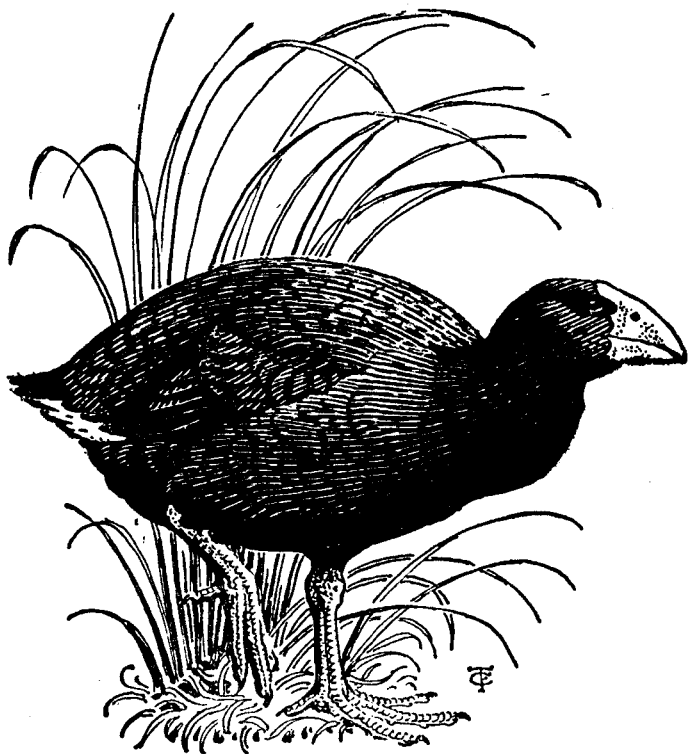


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 R. B. Sibson and E. G. Turbott, new ed. \$13.95

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## **SOME OBSERVATIONS ON THE SOUTHERN SUBSPECIES OF THE NEW ZEALAND PIPIT**

By M. N. FOGGO

The checklist of New Zealand birds (Kinsky 1970) gives three subspecies of the pipit *Anthus novaeseelandiae*. These are *A. n. novaeseelandiae* found on the mainland and on the Chatham Islands, *A. n. steindachneri* found on Antipodes Island and *A. n. aucklandicus* found on the Auckland Islands.

The pipit found on the Campbell Islands is considered to be *A. n. aucklandicus*. A fourth subspecies, *A. n. chathamensis*, is not in the checklist (Kinsky 1970), which considered Chatham Island pipits to be *A. n. novaeseelandiae*, but it is accepted by Falla *et al.* (1979).

Oliver (1955) described the essential differences of the southern islands forms as follows:

"The sub-species *aucklandicus*, as typified by the Auckland Island birds, is distinguished . . . by its stouter bill and its fulvous colouration both above and below . . . Antipodes Island birds [*steindachneri*] seem to be more fulvous than those from the Auckland Islands."

In the Campbell Island group, pipits are restricted to small offshore islands, presumably by the effects of rat (*Rattus norvegicus*) and cat (*Felis catus*) predation. (The inability of pipits to co-exist with rats on subantarctic islands has been demonstrated for South Georgia by Pye & Bonner 1980.) Pipits collected on Dent Island in 1975 and seen on Jacquemart Island in 1981 (Foggo & Meurk 1981) were fulvous.

In the Auckland Islands group, pipits are common, but fulvous birds were not seen on either the extensive 1972 expedition or my own visit to the northern end in 1983. In the field, the Auckland Island pipits seem indistinguishable from those of the New Zealand mainland.

To investigate this apparent discrepancy with the description given by Oliver (1955), I examined pipits in the collection of the National Museum, Wellington. This paper reports the results of that investigation and summarises recent sightings from various subantarctic islands.

I recorded the colour of all adult specimens in the collection as fulvous and non-fulvous. While not all fulvous birds are equally yellow, the difference between the fulvous and non-fulvous birds is always clear. Juveniles appear to follow the same pattern because two juveniles from Antipodes Island are fulvous whereas mainland and Chatham Island juveniles are not. Bill, tarsus, wing and tail lengths were measured for all adult specimens as in the ringer's manual of the British Trust for Ornithology, 1965.

For a smaller sample, bill depth and bill width were measured at the nostril. These measurements were rather unsatisfactory because the nostrils are at a point where the bill width changes rapidly.

## RESULTS

The results are grouped into four locations, mainland (M), Chatham Islands (C), Antipodes Island (A) and the Auckland/Campbell Island group (S).

*Colour forms:* Table 1 shows the distribution of colour forms between the four locations. The Auckland/Campbell group has both colour forms, and Table 2 lists the site and approximate date of collections made there. The collections were either from the Cape Expedition (1940-1945), the 1972 Auckland Islands Expedition or the 1975 Campbell Islands Expedition.

TABLE 1 — Distribution of colour forms from four locations within the New Zealand region

Mainland	34	0	34
Chatham Islands	7	0	7
Antipodes Island	0	7	7
Auckland Island and Campbell Island	7	6	13
	<u>Non-fulvous</u>	<u>Fulvous</u>	<u>TOTAL</u>

The two fulvous birds collected by the Cape Expedition on the Campbell Islands were both from the main island. The two recent collections were from Dent Island off the west coast and fulvous forms were also reported from Jacquemart Island off the south coast by Foggo & Meurk (1981). Pipits have not been reported from the main Campbell Island since the Cape Expedition.

For the Auckland Islands group, one of the fulvous birds was collected by the Cape Expedition on Adams Island but the precise location of the other was not given. On the 1972 expedition, no fulvous forms were collected and no fulvous forms were reported (Brian D. Bell, pers. comm.). I did not see fulvous birds in the northern area during a visit in 1983, even though pipits were common.

All the Antipodes Island specimens in the collection are fulvous but Brian D. Bell, P. J. Moors and R. H. Taylor (pers. comm.) cannot recall seeing fulvous birds on a visit to the island in 1978. Two colour-slides taken during that visit (P. J. Moors) appear to show non-fulvous birds.

*Measurements:* The data sets were compared by analysis of variance and significance between sets was determined using Duncan's New Multiple Range Test (using the computer program "Teddy-bear" of J. B. Wilson, Bot. Dept., University of Otago). The results are given in Table 3.

Bill width and bill depth appeared to increase with bill length but the differences in means were small and were not significant. This may have been a result of the small sample of these variables.

## DISCUSSION

Table 3 shows that the most significant distinguishing measurement among the three pipit subspecies is the length of the bill. Chatham Island birds are also significantly different from the mainland birds. It is however unlikely that any of these differences in bill size could be gauged without handling the birds.

