    | 2250     |  |
| South of Te Maika towards Lake Taharoa           | 1962      | Kendrick    | 2250     | Collection specimen — Drew             |
| Hauturu  | 1959      | MacDonald   | 2450     |  |
| Te Kihī track, Te Raumoana                       | 1968      | Merton      | 2550     |  |
| Te Kihī track                                    | 1968      | Cheyne      | 2550     |  |
| Kawhia   | 1923      | Dom. Mus.   | 2351     |  |
| Kawhia   | 1926      | Moncrieff   | 2351     |  |
| Kawaroa Stream head                              | 1956      | Sutherland  | 2451     | Maoris call it common                  |
| Oparau   | 1964      | MacDonald   | 2451     |  |
| Oparau   | 1966      | Merton      | 2451     |  |
| Te Rauamoana, Pirongia Range                     | 1962      | MacDonald   | 2551     |  |
| Maungatautari                                    | 1888      | Buller      | 3051     |  |
| Pirongia Range                                   | 1882      | Reischek    | —        |  |
| Pirongia Range                                   | 1882      | Rikitsansky | —        |  |
| Pirongia Range                                   | 1882      | Steinbacher | —        |  |
| Pirongia Range                                   | 1945      | Pracy       | —        |  |
| Pirongia Range                                   | 1949      | Pracy       | —        |  |
| Pirongia Range                                   | 1960's    | Kendrick    | —        | 4 collection specimens — Reischek      |
| Aotea harbour                                    | 1953      | Buckeridge  | 2352     |  |
| Te Mata-Aotea harbour road                       | 1954      | Buckeridge  | 2353     | Collection specimen                    |
| Aotea harbour — back in bush                     | 1960's    | Kendrick    | 2353     |  |
| Te Kuiti   | 1931      | Falla       | 2643     | Collection specimen                    |
| Pirongia   | 1933      | Turbott     | —        |  |
| Pirongia   | 1963      | Turbott     | —        |  |
| Bridal Veil Falls                                | 1920      | MacDonald   | 2453     | Collection specimen                    |
| Helcolite Cave, Raglan                           | Subfossil | Scarlett    | 2354     |  |
| Raglan   | 1907      | Fulton      | 2354     | Always a rare bird here                |
| Waikato  | 1905      | Buller      | —        |  |
| Glen Massey to coast, Wilton Colliery area       | 1954      | Bell        | 2555     |  |
| 6 Miles west Ngaruawahia, Glen Massey            | 1953      | Philburn    | 2555     | 2 specimens shot                       |
| Kokako trig                                      | 1960      | MacDonald   | 2555     |  |
| Kokako trig                                      | 1961      | MacDonald   | 2555     | 1114' ASL                              |
| 1/2 mile from Kokako trig                        | 1961      | MacDonald   | 2555     |  |
| Mangakara Stream                                 | 1961      | MacDonald   | 2555     | 1093' ASL                              |
| Trig   | 1961      | MacDonald   | 2555     |  |
| 6 Miles west Ngaruawahia                         | 1953      | Turbott     | 2555     | Collection specimen                    |
| Huntly   | 1926      | Moncrieff   | 2657     |  |
| West Waikato                                     | 1962      | Newcombe    | —        | Specimen shot                          |
| Whatawhata                                       | n.d.      | Turbott     | 2554     |  |
| Ngaruawahia                                      | 1953      | Turbott     | 2656     | 3 specimens in collection—H. Johnstone |
|  |           |             |          | Collection specimen — Goodall          |
| <b>7. TARANAKI</b>                               |           |             |          |  |
| Near Ngamatapouri on Waitotara River             | 1883      | Medway      | 2332     | Specimen shot                          |
| Rakaumahi trig near Tunapoto Stream              | 1883      | Medway      | 2333     |  |
| Rakautihitihī trig to Rakaumahi trig             | 1884      | Medway      | 2333     | Specimen shot                          |
| Waitotara River to trig                          | 1884      | Medway      | 2333     |  |
| Lake Rotokohu                                    | 1885      | Medway      | 2333     |  |
| Tahoronui trig to Rakautihitihī trig             | 1884      | Medway      | 2433     | Specimen shot                          |
| Taurukawau trig to Rakaumahi trig                | 1885      | Medway      | 2433     |  |
| Tuanuitakou trig to Mataimoana trig              | 1885      | Medway      | 2533     | 4 specimens shot                       |
| Lake Rotokare                                    | 1881      | Medway      | 1934     |  |
| Mangatoromiro Stream                             | 1800      | Medway      | 2034     |  |
| Tahupo trig                                      | 1884      | Medway      | 2334     |  |
| Maungarau trig to Tuanuitakou trig               | 1885      | Medway      | 2434     | Specimen shot                          |
| Whakauihi trig                                   | 1884      | Medway      | 2334     |  |
| Junction of Waitotara & Omaru stms, Puteore Trig | 1880's    | Medway      | 2334, 35 |  |
| Tahupo to Puteore trig                           | 1885      | Medway      | 2334     | 22, 2334                               |
| Matamatecnga Range                               | 1968      | Pracy       | 22, 2334 |  |
| Upper Waitotara River                            | 1960's    | MacDonald   | 22, 2334 |  |
| Behind Waverley                                  | pre 1900  | Smart       | —        |  |



