

## THE ORANGE-FRONTED PARAKEET

### *Cyanoramphus malherbi*

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#### ABSTRACT

The habitat and the history of the distribution and status of the Orange-fronted Parakeet *Cyanoramphus malherbi* have been appraised.

Never common, it occurred in most districts of the South Island and Stewart Island and, now rare, it seems confined to mid- and north-west Nelson. It favours forest at about 2,000-2,500 feet above sea level, but has been reported from higher altitudes.

#### INTRODUCTION

There has never been a comprehensive account of the Orange-fronted Parakeet and the few available notes on the species, mostly by Buller or Reischek, are in many instances nearly 100 years old. Buller's accounts are apparently all second-hand and Reischek has earned a reputation for inaccuracy not only by sexing specimens wrongly but, more important in this case, also for giving unlikely distributions. Reischek should have known this species better than anyone, for he apparently never reported it without a specimen in confirmation but, unfortunately, his reports must lose some authority. Sight records have been regarded with suspicion since the differences which distinguish this species from its nearest congener, the Yellow-crowned Parakeet, can be discerned only at very close range and in good light.

Most information has therefore come from the 59 specimens in 17 museums in New Zealand and overseas but only 25 of these gave the year of collection and only 32 provincial location or better.

#### THE GENUS *CYANORAMPHUS*

The genus *Cyanoramphus* has six species, two of which are now extinct. *C. zelandicus* was confined to Tahiti in the Society Islands and *C. ulietanius*, known from only two specimens, is believed to have inhabited the Island of Raitea, also in the Society Group (Peters).

The remaining four species are listed in the checklist of New Zealand Birds.

*Cyanoramphus novaezelandiae*, the red-crowned species, has five subspecies in the New Zealand region and two outside.

The typical subspecies occurs on the three main islands and many offshore islands; *cyanurus* on the Kermadecs, *chathamensis* at the Chathams; *hochstetteri* on Antipodes Island; but *erythrotis* of Macquarie Island is extinct. Outside New Zealand to the north are *verticalis* on Norfolk Island and *saisseti* on New Caledonia.

*Cyanoramphus unicolor*, the Antipodes Island green parakeet, is common on Antipodes Island.

*Cyanoramphus auriceps*, the Yellow-crowned Parakeet, has two subspecies.

*C. a. auriceps* occurs on the three main Islands, some offshore islands and the Auckland Islands.

*C. a. forbesi* occurred on the Chatham Islands but is now confined to one islet there.

*Cyanoramphus malherbi*, the Orange-fronted Parakeet, is found in the South Island, did occur on Stewart Island and may have occurred on Auckland Island.

It was first described by De Souance in 1857. Gray recorded it in 1859 as *Platycercus malherbi* and Finsch in 1868 described it as the young of *Platycercus auriceps*. In 1869 Buller described it as *Platycercus alpinus* by which it became best known until 1891 when Salvadori identified Buller's species with that of De Souance.

#### DESCRIPTION

The Orange-fronted Parakeet is described in Buller (1888), Oliver, and Falla *et al.*

Colour plates are included in the texts of Buller and Falla *et al* but both, especially Buller's, show a paler crown and less contrasting front and eyestripe than any of the specimens in the Dominion Museum.

The slightly smaller size of the Orange-fronted Parakeet is partly obscured by the male's overlap with the yellow-crowned female. Even at its greatest, the size difference can be recognised with certainty only by measurement. Furthermore, the structure and shape of the weaker bill does not help identification because it is more difficult to distinguish than the orange forehead.

Juvenile: De Souance mentioned that a young specimen in the Paris Museum had a barely distinguishable frontal band but was otherwise similar to the adult. If this is characteristic of juveniles the illustration in Buller's text may be not an atypical representation but an illustration of a juvenile specimen.