TABLE 2 — Distribution of colour forms on the Auckland and Campbell Islands

<u>Island Group</u>	<u>Date</u>	<u>Non-fulvous</u>	<u>Fulvous</u>
Campbell	Cape Exp.	0	2
	1975 Exp.	0	2
Auckland	Cape Exp.	5	2
	1972 Exp.	2	0
TOTALS		7	6

TABLE 3 — Comparison of bill, tarsus, wing and tail lengths (mm) between the four different locations. Measurements not significant at the given probability are joined by lines. (M = mainland; C = Chathams; A = Antipodes; S = Auckland/Campbell)

### Bill length

Location =	M	C	A	S
n =	34	7	7	13
mean =	12.6	13.9	14.7	16.1
p = 0.05				
p = 0.01				

### Tarsus length

Location =	M	C	A	S
n =	32	7	7	13
mean =	25.0	26.0	26.1	26.4
p = 0.05				
p = 0.01				

### Tail length

Location =	A	C	S	M
n =	7	7	13	34
mean =	69.0	70.2	70.5	74.6
p = 0.09				
p = 0.01				

### Wing length

Location =	A	C	S	M
n =	7	7	13	34
mean =	88.3	91.0	91.9	93.9
p = 0.05				
p = 0.01				



Tarsus length does not clearly separate the three subspecies although it does appear to be slightly longer in the southern forms. Tail and wing lengths are also unreliable indications of subspecies.

The fulvous colouring is an obvious feature but is not always reliable (Table 2). It seems to have caused some confusion of identification of subspecies in the museum collection. Birds from the Auckland Islands which are not fulvous are sometimes given as *A. n. aucklandicus* and sometimes as *A. n. novaeseelandiae*, but regardless of colour, all these birds have the larger bill.

Recent sightings of pipits in the Campbell Island group have been few but all birds seen have been fulvous. By contrast, pipits are common in the Auckland Islands but no fulvous birds have been seen since the Cape Expedition. Although all the specimens collected from the Antipodes Islands are fulvous, recent sightings appear to have been of non-fulvous birds.

These observations raise three points:

1. Has the colour of the subantarctic pipits changed from fulvous to non-fulvous since the early collections were made? The bill size seems to rule out the obvious suggestion of colonisation by mainland birds.
2. The pipit populations of Jacquemart and Dent Islands in the Campbell group are the only islands from which the fulvous form has been reported recently. If no other populations can be found, the survival of the fulvous colour form depends on the success of those two populations.
3. The subspecific status of the birds cannot be based reliably on the fulvous colour. If the length of the bill is considered as critical, my rather small sample seems to support the suggestion of Falla *et al.* (1979) that the Chatham Island population is distinct.

#### ACKNOWLEDGEMENTS

I thank Ben D. Bell for his comments on drafts, Brian D. Bell, P. J. Moors and R. H. Taylor for their discussions and information and the Lands and Survey Department for arranging my visit to the Auckland Islands.

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## A RECORD OF THE AUSTRALIAN BLACK FALCON

On the afternoon of 21 November 1983 I observed from the roadside gate of my home in Score Road, Gisborne, a large all-black bird, at 50 m distance, picking at some prey which I could not positively identify, but which appeared to be the well-opened carcass of a small yellow-feathered chicken. As it picked, the bird frequently raised its femurs almost vertically, with long slender wing tips trailing the ground, at the same time splaying its long and wide tail. In this situation, the bird was on an area of mown grass 2 or 3 m from the edge of a 0.4 ha area of 60-year-old native plantation which abuts on to the roadside.

I had suspected the bird to be a Black Falcon (*Falco subniger*) on first sighting it for, although it is rare in Australia, I had made close observations of the species in north-west Victoria and again in inland Queensland; but I was somewhat puzzled to see it eating its prey on the ground for, as Calaby (1969) says, the bird "usually carries its prey to a tree for butchering and eating." However, after about a minute of observation, by which time my wife had brought me my binoculars, the bird flew, with its prey in its talons, to a tree on the near side of the road, where at 40 m I could see it perfectly. Whereas in the shade it had appeared jet black all over, its true colour of very dark sooty brown, slightly lighter in the lower underparts, was now revealed. Except for the underparts, and an almost pure white patch about an inch in diameter on the upper throat immediately below the bill, the very dark colour was uniform throughout, with no trace of mottling such as is shown in the illustration in Frith (1969). According to Slater (1970), the mottling appears only during the moult in December to February and is due to the new very dark feathers appearing in the worn plumage.

The grey-blue bill was noted, a bluish-white cere and eye-ring, and dark brown eyes. The colour of the legs was not recorded because they were completely concealed by feathering, and the feet were not visible at any stage. The soft parts are variously described in the literature as bluish grey or yellow; but Slater (1970) definitely ascribes the bluish grey to immature birds. His illustration on p. 49 is precisely as I saw the bird, apart from the colour of the soft parts.

I estimated the total length of the bird at 17 or 18 inches, and this, together with the bluish-white soft parts, would indicate that it was a male, perhaps a year old.

The Black Falcon is described as rare throughout its range, which is restricted generally to open forest and plains, but reaching the east coast from the New South Wales border north to about Rockhampton.

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A. BLACKBURN, 10 Score Road, Gisborne

# THE CHANGED DISTRIBUTION OF STILTS IN NEW ZEALAND

By R. J. PIERCE

Nineteenth century publications, especially those of Buller (1878, 1888), indicate that Pied Stilts (*Himantopus h. leucocephalus*) and Black Stilts (*H. novaezealandiae*) occurred widely from the central and eastern North Island south to Otago. Since then Pied Stilts have greatly increased and expanded their range, while Black Stilts have greatly declined to become rare and in danger of extinction. The aim of this note is to establish, as far as records allow, the early distribution of stilts and where and when major changes in population size occurred.

From early literature and diaries and from data on specimens in museums in New Zealand and overseas, I built up a general knowledge of stilt distribution mainly in the 19th century and early 20th century. I then consulted staff of the Southland, Otago, Waitaki Valley, South Canterbury, Mid Canterbury and North Canterbury Acclimatisation Societies for information on Black Stilts in particular, and for names and addresses of reliable observers whom I later contacted individually. A similar approach was made to many Ornithological Society members throughout the South Island and to a few in the North Island. The information from these people extended from about 1905 to 1981 and is included in Appendix 1. Additional records from 1940 to 1980 came from the Ornithological Society's recording scheme and the Wildlife Service. Because of the possibility of misidentification by observers, I placed little emphasis on isolated locality records unless they were accompanied by accurate descriptions of the birds. I welcome further information on early records or likely diaries.