| Locality  | Date      | Reference  | Grid     | Comment                               |
|---|-----------|------------|----------|---------------------------------------|
| Behind Waverley   | 1958      | Smart      | —        |                                       |
| Whakauahi trig to Maungarau                               | 1884      | Medway     | 2434     |                                       |
| Whakauahi trig to Maungarau                               | 1885      | Medway     | 2434     | Specimen shot                         |
| Pipiriki  | 1909      | Scarlett   | 2734     | 5 collection specimens —<br>Stead     |
| Raetihi   | 1918      | Oliver     | 2734     | Numbers reduced — fire                |
| Pipiriki  | 1944      | Mead       | 2734     |                                       |
| Western Egmont Park                                       | 1964      | MacDonald  | 15 35,36 |                                       |
| Egmont  | 1907      | Fulton     | —        |                                       |
| 1 mile below Mangorei hut,<br>Ponakai Range               | 1938      | Medway     | 1637     |                                       |
| 20 miles N.E. of Lake Rotokare                            | 1846      | Medway     | 2236     |                                       |
| Ngatimaru   | 1907      | Fulton     | 2138     |                                       |
| Marco Rd, Whangamomona                                    | 1966      | MacDonald  | 2238     |                                       |
| Matirangi S.F. 110  | 1968      | Pracy      | 21,2238  |                                       |
| Tangarakau corge near road                                | 1956      | Smart      | 2339     |                                       |
| West of Tahore  | 1968      | Pracy      | 2339     |                                       |
| Skinner Hill, Tahora                                      | 1962      | MacDonald  | 2240     |                                       |
| Skinner Hill, Tahora                                      | 1963      | MacDonald  | 2240     |                                       |
| Skinner Hill, Tahora                                      | 1966      | MacDonald  | 2240     |                                       |
| Skinner Hill, Tahora                                      | 1970      | Mantle     | 2240     | Same 4 groups present                 |
| Moki Rd., Tahora  | 1968      | MacDonald  | 2240     |                                       |
| Ohura   | 1940      | MacDonald  | 2441     |                                       |
| Ohura   | 1954      | Bell       | 2441     |                                       |
| Tokirima-Ahititi, Rerepahupahu<br>falls, Tangarakau River | 1955      | Machaado   | 2441     | Same report                           |
|   | 1955      | MacDonald  | 2441     |                                       |
| Ohura   | 1964      | MacDonald  | 2441     | Specimen shot                         |
| Tongaporutu Valley  | 1963      | MacDonald  | 22,2341  | Specimen shot                         |
| Awakau Rd., 10 mls up<br>Mokau River                      | 1960's    | MacDonald  | 2243     |                                       |
| Kokako trig, Waitaanga                                    | 1962      | MacDonald  | 2442     |                                       |
| Mangatiti Stream, Wanganui River                          | 1964      | MacDonald  | 2536     |                                       |
| Waitaanga   | 1954      | Packer     | —        |                                       |
| Kokakonui   | 1912      | Scarlett   | 2642     | 2 collection specimens —<br>O'Connor  |
| Robbers hole, Awakino                                     | Subfossil | Medway     | 2244     |                                       |
| Herangi Range   | 1960's    | Pracy      | 22,2345  |                                       |
| Bluegum cave, Mahoenui                                    | Subfossil | Scarlett   | 2345     |                                       |
| Wanganui  | 1908      | Vestergren | —        | 2 collection specimens —<br>Rosenburg |
| Taranaki  | 1902      | Dom. Mus.  | —        | Collection specimen                   |
| Taranaki  | 1926      | Moncrieff  | —        |                                       |
| Taranaki  | 1928      | Stidolph   | —        | Not uncommon in several<br>localities |