#### DISTRIBUTION

##### *The North Island:*

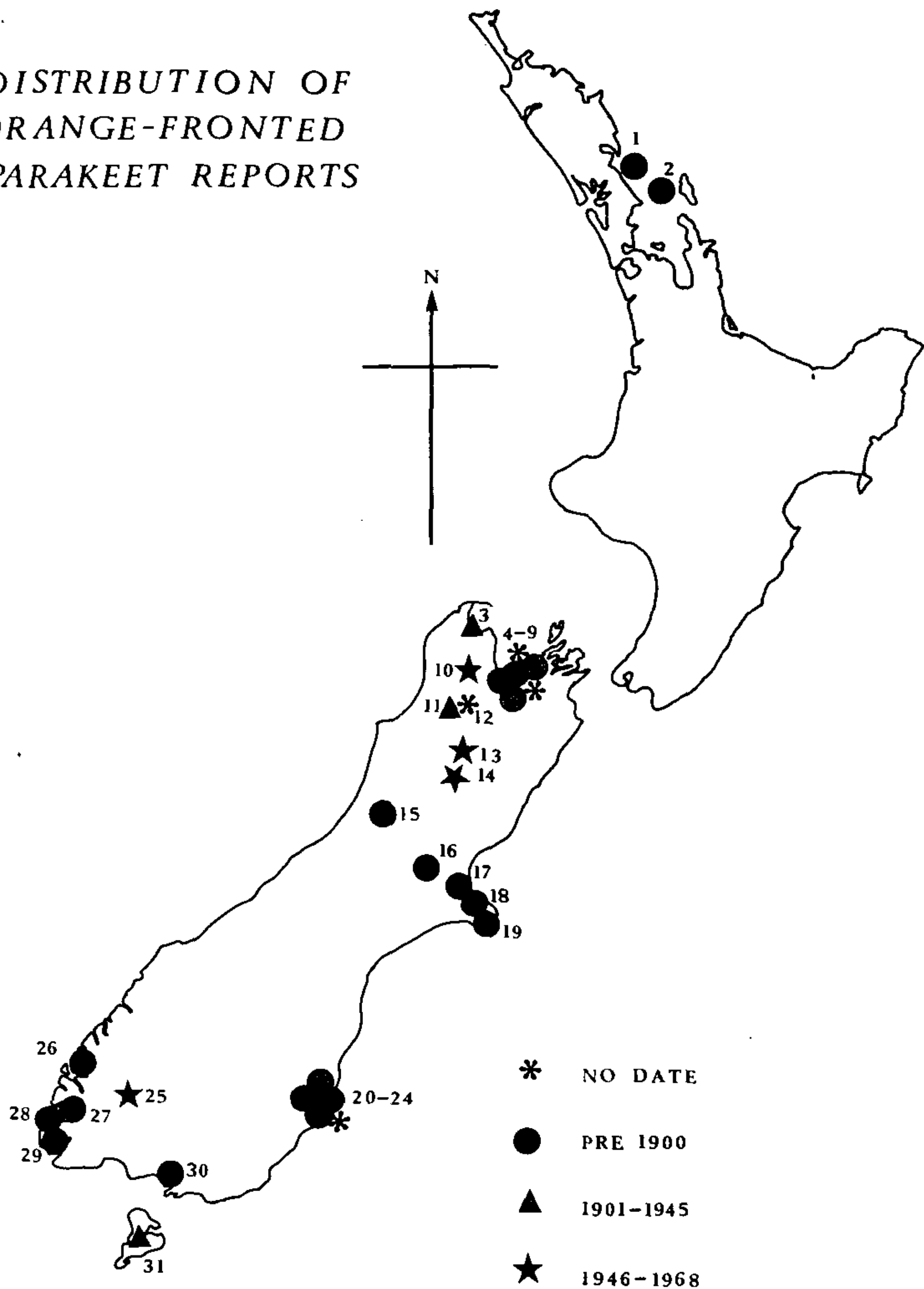
There have been four reports from the North Island. The earliest came from Buller (1869) who mentioned that a caged specimen had been obtained in the Wellington Province but later (1888) he apparently discounted this. A mounted specimen in the Dominion Museum, allegedly from the Wairarapa, may be the cage specimen to which Buller had referred. However, whether these two are connected or not, neither is fully acceptable. These, apart from Buller (1882) and Travers listing the species' distribution as both Islands, are the only references to the species inhabiting the North Island mainland.