## HISTORICAL RECORD OF DISTRIBUTION

### *North Island*

The first Black Stilts to be described were two immature birds collected at Wellington (Gould 1841) and one from Otago (Hombron & Jacquinot 1841). The first New Zealand specimen of the Pied Stilt was collected in the Waikato region in 1854 (Buller 1905), but it was not until the 1860s that several were recorded (Buller 1868). During the 1870s and 1880s, Pied and Black Stilts were probably generally spread in the central, eastern and southern North Island. At Lakes Rotorua and Rotomahana Buller (1878) described both

species as being "formerly rare" but now "very plentiful" and he cited breeding records of each. He knew of no Black Stilts from Lake Taupo, where he had seen flocks of up to 40 Pied Stilts. In Hawkes Bay both species were recorded at the Napier Saltmarshes, at Waipukurau (Buller 1888), and both nested on the Petane River (Hamilton 1885), where they were still present at the turn of the century (Hutchinson 1900). Buller (1888) considered that Black Stilts were "much rarer" than Pied Stilts, but "generally found in all the river courses of the Wellington district and further south."

Neither species appeared to occur commonly north of the Waikato River during the 19th century. Buller (1868, 1888) knew of only one record of a Pied Stilt from Auckland and none north of there, but small numbers of Black Stilts occurred as far north as Kaipara and Parengarenga. Pycroft (1898) endorsed Buller's observations in Northland, although two Pied Stilts were collected by A. Reischek near Whangarei in March 1882 and are now in the Vienna Museum (K. E. Westerskov, pers. comm.).

I know of no records of Black Stilts having nested in the North Island in the 20th century, but with the shortage of observers up to 1940, some pairs may have nested unnoticed for many years. Several observers, e.g. Buller (1898), Hutton (1900) and Guthrie-Smith (1969), did not note Black Stilts in various parts of the southern and eastern North Island.

Kawhia Harbour appears to be a traditional wintering ground for Black Stilts with records going back to the 1950s (B. D. Heather, pers. comm.). Regular autumn and winter counts since 1971 (B. Seddon, pers. comm.) have produced 1-7 adult Black Stilts each year, and up to eight mainly black birds. Descriptions of the latter indicate that most are hybrid stilts, although there have been at least two records of probable Black Stilts in their second year. Single Black Stilts are occasionally recorded from several other northern harbours (OSNZ Rec. Scheme) but not in numbers similar to those usually recorded at Kawhia Harbour.

By the 1940s Pied Stilts occurred in large post-breeding flocks in many Northland harbours (OSNZ Rec. Scheme) where they had been rare or unrecorded in the 19th century. Sibson & McKenzie (1944) found flocks of up to 1000 in the Firth of Thames, but since 1960 there has been no detectable increase in numbers wintering in Auckland and Northland. Recent counts by Ornithological Society members indicate a total New Zealand population in the order of 30 000, breeding in mainly lowland areas with a post-breeding dispersal to coastal and northern parts of the country (see seasonal distribution maps in Bull *et al.* 1978).

### *South Island*

During the late 19th century and early 20th century, Pied and Black Stilts occurred throughout the South Island and on both sides