## 8. UREWERA - EAST COAST

|  |            |            |         |                            |
|--|------------|------------|---------|----------------------------|
| Te Puna, Lake Waikaremoana                     | 1954       | Hardacre   | 4542    | Possible report            |
| Forest ranges of Parahaki<br>and Waiau Rivers  | 1908       | Best       | 4243    |                            |
| Huiarau Range                                  | 1924       | Falla      | 4243    |                            |
| Mokau falls, Waikaremoana                      | 1966       | MacDonald  | 4543    |                            |
| Te Whaiti school area                          | 1942       | Hill       | 4244    |                            |
| Ruatahuna                                      | 1909       | Best       | 4344    |                            |
| Tutaepukepuke clearing                         | 1962       | Williams   | 4345    |                            |
| Maungapohatu                                   | 1962       | MacDonald  | 4545    | Nest collected             |
| Maungapohatu                                   | 1962       | Scarlett   | 4545    | Collection specimen (nest) |
| Horomanga to Tawhiuau                          | 1965       | Pracy      | 4246    |                            |
| Horomanga - Pukareao ridge                     | after 1968 | Nilsson    | 4345    |                            |
| West of Hunamahihi clearing                    | 1961       | Kiddie     | 4346    |                            |
| Ohane - Waikare Catchments                     | 1967       | Miers      | 4446    |                            |
| Urewera  | 1908       | Best       | —       | Scarce                     |
| Denis Creek (Manaohau Stm -<br>Hunamahihi Stm) | 1965       | Pracy      | 4347    |                            |
| Galatea - btw. Manaohau &<br>Hunamahihi Stms.  | 1964       | MacDonald  | 4348    |                            |
| Mangamoko - Waihua ridge                       | after 1968 | Nilsson    | 4348    |                            |
| Mangamoko - Waihua Stms                        | 1969       | Sutherland | 4348    |                            |
| Waikokou - Waihua ridge                        | after 1968 | Nilsson    | 4349    |                            |
| Rautiti Stm, lower Whakatane River             | 1969       | Stack      | 4448    |                            |
| Manganuku Stm, Waioeka River                   | 1967       | Jones      | 4748    |                            |
| Manganuku Stm, Waioeka River                   | 1969       | Jones      | 4748    |                            |
| Motu bush, Toatoa                              | 1960-61    | Blackburn  | 4948    |                            |
| Motu bush, Toatoa bush                         | 1962       | Blackburn  | 4948    |                            |
| Maungahaumi                                    | 1906       | M'Lean     | 5048    | 3000' ASL                  |
| Waioeka River area                             | 1958       | Blackburn  | 4749    |                            |
| Urutana  | 1952       | Secker     | 4849,50 |                            |