The other two reports originated from Reischek but it was Buller (1883) who first reported that Reischek had taken specimens on Hen and Little Barrier Islands. Later Reischek (1886) reported them from Little Barrier Island only, although the Vienna Museum has two specimens labelled "Hen Island" and recorded as collected by Reischek in 1880.

It is very unlikely that the species ever inhabited the North Island, at least in European times. The Hen Island and Little Barrier Island reports must be regarded with suspicion since the species has not been recorded there before or since Reischek's report, although the other two species of parakeet have survived well on both Islands.

Subfossil identification of this species is not positive enough to be acceptable; even so, none of the subfossil material tentatively attributed to this species has come from the North Island. (Scarlett pers. comm.)

*DISTRIBUTION OF  
ORANGE-FRONTED  
PARAKEET REPORTS*



## DISTRIBUTION

*The South Island:*

Acceptable reports have come from twenty localities in the South Island. All except six are from last century. Although the earlier fourteen provide some data, some of them seem misleading for reasons discussed later. For the sake of completeness they have been included but separated from reports referring to the period after 1900.

## REPORTS BEFORE 1900

*Fiordland and the West Coast*

The southernmost report from this area is of three specimens collected by Reischek in 1887 from Chalky Sound and now held in the Vienna Museum. The British Museum has a specimen taken from Dusky Sound that same year but the collector is not recorded. In 1884 Reischek took a specimen, now in the Vienna Museum, from Mount Foster and wrote (1884) that the species was rare during his six month stay in Dusky Sound. The Cambridge University Museum has a specimen taken in 1899 from Open Cove in Thompson Sound. The only other record from the Fiordland area is a British Museum specimen obtained in 1889 but no other data are given. The most northerly report from the West Coast, a specimen collected by Reischek on Mt. Alexander, was recorded by Buller (1883).

*Otago*

Morton reported a parakeet near Invercargill "with a band of orange on the forehead" which was undoubtedly this species. No other reports refer specifically to the area south of Dunedin, but there are five reports before 1900 in the Dunedin area and another without date. The earliest of these is a specimen in the Otago Early Settlers' Museum dated 1865 taken from Helensburgh, now a suburb of Dunedin. Potts (1872) mentions specimens procured in Otago in 1871. The Paris Museum and the Frankfurt Museum hold one specimen each taken in 1875 and 1896 respectively from "Dunedin" and Oliver refers to a record from Dunedin dated 1874. The Carnegie Museum has two specimens taken in Otago in 1892 but no detailed information is given.

*South and Mid-Canterbury*

There are no reports for this period between the Otago Peninsula and the cluster of reports at Banks Peninsula. The earliest of these latter is of two specimens in the Harvard Museum which entered their collection in 1870. No collection date is given and they are labelled simply "Christchurch." The British Museum has a specimen from Akaroa taken in 1872 and the City of Liverpool Museum has three specimens labelled Port Cooper [= Lyttelton] that H. O. Forbes (R. Wagstaffe pers. comm.) listed as being held there at least by 1898. Haast (Buller 1869) reported the species had been shot in the Oxford ranges.

*North Canterbury, Nelson and Marlborough*

The Auckland Museum has two undated specimens from Nelson. The co-type in the Paris Museum has no date but was collected in Tasman Bay by the Astrolabe and Zelee expedition so it must have been before 1840 and is therefore the earliest known record. The University of Cambridge Museum has a specimen taken in Nelson in

1895 and the Canterbury Museum (N.Z.) has one taken in 1896 labelled "Nelson approximate." Buller (1888) remarked that the species was not uncommon in the wooded hills around Nelson.

With three exceptions, all the reports referring to the period before 1900 have come from Museums, a fact which partly explains the three clusters that occur in Fiordland, Otago Peninsula and Banks Peninsula and perhaps that in Nelson. It is likely that many specimens were labelled with the address of their collector or the town nearest to their point of collection, which may be why the only out of town reports for Dunedin and Christchurch were from literature and not museums.