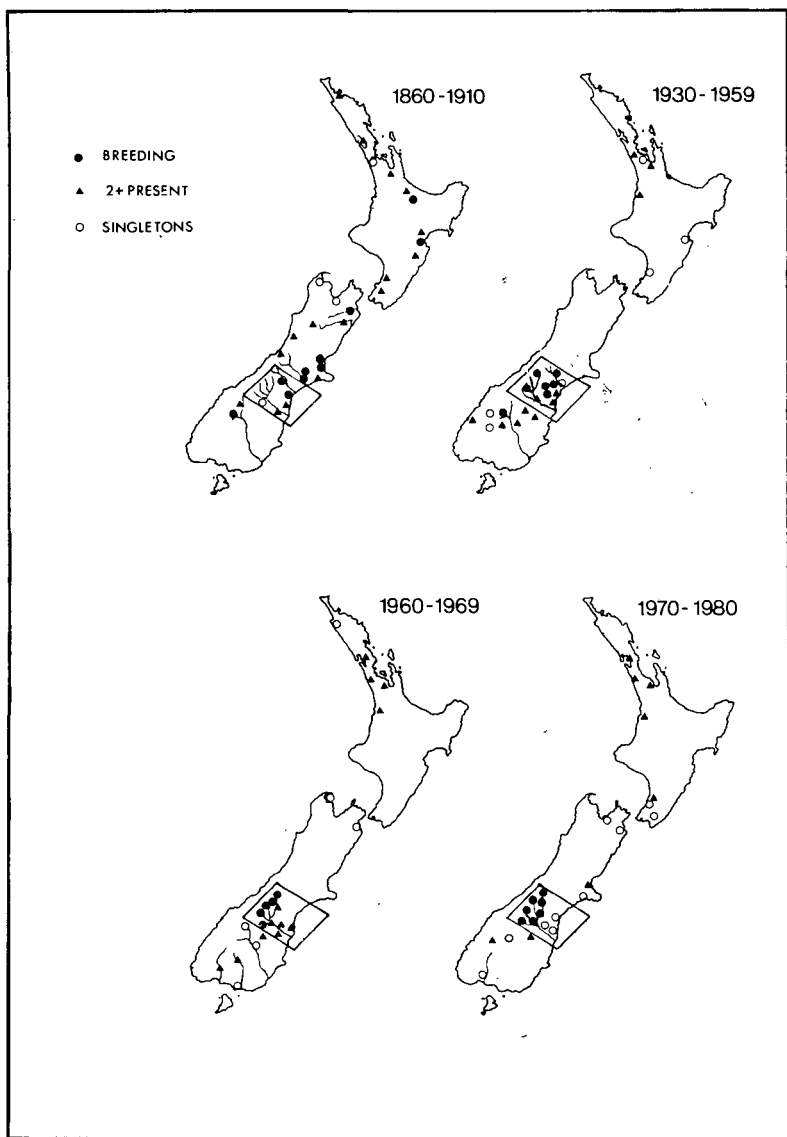


FIGURE 1 — Historical records of Black Stilt distribution. For inset, see Fig. 2

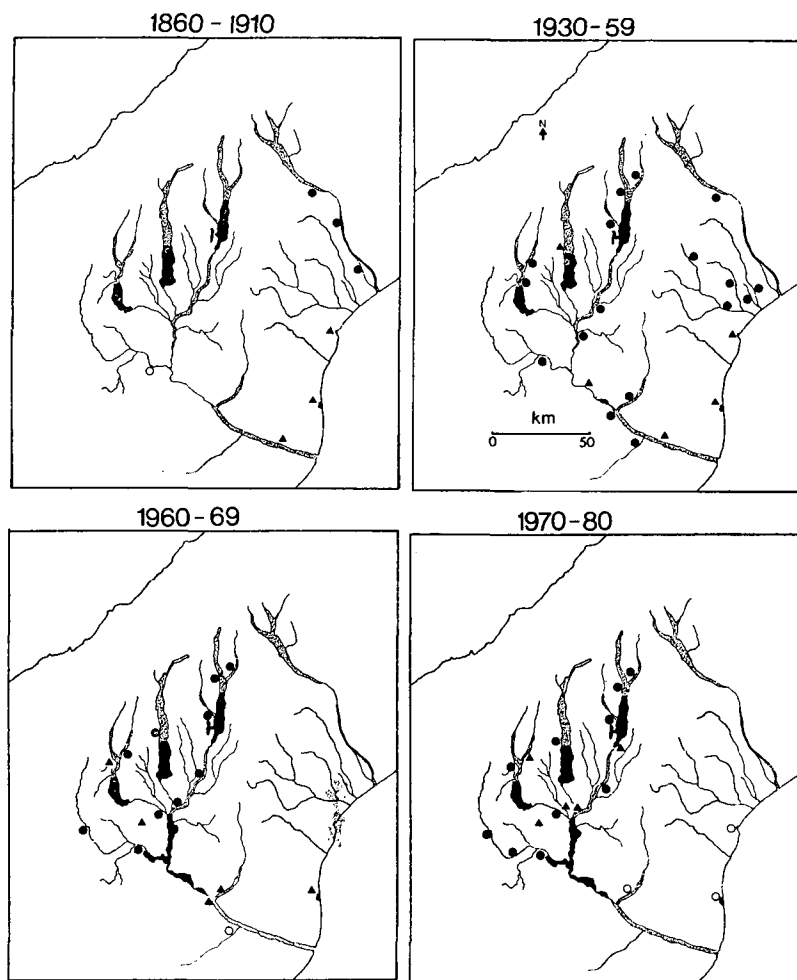


FIGURE 2 — Historical records of Black Stilt distribution in South Canterbury. Symbols as in Fig. 1

of the Southern Alps (Fig. 1, 2). In Westland, Smith (1888) recorded both species on the Ahuna and Crooked Rivers, while Douglas (c. 1899) noted "Black Snipe" (his description confirming that they were Black Stilts) as "a pair trotting about now and again in certain localities represent Black Snipe both now and 30 years ago." In Marlborough, Handly (1895) considered both species to be widely but sparingly distributed, while Black Stilts were collected on the Wairau River (Buller 1875b) and at Collingwood (Hutton 1871) and a "pre-1921" specimen from Nelson is in the Australian Museum. Since 1900 Black Stilts have not been recorded nesting in Marlborough, Nelson and Westland, but Pied Stilts nest there commonly.

The riverbeds of Canterbury and Otago supported large numbers of Black Stilts during the late 19th century and early 20th century, while the lagoons and swamps in particular attracted mainly Pied Stilts (Appendix 1). Both species penetrated far inland, and at least part of each population moved to the coast after breeding and, Pied Stilts especially, dispersed northwards (Potts 1882, Hutton 1900). Stead (1932) noted that between about 1900 and the 1920s Pied Stilts increased in numbers and that so many were at Lake Ellesmere that single flocks could number 2000-3000 birds, and they were plentiful at other coastal lagoons and swamps (Appendix 1). During the early 20th century, Black Stilts were declining in numbers and range in Canterbury. Stead (1932) found reduced numbers of Black Stilts between 1900 and 1910, and Guthrie-Smith (1936) saw many Pied Stilts but no Black Stilts along sections of the Conway, Waiau and Hurunui Rivers in 1924.

In lowland South Canterbury, Black Stilts persisted for much longer than they did in North Canterbury. Between 1920 and 1940 they nested on sections of the upper and lower Rangitata, Waihi, Te Moana, Orari, Opihi, Opuha, lower Waitaki, Marawhenua and Hakataramea Rivers and in the Waimate district (Fig. 2), and they also occurred at coastal lagoons but were outnumbered by Pied Stilts. The diaries of Mr A. B. Curtis of Geraldine indicate that in 1928-30 one pair of Black Stilts may have occurred for every 2 km of lowland riverbed in South Canterbury. By the 1930s or early 1940s all observers recorded a decline in the number of Black Stilts there, although some nesting persisted until the 1950s. The last record of lowland nesting in New Zealand by a Black Stilt pair was on the Orari River, South Canterbury, in 1957 (Child 1959).

In Central Otago during the period 1930 to about 1964, Black Stilts were found nesting at Naseby and Cromwell and on the beds of the Shotover, Nevis, Arrow, Timaru, Dingleburn and Hunter Rivers (Appendix 1). Since then no Black Stilt pairs have been reported nesting there, but ones and twos have occasionally been seen in Central Otago and Southland. Poole (1951) reported that several pairs of

Black and Pied Stilts were known in swamps at the head of Amelia Arm, Charles Sound, Fiordland.

In the Upper Waitaki River Basin, Black Stilts were common during the 1930s and 1940s, nesting from the Waitaki River in the south to the Godley and Macaulay Rivers in the north (Fig. 2). In the Cass River and Godley River Valleys gatherings of up to 20 Black Stilts occurred, but they were "always outnumbered" by Pied Stilts (A. B. Curtis, pers. comm.). The diaries of D. D. Smith of Geraldine indicate that a major decline in the inland population occurred in the early 1950s, about 20 years later than in coastal areas. From December 1947 to 1949, Mr Smith recorded concentrations of 40-50 pairs of Black Stilts in an extensive wetland in the Gray's Creek area near Tekapo River and 20 pairs on flats of the Tekapo River, now flooded by Lake Benmore. In the 1950s — before Lake Benmore was formed — "nearly all the stilts gradually disappeared from these two nesting areas." A third large area of swamp and shingle flats, on the bed of the Dobson River, contained 20-30 pairs of Black Stilts in the 1940s and had been a breeding place since at least the 1930s (Appendix 1).

During the 1960s, the breeding range of Black Stilts became confined to the Upper Waitaki River Basin with only isolated records of birds elsewhere during the breeding season. A breeding season count by the Wildlife Service in 1962 produced a total of 68 adults, while winter counts (including North Island birds) from 1975-79 indicated a total adult population of 50-60 (R. J. Nilsson, pers. comm.). Since 1977 Black Stilts have been found nesting in valleys of the Ahuriri, Hopkins, Dobson, Ohau, Tekapo, Tasman, Cass, Godley and Macaulay Rivers, and at kettleponds near Lakes Ohau and Tekapo. A pair of birds on the Manuherikia River (outside the Waitaki River Basin) in October 1979 and in 1980-81 were probably nesting (M. Wright, pers. comm.). Estimated numbers of adult Pied Stilts in the Upper Waitaki River Basin in the 1980-81 season were 1500-2000, including 1190 at one drying-up pond ("Big Tarn") near Lake Ohau on 6 January 1981.