| Locality                                       | Date       | Reference           | Grid | Comment                           |
|--|------------|---------------------|------|-----------------------------------|
| Urutana  | 1953       | Forester & Thompson | 4850 |                                   |
| Urutana peak                                   | 1958       | Forester & Thompson | 4849 |                                   |
| Pakihi River                                   | 1953       | Forester & Thompson | 4849 |                                   |
| Otara River                                    | 1953       | Forester & Thompson | 4850 |                                   |
| Pakihi Valley                                  | 1952       | Forester & Thompson | 4849 |                                   |
| Ranges near Oporiao                            | 1909       | Best                | 4350 |                                   |
| 4 mls sth Opotiki (reserve)                    | 1945       | McKenzie            | 4650 |                                   |
| Waioeka district                               | 1909       | Best                | 4750 |                                   |
| Otara River, Pakihi catchment                  | 1964-66    | Jones               | 4850 |                                   |
| Otara River, Pakihi catchment                  | 1970       | Jones               | 4850 |                                   |
| Papamoa bush, Toatoa                           | 1944       | Clark               | 4950 |                                   |
| Toatoa district                                | 1951-52    | Clark               | 4950 |                                   |
| Near Toatoa                                    | 1960's     | MacDonald           | 4950 |                                   |
| Motu bush                                      | 1960       | Blackburn           | 5250 |                                   |
| Waiotahi River mouth                           | 1957       | Talbot              | 4651 |                                   |
| 12 mls sth Opotiki on Toatoa Rd.               | 1948       | Anon                | 4851 |                                   |
| Te Atuaahutapu (Toatoa)                        | 1959       | Hamlett             | 4951 |                                   |
| Southern Raukumaras                            | 1966       | MacDonald           | —    | In many parts                     |
| Taurangakautuku River                          | 1919-34    | Fleming             | 5654 |                                   |
| Tangitira Stm, Raukokore River                 | 1961       | Kendrick            | —    |                                   |
| Mt. Hikurangi                                  | 1947       | Sheet               | 5452 | Maoris shot some                  |
| Kopuapounamu stm headwaters                    | 1939       | Fleming             | 5555 |                                   |
| Motumuka stream headwaters                     | after 1968 | Nilsson             | 4446 |                                   |
| Ohane - Toromiro ridge                         | after 1968 | Nilsson             | 4447 |                                   |
| Raroa peak                                     | after 1968 | Nilsson             | 4449 |                                   |
| Betw. Maungakakariki & Kopuapounamu headwaters | 1935       | Fleming             | 5555 |                                   |
| Kopuapounamu Stream                            | 1950       | Secker              | 5555 |                                   |
| Kiritahi Station, Kopuapounamu stm             | 1910       | Fleming             | 5655 |                                   |
| Potaka, Hicks Bay                              | 1934       | Clark               | 5556 |                                   |
| Whanarua Bay, East Coast                       | 1967       | Weston              | 5255 |                                   |
| <b>9. WELLINGTON</b>                           |            |                     |      |                                   |
| Cave near Martinborough                        | Subfossil  | Stidolph            | 2811 |                                   |
| Harrison's hole cave                           | Subfossil  | Scarlett            | 2811 |                                   |
| Cave 1 — Martinborough                         | Subfossil  | Yaldwin             | 2811 | Bones possibly 8,000 years old    |
| Cave 5 — Martinborough                         | Subfossil  | Yaldwin             | 2911 |                                   |
| Wainuiomata                                    | 1890       | Phillips            | 2512 |                                   |
| Wellington                                     | 1872       | Junge               | —    | Collection specimen               |
| Wellington                                     | 1873       | Buller              | —    | Far from uncommon                 |
| Wellington                                     | 1881       | Finsch              | —    |                                   |
| Wellington                                     | 1888       | Anon                | —    |                                   |
| Wellington                                     | 1892       | Anon                | —    | Fast disappearing                 |
| Wellington                                     | 1899       | Dom. Mus.           | —    | 2 Collection specimens            |
| Wellington                                     | 1899       | Ziegler             | —    | Collection specimen <sup>1</sup>  |
| Wellington                                     | 1901       | Amadon              | —    | Travers                           |
| Wellington                                     | 1901       | Amadon              | —    | Collection specimen — Travers     |
| Wellington & Southern Wairarapa                | 1926       | Moncrieff           | —    |                                   |
| Wellington and Hutt                            | 1854       | Buller              | —    | Comparatively common              |
| Dry River                                      | 1884       | Kirk                | 2812 | Specimen shot                     |
| Ridges above Mangaroa Valley                   | 1900's     | Pracy               | 2613 |                                   |
| Confluence of Wakatikei & Hutt Rivers          | 1890       | Secker              | 2514 |                                   |
| Near Pakuratahi hotel, Rimutakas               | 1877       | Buller              | 2714 | Bird kept in captivity            |
| Rimutaka Range                                 | 1881       | Kirk                | 2714 | Albino specimen shot              |
| Rimutaka Range                                 | 1905       | Buller              | —    |                                   |
| Rimutaka Range                                 | 1934       | Fleming             | —    |                                   |
| Near Greytown                                  | 1884       | Kirk                | —    | Specimen shot                     |
| Wairarapa                                      | 1873       | Potts               | —    |                                   |
| Wairarapa                                      | 1882       | Kirk                | —    | Two partial albino specimens shot |
| Wairarapa                                      | 1890       | Amadon              | —    | Collection specimen               |
| Wairarapa                                      | 1890       | Amadon              | —    | Albino collection specimen        |
| Wairarapa                                      | 1891       | Scarlett            | —    | Collection specimen — Buller      |
| Wairarapa                                      | 1892       | Scarlett            | —    | Collection specimen — Buller      |
| Tararua Range                                  | 1892       | Buller              | —    | Specimen shot                     |
| Tararua Range                                  | 1892       | Parkes              | —    | Collection specimen               |