The Fiordland coast, with all its sheltered sounds providing easy access by sea and its abundant flora and fauna was a popular area for exploration by naturalists. This may explain the concentration of reports in this area — they are probably as much a reflection of the intensity of exploration as of the parakeet population of the time.

Museum specimens labelled "Nelson" may be regarded as coming either from near Nelson town or from within Nelson Province. Remarks like those of Buller (1888) that the species was common in the wooded hills around Nelson and the Canterbury Museum specimen which states "Nelson approximate" certainly gives reason to assume the province was meant; but "Dunedin" and "Christchurch" have no such alternative interpretation yet doubtless most specimens did come from their surrounding areas. Therefore these reports do not give a reliable indication of distribution or details that might indicate their favoured habitat but do indicate that the species was widespread although not common throughout much of the South Island.

#### REPORTS AFTER 1900

The species has been recorded in six locations this century, the most southerly being Manapouri in 1949 (Tily) but no details were given. The remainder all come from the northern end of the South Island. The earliest of these, from Takaka in 1913, is a specimen held in the Canterbury Museum. The Canterbury and Dominion Museums each have one specimen taken at Owens Junction in 1928 and the Dominion Museum has a second undated specimen from Owens Junction. Breem records a sighting by the Flora River in 1955 of a parakeet seen at a distance of twenty feet and thought to be orange-fronted. G. Caughley (N.Z.F.S.) reported a highly probable but not positive identification of an Orange-fronted Parakeet from the Hope branch of the Waiau River in 1963. In 1965 a Wildlife Service party sighted the species in the D'Urville River Valley (Adams) and since then there has been no acceptable record.

This century five of the six reports including the most recent three and all four specimens have come from the mid-west Nelson-north Canterbury area.

#### *Stewart Island*

The Dominion Museum has a specimen labelled Stewart Island 1904, the only record of which I have knowledge from this Island.

#### *The Auckland Islands*

Gray and Finisch have made reference to Orange-fronted Parakeets from the Auckland Islands. Gray in 1859 simply stated

"*Platycercus malherbi* habitat Auckland Island." Finsch's (1868) reference was not so straight-forward because at that time he still regarded Orange-fronted Parakeets as juvenile Yellow-crowned Parakeets (Finsch 1868 M). He listed specimens of Yellow-crowned Parakeets from the Auckland Island which he said "form, according to De Souance, a distinct species *Platycercus malherbi*." Because De Souance originally described the species, he, if anyone, should have been able to recognise them so that there is no doubt in my mind that the specimens in question were Orange-fronted Parakeets, but for the following reasons I am not entirely satisfied that they came from the Auckland Islands.

Gray listed it with the same specific name De Souance had first given the species only two years before, so probably he obtained his information from the specimens De Souance had examined. However, De Souance said the habitat was unknown and Gray said it was Auckland Island. The co-type (now in the Paris Museum), which De Souance must have seen for it to be a co-type, is labelled "Astrolabe and Zelee expedition, Tasman Bay," so it is puzzling that neither De Souance nor Gray gave this as its habitat. However, it may help explain, though does not confirm, the Auckland Island habitat Gray gave, because the Astrolabe and Zelee expedition did call at Auckland Island.

When in 1868 Finsch gave the habitat as Auckland Island he said the specimens in question had been examined by De Souance, and had been collected by an antarctic expedition. Because De Souance was French and the Astrolabe and Zelee, also French, was an antarctic expedition which called at the Auckland Islands, it is possible that even after the elapsed nine years Finsch was referring to the specimens De Souance had used to describe the species and from which Gray subsequently obtained his information.

Since there is no record of Orange-fronted Parakeets on Auckland Island other than those in some way associated with the Astrolabe and Zelee expedition, and since there is confusion over the origin of these specimens, it is possible but unlikely that the species ever occurred there.

### BREEDING

Apart from three eggs (no date) from Mt. Peel which are now in the Canterbury Museum the only reference to breeding is covered under "Captivity." The Mt. Peel eggs were part of the Stead collection but the criteria for their identification were not given.