## DISCUSSION

The scarcity of sightings of Pied Stilts in the North Island during the 1860s may suggest that the species was only a recent colonist from Australia (Fleming 1982). Potts (1869), however, found Pied Stilts to be common and breeding in Canterbury during the 1860s, which shows that they were well established. It is possible that Pied Stilts established in the South Island first and that the apparent increase in the North Island after the 1860s resulted from a northward expansion. Unfortunately, observers were too few for us to be able to state confidently whether statements such as "Formerly rare, both this



[Black Stilt] and the White-headed Stilt are now very plentiful in the Lake District" (Buller 1888) referred to long-term trends or merely seasonal changes. Whether or not Pied Stilt colonisation occurred as late as the early 19th century, it is clear that the Pied Stilt population expanded rapidly in both islands from about the 1870s to the early 20th century at least. This expansion was probably encouraged by, but not necessarily caused by, clearing of forests, which provided seasonal and permanent wetlands suitable for nesting. By the early 20th century, several probably new wintering areas were heavily used, including the harbours around and north of Auckland.

The north to south decline of Black Stilts was opposite to the supposed direction of expansion of Pied Stilts. Black Stilts were still common in South Canterbury up until the 1940s, and two wetlands in the Tekapo River Valley and one in the Dobson River Valley contained a total of about 160-200 adults. Considering the formerly extensive wetlands of the Tasman River Valley as well as suitable habitat in the Ahuriri River Valley, the Lakes Tekapo and Ohau areas and in lowland valleys, the total population in the 1940s may have numbered 500-1000 birds. But within 20 years the adult population plummeted to 50-100 birds and the number of valleys used for nesting dropped from at least 24 to about 12. Since 1960 the decline has progressed more slowly, and in that period only two rivers, the lower Waitaki and Hakataramea, have been abandoned by nesting birds. Predatory mammals, habitat changes and hybridisation with the Pied Stilt (R. J. Pierce, in prep.) continue to threaten the survival of Black Stilts.

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# APPENDIX 1 — EARLY RECORDS OF STILTS IN SOUTH-EASTERN NEW ZEALAND

Br = breeding

## A. Canterbury and Waitaki River System

Source	Pied Stilt	Black Stilt
Potts (1869)	Swamps, lagoons (Br)	Rivers including Rakaia (Br)
Travers (1871)	Lake Guyon	Lake Guyon
Buller (1875a)	Rakaia River	Bottle Lake January 1872 adult and juvenile, Orari February 1872, Saltwater Creek April 1873
British Museum	Rakaia (2) and Selwyn Rivers (2) 1872	Selwyn River September 1872, Saltwater Creek May 1873
Canterbury Museum		Selwyn 1872
Otago Museum		Benmore 1875, juvenile
British Museum	Waimakariri River-mouth July 1878	
Vienna Museum	Kaipoi October 1877, (2)	Malvern Hills September 1877 (Br)
Buller (1882)		Rivers Wellington southward
Potts (1882)	Many nest inland and move to coast in January	
Buller (1888)	Common in middle to southern portions of N.Z. Nesting upper Rangitata	Rivers Wellington southward
Stead (1932)	Waipara River, swamps, lagoons (Br). Lake Ellesmere 2000-3000	Waipara River 1904 (Br) Gone 1907
E.M. Maguire, Dunedin; F. Hern, Timaru		Rangitata River, mainly above Arundel. Large numbers 1910 dwindling to low numbers 1930s. Also Opihi River, c. 1930
Stead (1927)	Now rare on rivers	Now very scarce, usually single birds mating with Pied Stilts

## Canterbury (continued)

Source	Pied Stilt	Black Stilt
Oliver (1930)		Eggs found at Ashburton (Br)
Canterbury Museum	Selwyn c. 1920 (2), Lake Ellesmere November 1915	Lake Ellesmere pre-1935 (3), Waitaki June pre 1935 2 + juvenile, Omarama May 1939
Mr Cameron, Maungati		Dobson Riverbed 1930s. Common (Br)
A.B. Curtis, Geraldine	Washdyke 1927 numerous, Orari, Waihi, Te Moana, Opihi Rivers 1928-30, 1940s	Washdyke 1927 fairly common. Orari, Waihi, Te Moana, Opihi Rivers 1928-30, approx 6-8 birds per 5-7 km (Br). Still present late 1930s and on Te Moana late 1940s but less common
G. Riddell, Timaru		Opuha River (Sherwood Downs) 1931-35 (several pairs, Br)
A.B. Curtis	Lake Tekapo 1931-37, numerous	Macaulay, Godley, Cass Rivers 1931-37. Not as numerous as on lowland riverbeds and lagoons, but up to 20 seen at once
Studholme (1940)	Lake Wainono area, "holding their own"	Lake Wainono, rare and decreasing
F. Cain, Orari		Opihi River 1941 (1)
M. Keioller, Otiake	Marawhenua River, (Br) 1950s - 1960s	Hakataramea and Marawhenua River 1940s - 1950s (Br)
R. Trotter, Dunedin		Waitaki River 1950s from Aviemore upstream
D. O'Connor, Otekaieke		Waitaki River at Kurow c. 1950s
Child (1959)		Orari River 1957, 1 pair
D.D. Smith, Geraldine	Gray's Creek area late 1940s, 50+ pairs (Br)	Gray's Creek area late 1940s, 40-50 pairs and odd Black Stilts. Nesting group of Pied Stilts was separate to that of Black Stilts. Holden Station late 1940s, c. 20 pairs with well dispersed nests near small swamp. No Pied Stilts seen there. Nearly all stilts from Gray's Creek and Holden Station gradually disappeared after 1950

## Canterbury (continued)

Source	Pied Stilt	Black Stilt
D.D. Smith (cont).	Dobson River 1950-53, nesting several miles away from Black Stilts	Dobson River 1950-53, 20-30 pairs of Black Stilts nesting on swampy flats and high shingle
G. McIntoch & J. Bull, Temuka	Upper Waitaki 1950s - 60s (present)	Macaulay River 1950s - 1960s (several pairs), Tasman River 1950-1960s several pairs
M.F. Soper, Arrowtown	Upper Waitaki 1960s (present, Br)	Ahuriri River 1960s (<20, Br) Lake Ohau 1960s (<10), Tasman River 1960s (<40, Br)
OSNZ 1940-1980	Many records	Many records, mainly from Upper Waitaki and coastal lagoons
Wildlife Service		68 adults counted in October 1962 on Waitaki, Pukaki, Tekapo, Ohau, Ahuriri, Hakataramea, Hopkins, Tasman, Godley and Cass Rivers
R.J. Pierce		Hakataramea River October 1971, 1 nesting with Pied. Lake Wainono 1979, 1 nesting with Pied