| Locality                                   | Date       | Reference     | Grid | Comment                             |
|--|------------|---------------|------|-------------------------------------|
| Tararua Range                              | 1905       | Buller        | —    |                                     |
| Tararua Range                              | 1907       | Fulton        | —    | Still plentiful                     |
| Tararua Range                              | 1908       | Oliver        | —    | Still plentiful                     |
| Waioatauru River, Tararuas                 | 1952       | McCann        | 2716 |                                     |
| Hector Stream, Tararuas                    | 1959       | Pracy         | 2816 |                                     |
| Tauwharehikau Ridge, Tararuas              | 1961       | MacDonald     | 2816 |                                     |
| Otaki                                      | 1862       | Buller        | —    | Specimen bought from Maori          |
| Rangitumau hill                            | early 1900 | Stidolph      | 3217 |                                     |
| Cleft creek, Tararuas                      | 1956       | Pracy         | 3018 |                                     |
| Ruamahanga River, Tararuas                 | 1949       | —             | —    |                                     |
| Komako                                     | 1907       | Fulton        | 3426 |                                     |
| Upper Tutaenui River, Marton               | 1957       | Breen         | 2927 |                                     |
| Mt Colenso, Ruahines                       | 1957       | Adams         | 3530 |                                     |
| Hawkes Bay                                 | 1873       | Buller        | —    | In certain localities               |
| Napier                                     | 1886       | Aellen        | —    | Collection specimen                 |
| Dartmoor Rockshelter                       | Subfossil  | Scarlett      | 4133 |                                     |
| Rockshelter No. 2, Patoka                  | Subfossil  | Scarlett      | 4035 |                                     |
| Limestone cave No. 3, Puketitiri           | Subfossil  | Scarlett      | 3936 |                                     |
| Midden - Rockhill rock shelter, Puketitiri | Subfossil  | Scarlett      | 3936 |                                     |
| Te Weka cave No. 1                         | Subfossil  | Scarlett      | 4037 |                                     |
| Kaupokonui (Hawkes Bay) Midden             | Subfossil  | Scarlett      | —    |                                     |
| Hawkeston Gorge (Hawkes Bay) cave          | Subfossil  | Scarlett      | —    |                                     |
| Pigeon Bush (Hawkes Bay) No. 1 rockshelter | Subfossil  | Scarlett      | —    | 30 miles from Napier 2000' ASL      |
| Pigeon Bush (Hawkes Bay) No. 2 rockshelter | Subfossil  | Scarlett      | —    | 30 miles from Napier 3000' ASL      |
| Pigeon Bush (Hawkes Bay) No. 3 rockshelter | Subfossil  | Scarlett      | —    |                                     |
| Hukanui No. 1 cave                         | Subfossil  | Scarlett      | —    | 30 miles from Napier 2700' ASL      |
| Hukanui No. 3 rockshelter                  | Subfossil  | Scarlett      | —    | 30 miles from Napier 2500' ASL      |
| Hukanui No. 7a cave                        | Subfossil  | Scarlett      | —    | 30 miles from Napier 2500' ASL      |
| Hukanui No. 5 cave                         | Subfossil  | Scarlett      | —    | 30 miles from Napier                |
| Tutira, Hawkes Bay                         | pre 1882   | Guthrie-Smith | 4238 |                                     |
| Wairoa - Gisborne                          | pre 1882   | Guthrie-Smith | —    | Extremely plentiful on coast forest |

## APPENDIX 2

## ADDITIONAL LOCALITY RECORDS — SINCE 1970\*

| Grid | Observer               | Comments                   |
|------|------------------------|----------------------------|
| 2239 | R. J. Vail             | 1 seen                     |
| 2551 | P. D. Gaze             | Seen                       |
| 2845 | Wildlife Service       | State Forest 103 1975      |
| 3146 | J. A. Gibb             | Heard                      |
| 3356 | Wildlife Service       | 1-10 present. S.F.8 1974   |
| 3455 | Wildlife Service       | 1 heard                    |
| 3548 | Wildlife Service       | 1-10 present               |
| 3552 | Wildlife Service       | Seen                       |
| 3650 | R. Jackson             | 1 heard                    |
| 3752 | R. Jackson, P. Roberts | 1 seen; 8 heard            |
| 4051 | J. A. Fowler           | 6 seen                     |
| 4949 | A. Blackburn           | 1 seen                     |
| 3064 | J. Wendelken           | Pair & nest. SF. 149. 1978 |

\* These records, compiled from OSNZ and Wildlife Service files, include only new grid square references and have been used to update Fig. 4.

# APPENDIX 3

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