### FOOD

Only two very brief references specific to Orange-fronted Parakeet's food have been found. Reischek (1885) said its food consists of berries and seeds but the label of a British Museum specimen taken on the West Coast states "Stomach small grubs."

Small grubs as part of its diet could be the major factor which separates it ecologically from the Yellow-crowned Parakeet. Its weaker bill indicates that its food probably is different to some extent from that of the Yellow-crowned Parakeet but there is insufficient information available even to guess what that difference may be.

## CAPTIVITY

Although parakeets are popular cage birds there are very few references to captive Orange-fronted Parakeets. Buller (1869) mentioned a caged specimen which to his certain knowledge was five years old and he later wrote (1888) that there were many caged specimens at Nelson. In 1873 he mentioned that more than twenty specimens had been taken to England but it was not until 1883 that he specified these were living examples. In 1874 he mentioned living examples in the Zoological Gardens, Regent Park, in London. According to the Park records (J. J. Yealland pers. comm.) there were two there in 1872 and two more in 1882 but no other information was available.

The only account of this species breeding in captivity comes from Prestwich's "Account of Psittacidae raised in France" in which De Laurier's attempts to raise Orange-fronted Parakeets at Angouleme are described.

In 1883 several pairs of Yellow-crowned and Orange-fronted Parakeets that had reached him sick and without feathers were lost but two pairs of Yellow-crowned and one pair of Orange-fronted had been restored to health. In 1883 the Orange-fronted pair produced a first clutch of four chicks and the female was at that time (20 December 1883) sitting on eggs again. There was no further report until 1887 when it was reported that they had not bred since 1883 and although the male was lively and ardent the female was listless and moulting frequently. There was no further mention of the chicks.

These accounts tell enough to show that the Orange-fronted Parakeet, like our other parakeets, make good captives; and if a pair is ever captured, there is a good chance that they will breed in captivity.

## HABITAT

The species has been reported in a range of habitats none of which is strikingly evident as a favoured or typical one. Probably because Buller (1869 I) first named it "alpine parakeet" most writers assumed it to favour an alpine habitat, in spite of Buller himself criticising this choice of name the same year (Buller 1869).

Reischek reported it in the scrub on the summit of Mt. Alexander (Buller 1883) and later (Buller 1888) on the "highest peak of Little Barrier Island." Mt. Alexander, at more than 6,000 ft. above sea level, is truly alpine, but the highest peak of Little Barrier Island, at 2,370 ft. above sea level is hardly alpine yet the wording implies it. Although this Little Barrier Island report is suspect, it may have encouraged the concept of an alpine habitat.

Reischek (1885) said he had come across it only on the mountains near the alps in low thick scrub which implies an alpine habitat. According to literature, however, Mt. Alexander and Mt. Foster were the only localities where he had seen it that could be considered alpine; and, whether he realised it or not at the time of writing, he had, according to museum records, already shot it on Hen Island and Little Barrier Island, neither of which is alpine. This fact could be another reason for discrediting the Little Barrier and

Hen Island reports, in which case none of Reischek's reports should be considered reliable, not even the Mt. Alexander and Mt. Foster reports.

Most references to an alpine habitat can be traced to Reischek who, although not renowned for accuracy, probably did see them in an alpine habitat, but his implication of an exclusively alpine habitat is misleading in the light of all records available.

Buller (1868) gave the habitat as the wooded heights of the South Island and in 1869 reported Haast as shooting this species in forest vegetation at 2,500 ft. In 1888 he said it was by no means uncommon in the wooded hills around Nelson, that specimens had been obtained from the forests of the Southern Alps at 2,000-2,500 ft. and that it may be found frequently in alpine scrub. This second reference to the forests of the Southern Alps at 2,000-2,500 ft. is probably a repetition of Haast's report. (Buller 1869) and that in alpine scrub probably from Reischek (1885) in which case it shows that Buller was still prepared to accept both these habitats at that time.