## B. Otago and Southland

Hombrook & Jacquinot (1841)		Otago
British Museum	Palmerston 1873 (1) Otago July 1874 (1) November 1874 (4), May 1875 (1)	Dunedin 1870 (1)
Otago Museum		Shag River (1) undated
Stead (1932)		
Canterbury Museum	Wanaka 1912 (1)	
W. Elliot		Shotover River c. 1910 (Br)
Philpott (1914)	Rivers e.g. Waikaia, Mataura; New River Estuary c. 50	

## Otago and Southland (continued)

Source	Pied Stilt	Black Stilt
K. McBride Kaikoura		Naseby 1933, 2 pairs, Arrow River pre 1933, Nevis River pre 1933
M. Macnicol, Roxburgh		Shotover River, odd pairs 1943-48 (Br), none after 1949
D.G. Jardine, Cromwell		Cromwell area c. 1940s
Poole (1951)	Charles Sound, 1940s	Charles Sound, 1940s
Oliver (1955)		Manuherikia River
M. Sargison, Wanaka		Timaru Creek, Dingleburn and Hunter Valley 1940s - 1950s. One September 1966
M.F. Soper		Kingston c. 1957 (1), Route- burn River 1958 (1 nested successfully with Pied Stilt). Arrowtown 1977 (1)
O.S.N.Z. 1940- 1980	Many records	Manuherikia c. 1959 (3), 1964, (1) Waiau River 1963 - two unconfirmed nesting reports. Gorge Rd September 1963 (1), Oreti River January 1968 (1)
M. Wright, Dunedin		Manuherikia October 1979 (2) and 1980-81 (2)
L.R. Beale, Dunedin		Rees River 1979-80 (2)

## C. Outlying Islands

British Museum	Bounty Islands, no date (2)
Forbes (1891)	Unspecified bones found on Chatham Island
Falla et al	Chatham Islands 1961 Stewart Island 1956

# DIFFERENTIATING THE SEXES OF THE BROWN CREEPER

By JAMES B. CUNNINGHAM

## ABSTRACT

The measurements of male and female Brown Creepers (*Finschia novaeseelandiae*) were compared to determine whether they are sexually dimorphic and, if so, which characters can be used to distinguish the sexes. In all the measured characters males were significantly larger than females. Possible selective advantages of the Brown Creeper's sexual dimorphism are discussed. Wing length was found to be the most reliable discriminator of sex.

The Brown Creeper (*Finschia novaeseelandiae*) is a small insectivorous passerine endemic to the South and Stewart Islands of New Zealand. The sexes are alike in plumage, and during an investigation of its breeding ecology and vocal behaviour, I needed a method for sexing captured birds in the field.

In many species of birds that are monomorphic in plumage, body measurements have been useful for distinguishing the sexes (see Craig *et al.* 1982). In this paper, measurements of adult Brown Creepers are analysed to determine the characters by which males and females differ most and which characters can be used to sex captured birds.

## Methods

The birds measured were captured in mist nets in Kowhai Bush, a native forest near Kaikoura (see Hunt & Gill 1979) from August 1979 intermittently to October 1981. I excluded birds captured during the annual moult (February-March) and all fledglings and juveniles captured before they had acquired adult size and plumage in May. Before May I could easily distinguish fledgling and juvenile Brown Creepers from adults by their bright yellow bill flanges or buccal linings.

I sexed the birds later by observing breeding pairs, in which only males sing the loud complex song and only females build nests and incubate. I verified the sex of some birds by observing copulation and egg laying.

Immediately after capture, I weighed the birds with a 30  $\pm$  0.5 g capacity spring balance and with vernier calipers I measured ( $\pm$  0.1 mm) bill length (tip to base at skull), bill width (at base of exposed culmen), bill depth (at base of exposed culmen), tarsometatarsus

TABLE 1 — Measurements of adult Brown Creepers from Kowhai Bush

	Male				Female			
	n	Mean	SD	Range	n	Mean	SD	Range
Body weight (g)	51	13.4	0.69	12.0 - 15.0	24	11.0	0.43	10.5 - 12.0
Bill length (mm)	50	13.0	0.45	12.0 - 14.3	25	12.4	0.32	11.6 - 13.2
Bill width (mm)	50	3.6	0.25	3.0 - 4.0	25	3.4	0.19	3.1 - 3.8
Bill depth (mm)	50	4.0	0.14	3.8 - 4.3	25	3.6	0.17	3.3 - 3.8
Tarsus length (mm)	50	27.3	0.43	26.1 - 28.4	25	26.1	0.62	24.6 - 27.3
Wing length (mm)	26	61.0	1.17	59.5 - 63.6	18	56.9	1.00	54.7 - 58.5

tarsus length (ankle joint to articulation of toes), and wing length (minimum chord of unflattened and unstraightened wing).

### Results

Male Brown Creepers were larger than females (one-tailed Wilcoxon two-sampled test;  $p < 0.0005$ ). Males weighed on average 2.4 g (17.9%) more than females (Table 1), had bills of 0.6 mm (4.6%) longer, 0.2 mm (5.6%) wider, and 0.4 mm (10%) deeper than females, had tarsometarsi 1.2 mm (4.4%) longer than females and wings 4.1 mm (6.7%) longer than females.

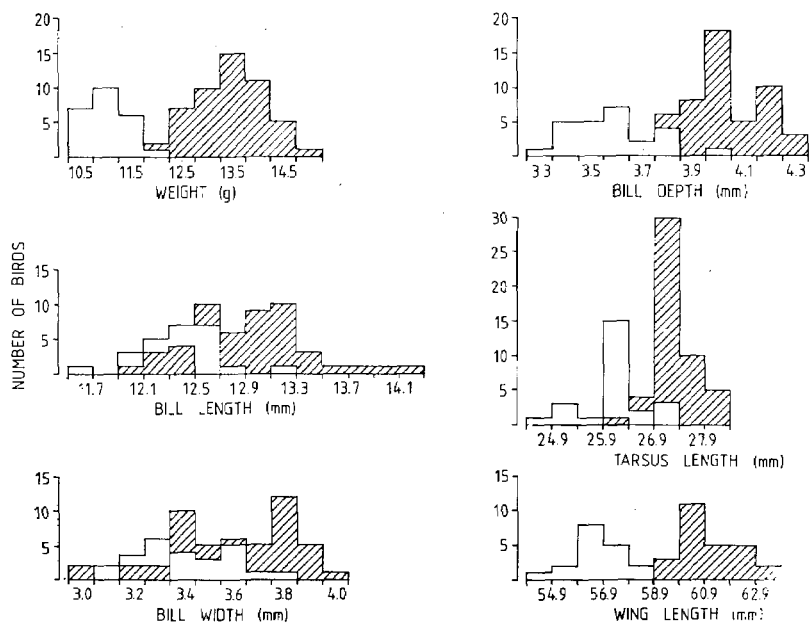


FIGURE 1 — Frequency distributions of Brown Creeper measurements. Cross-hatched columns, males; open columns, females



Figure 1 shows the overlap between the measurements of males and females. The weights of males and females overlapped only slightly, and all bill and tarsometatarsal measurements also overlapped. However, wing lengths did not overlap. The shortest wing length of males was 59.5 mm and the longest wing length of females was 58.5 mm.