Potts (1885) said Orange-fronted Parakeets were among the large flocks of parakeets that spread over Canterbury in the summer of 1884-1885, which implies at least that this species did not have an aversion to lower altitudes and was, in that respect, no different from the other New Zealand parakeets. Haast (Buller 1869) went as far as to say Orange-fronted Parakeets always occurred with Yellow-crowned; so in Haast's experience the Orange-fronted Parakeet was never seen outside the Yellow-crowned Parakeet's habitat. There is no doubt that Haast had first hand experience of the species, although perhaps not as much as Reischek; however, his reports have a more reliable ring than Reischek's.

Buller (1868), Potts (1885), Haast (Buller 1869), Breem and Adams all reported the species occurring in the bush and Haast, Breem and Adams specified altitudes, the only ones I have found in the literature searched, from 2,000-2,500 ft.

From this it seems that reports of the species above the bush have been exceptions although not rare ones. Many reports from alpine areas have, on close examination, shown that the only criterion for species identification was the altitude of the sighting. Such reports have only perpetuated and exaggerated the *alpinus* reputation. The absence of reports from low altitudes cannot be regarded as significant when reports of any nature on this species are so scarce.

### STATUS

Records show that in European times the Orange-fronted Parakeet has never been as common as either of the other two mainland parakeets.

As mentioned earlier, Buller (1888) said it was not uncommon in the hills around Nelson and he had seen many caged specimens in Nelson. His identification of cage specimens must be acceptable and "many" implies that the species was not scarce there at that time. Potts (1885) said it was fairly represented in the large flocks of parakeets of the 1880's but Reischek (1885) said "it is a rare bird" in the same notes in which he described large flocks of Red-crowned and Yellow-crowned Parakeets that came to Christchurch —



almost certainly the flocks to which Potts was referring. Even if Reischek's distributions are suspect a collector's evidence, as far as this species' abundance is concerned, would be more reliable than that of the most discerning observer because these parakeets are so difficult to identify unless actually held in the hand.

Museum records indicate the species was probably least uncommon in the Nelson area in the 1880's.

The present-day status of *malherbi* is perhaps under-rated. The reputation it has as a subalpine dweller must have influenced many observers to look for it more in these areas and not in the bush, where pertinent records indicate it occurs more commonly. Only an exceptional sighting in the bush could be acceptable and since parakeets have been totally protected the odd specimen that confirmed their presence has not been shot. Most of the acceptable early reports were of specimens either shot or captured.

### THE DECLINE OF NEW ZEALAND PARAKEETS

Yellow-crowned and Red-crowned Parakeets were very numerous in the 1880's (Potts 1885) (Handley) (Fulton) at least in the inhabited areas of Canterbury but in the 1890's they declined very drastically and were no longer very common by about 1900 (Fulton). Nowadays Red-crowned Parakeets are rare on the mainland but Yellow-crowned are increasing. On many offshore islands both species are thriving but on all islands which have cats the parakeets are either extinct or declining.

The sudden crash about 1890 may have been typical of any population which builds up to such an extent that it damages its own habitat and then crashes to a very low level, but this does not explain the continued depression lasting some 80 years till now. According to records, the population boom occurred around orchards and gardens. If these were not surplus birds pushed into a fringe habitat by overcrowding then it is strange that parakeets have not recovered and thrived now that there are more orchards and gardens than ever before. It may explain, however, why parakeets have survived on our offshore islands which have apparently not been subjected to a population boom.

About the time of the crash, birds and mammals had already been introduced on a large scale so it is possible that a disease which did not seriously affect, but was carried by, an introduced species was spread to the susceptible parakeets. This could explain the sudden decline but does not explain why close offshore islands have not been affected although many introduced species have spread to them, unless the species responsible was not one of these invaders.

Predation by itself is most unlikely to have been responsible for such a rapid decline but nevertheless cats on our offshore islands are heavy predators on parakeets. Smaller communities such as islands are more severely and quickly affected by introductions than are larger ones which explains why parakeets still occur and why the Yellow-crowned Parakeet is able to increase on the mainland in spite of predation by mustelids as well as cats. The red-crowned species, being more of a ground feeder than the yellow-crowned, possibly falls a victim to predators more easily and is consequently declining.