### Discussion

Brown Creepers in Kowhai Bush are sexually dimorphic, the males being larger in all characters examined. Robertson *et al.* (1983) found that male Whiteheads (*Mohoua albicilla*), a species closely related to the Brown Creeper, are larger also.

To explain the evolution of sexual dimorphism in birds, two major hypotheses have been proposed (Selander 1966, 1972). The first predicts that sexual selection favours an increase in the size of the sex involved in territorial competition. The second hypothesis argues that, through sexual dimorphism, males and females avoid competition by partitioning the resources of their habitat. The selective forces implied in both of these hypotheses may have influenced the evolution of sexual dimorphism in the Brown Creeper.

In agreement with the first hypothesis, male Brown Creepers, the larger sex, are the principal territory defenders. According to the hypothesis, larger males have a selective advantage over smaller males for breeding sites, whereas larger females have no selective advantages in this respect because females seldom defend territories.

The exploitation of different subniches by dimorphic males and females has been demonstrated by Selander (1965, 1966), Newton (1967), Holyoak (1970), Wallace (1974), and others. In the Goldfinch (*Carduelis carduelis*), for example, Newton (1967) showed that males, which have a 9% longer bill than females, could feed more efficiently on the seeds of the teasel (*Dipsacus fullonum*). Therefore, the sexual differences of Brown Creepers, especially of bill dimensions, may be expected to reduce competition between the sexes. With their larger bills, males may take a wider size range of foods than females, thus reducing competition for food. However, I have no direct evidence for this hypothesis.

Body measurements in which the sexes do not overlap are the most reliable for sexing birds in the hand. In this study, the wing lengths of the sexes did not overlap, and so non-moulting adult Brown Creepers can be sexed by wing length. Those with a wing length 59.5 mm or more are males; those with a wing length 58.5 mm or less are females. Although the weights of males and females overlapped slightly, weights may help to confirm the sex of birds with intermediate or borderline wing length.

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# OBSERVATIONS ON THE RED-FOOTED BOOBY ON MABUALAU ISLAND, FIJI

By N. P. LANGHAM

## ABSTRACT

The Red-footed Booby (*Sula sula*) colony on Mabualau Island, Fiji, was visited from 1980 to 1982. Eggs were recorded throughout the year, and young were found in seven of the nine months of the year considered. The two peaks of nesting recorded were about 7-8 months apart. Only unsuccessful birds were likely to nest twice in the same year. Fledging success was low in both 1980 (55%) and 1981 (24%). Climatic factors rather than food supply or predators caused most mortality. The diet comprised flying fish and squid. Growth was similar to that on Aldabra Atoll, but fledging weight was higher. The timing of the breeding seasons is discussed.

The ecology of seabirds breeding in the Fijian Islands is poorly known, as is shown by the accounts in King (1967) and Watling (1982). The most informative recent account is that of Tarburton (1978), who visited the main seabird islands in 1974-76. Further information is in the marine survey by Barritt (1979/80) and in Clunie *et al* (1978), although the latter is principally concerned with new records. Other observations relate to short accounts (Shorthouse 1967, Lovegrove 1978) or unpublished reports by other mariners (J. A. F. Jenkins, pers. comm.). During 1980-1982, I made a series of brief visits to the colony of Red-footed Boobies (*Sula sula*) on Mabualau Island (178°46'E, 17°58'S) in Bau waters close to the south-east coast of Viti Levu, Fiji. The island consists of highly eroded coral limestone surrounded by an extensive shallow reef flat, making it inaccessible except at high water. At the north end is a small beach and at the south end is a *Rhizophora* mangrove swamp. That part above high water is covered with trees such as *Cerbera manghas*, *Pisonia grandis*, *Morinda citrifolia*, and other strand species. These trees provide the site for the nests of the Red-footed Booby on the leeward side of the island.

On each visit, I noted the number of nests and the contents of accessible or visible nests (Table 1). I could not visit the island in January, September and December, but eggs were recorded in all other months. Young were recorded in all these months except March and April 1981. On a visit to Vatu-i-Ra Island, 80 km north, on 14/8/82, I counted 190 nests, including 41 birds presumably incubating, three small chicks (<500 g) and 14 large chicks (>500 g).

TABLE 1 — Red-footed Booby census details

Date	No. of occupied nests	Eggs	Young
3/ 7/80	246	✓	✓*
24/ 8/80	-	-	✓*
12/10/80	-	✓	✓*
26/10/80	173	✓	✓*
23/11/80	118	✓	✓*
15/ 2/81	5+	✓(4)	✓(1)
17/ 3/81	394	✓	0
7/ 4/81	-	✓	0
5/ 5/81	-	✓	✓*
26-27/ 5/81	-	✓	✓*
7/ 7/81	-	✓	✓*
7-8/ 8/81	c.300	✓	✓*
23/ 8/81	340	✓	✓ large only
18/10/81	397	✓	✓*
17/ 2/82	17	✓	✓ large only
22/ 6/82	263	✓	✓*

\* Young at all stages; - no record; large young > 500 g

The predominance of large to small chicks suggests that the previous breeding period was tailing off and that the sitting birds represented the start of a new period of laying. A similar situation was found on Mabualau in the same month, and again in February 1982.

On Mabualau, the peak nest counts were made in March and October 1981, and the number was rising in June 1982 when counts ceased. These counts seem to show that the laying peaks were 7-8 months apart, that is, that the breeding cycle was over less than annual intervals. This presumption needs confirmation. If adults had a successful breeding season, the long incubation period (45 days) and nestling stage (91-105 days), together with at least 1 and perhaps 3 months of post-fledging care, made it very unlikely that such birds could breed more than once a year (Nelson 1969). Moulting, courtship and nestbuilding would preclude successful breeders from laying at the next peak. However, unsuccessful birds could profit by not having to wait a year before attempting to breed again. Individual colour

banding of adults is necessary to show definitely whether only unsuccessful birds breed more than once a year.