Whatever the cause of the crash of the 1890s, predators could have kept the declined parakeet population in check. Unfortunately records for populations of offshore islands are insufficient to show a decline, even if one did occur and then, in the absence of introduced predators, a return to normal again.

#### APPENDIX

The numbers refer to the corresponding ones on the map and the dates given are those of the observation or collection of specimens or, when they were not specified, the earliest reference to the report.

1. Hen Island, 1880. Two specimens collected by Reischek in the Vienna Museum (not acceptable).
2. Little Barrier Island, 1883. Specimen collected by Reischek (Buller 1883) (not acceptable).
3. Takaka, 1913. Specimen in the Canterbury Museum from the Stead collection, the collection locality is vague.
- 4-9. Nelson, no date. Two specimens in the Auckland Museum.  
1840 Co-type collected in Tasman Bay by Astrolabe and Zelee expedition, now in the Paris Museum.  
1895 Specimen in Cambridge University Museum.  
1896 Specimen in Canterbury Museum, location vague.  
1888 Buller listed the species as not uncommon in the wooded hills around Nelson.
10. Flora River, 1955. Broom reported a bird seen at 2,300 ft. at about 20 ft., thought to be *C. malherbi*.
- 11-12. Owens Junction, no date. Specimen in Dominion Museum.  
1928 Two specimens in Canterbury Museum and one specimen in Dominion Museum.
13. D'Urville River Valley, 1965. Wildlife Service party sighting.
14. Hope branch of Waiatu River, 1963. A highly probable but not positive identification by G. Caughley, N.Z.F.S.
15. Mt. Alexander, 1883. (Buller 1883.)
16. Oxford Ranges, 1869. Haast was reported shooting the species in this area by Buller 1869.
17. Christchurch, pre 1870. Two specimens in Harvard University Museum, no other data.
18. Akaroa, 1872. Specimen in the British Museum.
19. Lyttelton, 1898? Three specimens in the Liverpool Museum.
- 20-24. Helensburgh, 1865. Specimen in Otago Early Settlers' Museum.  
Dunedin, 1874. (Oliver 1955).  
1875. Specimen in Paris Museum.  
1896. Specimen in Frankfurt Museum.  
No date. Specimen in Otago Museum.
25. Manapouri, 1949. (Tily 1949.)
26. Open Cove, 1899. Cambridge University Museum.
27. Mt. Foster, 1884. Vienna Museum, collected by Reischek.
28. Dusky Sound, 1887. Specimen in the British Museum.
29. Chalky Sound, 1887. Three specimens in the Vienna Museum collected by Reischek.
30. Near Invercargill, 1872. (Morton 1872.)
31. Stewart Island, 1904. Specimen in the Dominion Museum.  
The following have kindly provided details of specimens in their collections:  
Smithsonian Institution  
Harvard University Museum of Comparative Zoology  
Carnegie Museum  
American Museum of Natural History  
Cambridge University Museum of Zoology  
City of Liverpool Museums  
British Museum of Natural History  
Vienna Museum  
Frankfurt Museum  
Paris Museum of Natural History  
Brussels Royal Institute of Natural Science  
Auckland Institute and Museum  
Dominion Museum  
Canterbury Museum  
Otago Museum  
Otago Early Settlers' Museum

#### REFERENCES

- ADAMS, J. S., 1965: Internal Affairs Department files.  
BROOM, M. J., 1956: Classified summarised notes, *Notornis* 6: 7, p. 207.  
BULLER, W. L. R., 1868: Notes on Herr Finsch's review of Mr. Walter Buller's essay. *Trans. N.Z. Inst.* 1: p. 54.  
BULLER, W. L. R., 1869 I: On some new species of New Zealand birds, *Ibis* pp. 39-40.  
BULLER, W. L. R., 1869: Notes on ornithology of New Zealand. *Trans. N.Z. Inst.* 2: pp. 385-392.  
BULLER, W. L. R., 1873: History of the birds of New Zealand, 1st edition, van Woort, London.

- BULLER, W. L. R., 1874: On the Ornithology of New Zealand. Trans. N.Z. Inst. 7: p. 202.  
 BULLER, W. L. R., 1882: Manual of Birds of New Zealand, Govt. Printer, Wellington.  
 BULLER, W. L. R., 1883: On some Rare Species of New Zealand Birds. Trans. N.Z. Inst. 16: p. 318.  
 BULLER, W. L. R., 1888: History of the Birds of New Zealand 2nd edition, published by the author, London.  
 CAUGHLEY, G., 1963: Internal Affairs Department files.  
 FALLA, R. A., SIBSON, R. B., TURBOTT, E. G., 1966: A Field Guide to the Birds of New Zealand, Collins, London.  
 FINSCH, O., 1868: Monograph of the family Psittacidae 2: p. 286 in Ibis 1869 p. 379.  
 FINSCH, O., 1868: Notes on Mr. Walter Buller's essay on the Ornithology of New Zealand. Trans. N.Z. Inst. 1: p. 58-70.  
 FORBES, H. O., 1898: Bulletin of the Liverpool Museums Vol. 1.  
 FULTON, R., 1907: The disappearance of New Zealand Birds. Trans. N.Z. Inst. 40: p. 494.  
 GRAY, G. R., 1859: List of Psittacidae in the British Museum, Ibis 1862, p. 229.  
 HANDLEY, J. W., 1895: Notes on Some Species of New Zealand Birds. Trans. N.Z. Inst. 28: p. 362.  
 MORTON, J., 1872: Notes on Some of the New Zealand Birds. Trans. N.Z. Inst. 5: p. 225.  
 OLIVER, W. R. B., 1955: New Zealand Birds 2nd edition. A. H. & A. W. Reed, Wellington.  
 PETERS, J. L., 1937: Checklist of the Birds of the World. Vol. 3, pp. 269-272, Harvard University Press 1937.  
 PHILPOTTS, A., 1919: Notes on the Birds of South Western Otago. Trans. N.Z. Inst. 51: p. 222.  
 POTTS, T. H., 1872: On the Birds of New Zealand. Trans. N.Z. Inst. 5: p. 185.  
 POTTS, T. H., 1885: The Oology of New Zealand. N.Z. Jour. Sci. 2: p. 185.  
 PRESTWICH, 1883: Account of Psittacidae raised in France. Bulletin de la Societe d'Acclimatation pp. 692 - 693.  
 PRESTWICH, 1884: Account of Psittacidae raised in France. Buletin de la Societe d'Acclimatation pp. 216 - 218.  
 PRESTWICH, 1887: Account of Psittacidae raised in France. Buletin de la Societe d'Acclimatation pp. 93 - 94.  
 REISCHEK, A., 1884: On New Zealand Ornithology. Trans. N.Z. Inst. 17: p. 190.  
 REISCHEK, A., 1885: On the habits of New Zealand Birds. Trans. N.Z. Inst. 18: p. 98.  
 REISCHEK, A., 1886: Appended list of Birds which Inhabit Hauturu Island. Trans. N.Z. Inst. 19: p. 138.  
 SALVADORI, T., 1891: Catalogue of the Birds of the British Museum 20: p. 590.  
 SOUANCE, Ch. De, 1857: Descriptions of three new species of Parakeets. Review et magazin de zoologie, March 1857, p. 98.  
 TRAVERS, W. T. L., 1882: On the Distribution of New Zealand Birds. Trans. N.Z. Inst. 15: p. 186.  
 TILY, I., 1949: In classified summarised notes. Notornis 3: 4, p. 100.

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## SHORT NOTE

## DUNKING BY PETROICA

In October 1968 Mr. B. Ward and I made a trip into the Goulund Downs area (N.W. of Nelson). On 12/10/68 we observed a Yellow-breasted Tit feeding its young alongside the Cave creek. It would catch an insect and each time before offering it to the young bird, fly down to a boulder in the creek and dunk the insect in the water.

It was obviously a deliberate series of actions, catching the insect, flying to the creek, dunking it in the water and only then taking it to its young in the branches above.

I have been unable to find a record of such behaviour in any of the Petroica species.

— H. F. HEINEKAMP