Breeding success was hard to measure accurately because marked nests and eggs might be destroyed and replaced between visits and the origin of dead and starving chicks found on the ground was often uncertain. In 1980, a sample of 20 labelled nests with chicks produced 11 young (55%) to the fledging stage. In 1981, only six young (24%) definitely fledged from a sample of 29 nests. High mortality has been noted in other Red-footed Booby colonies (Nelson 1978), but in the Galapagos Islands, the cause seemed to be erratic food supply, resulting in starvation. On Mabualau, starvation was seen only in chicks that had fallen out of nests, when the chicks would generally be ignored by their parents. However, unless nests were watched continuously to record feeding rates and weight gains, starvation is hard to detect. Circumstantial evidence from weighings and measurements did not suggest that starvation was prevalent during the period of observation at Mabualau. In ten regurgitation samples from chicks were about equal amounts by weight of flying fish (Exocoetidae) and squid, a feeding bolus weighing 35-50 g. Regurgitation samples from two breeding adults, probably intended for their respective chicks, weighed 70 g and 90 g.

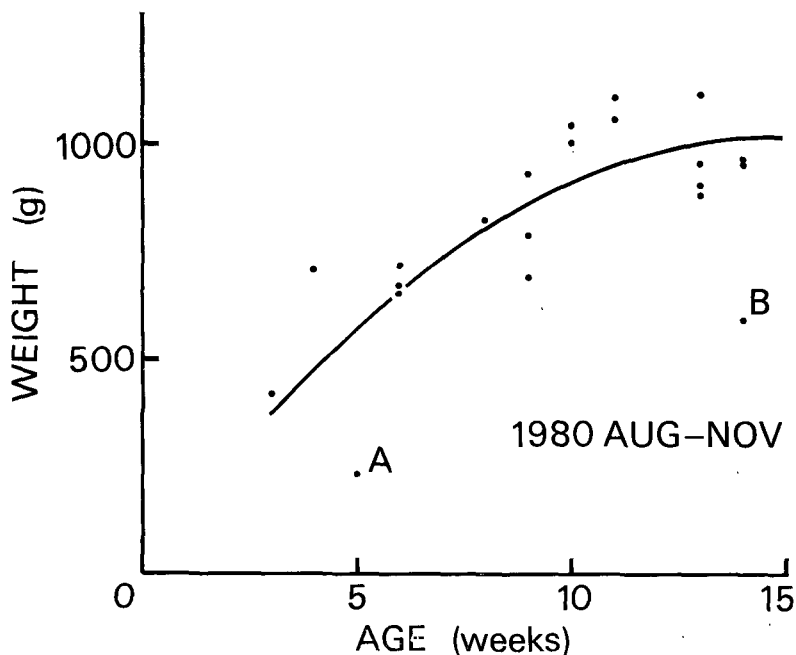


FIGURE 1 — A = Fallen chick; B = Underweight fledgling on ground

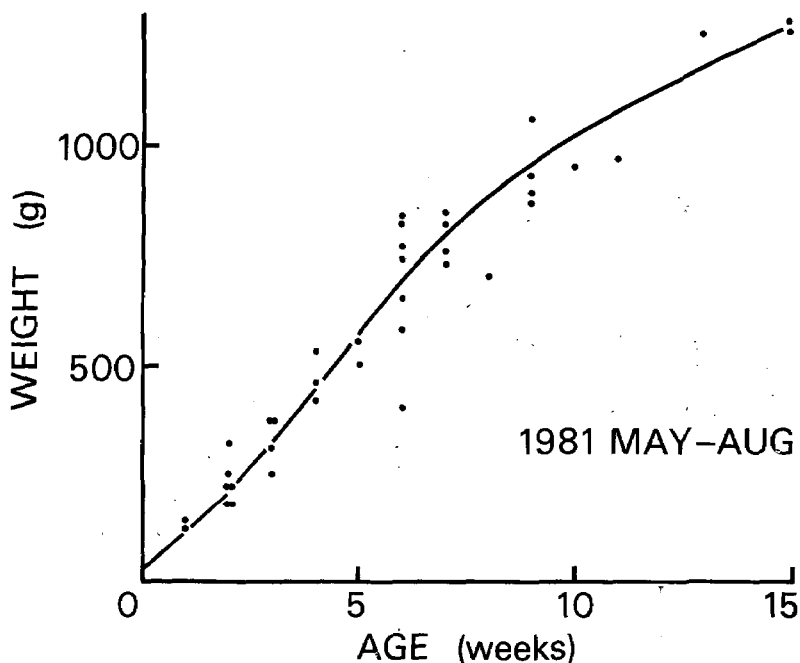


FIGURE 2

On Mabualau, climatic factors caused the main mortality of chicks and, to a lesser extent, of eggs. The cyclone season is normally from November to March, which may explain the low numbers nesting during that period and the absence of young in March and April 1981. In strong winds, branches were broken and eggs and young were knocked out. Any chicks not dead from the fall died from starvation as parents feed only young that are in or close to the nest. Large young were particularly vulnerable as they cannot be covered by adults and their down soon loses its insulating power in rain storms. The prevailing easterly trade winds account for the nests being sited on the western leeward side of the island.

The growth rate of chicks in accessible nests was examined. To estimate the age of chicks, I used the culmen and wing length of birds of known age measured on Aldabra Atoll (Diamond 1974) and in the Galapagos Islands (Nelson 1969, 1978). The growth in terms of weight is shown in Figures 1 and 2. The growth rate in 1980 was lower than in 1981 and resembled that recorded in Aldabra. In 1981, the growth rate was such that birds fledged at over 1.2 kg, higher than any fledglings in Aldabra or Galapagos (Nelson 1978). The growth rate was slowest in the Galapagos, where starvation,

probably related to current change, was prevalent. Growth rate, particularly feather development, determines fledging date, which was 91-105 days on Mabualau, 100-110 days on Aldabra, but 135 or more days on Galapagos. The Red-footed Booby lays one egg, which means that during a shortage of food the chick can survive only by reducing its growth rate (Ricklefs 1968).

Predation did not seem important on Mabualau. Rats (*Rattus exulans*) and a Swamp Harrier (*Circus approximans*) were only seen scavenging on dead chicks that had fallen to the ground. Lesser Frigate Birds (*Fregata ariel*), which were often in small groups above the colony, were seen only to chase incoming boobies and terns, trying to force them to disgorge their food.

The phenomenon of non-seasonal breeding with laying peaks less than a year apart, as on Mabualau, has also been reported on Christmas Island (Pacific Ocean), where laying occurred in April-May and December-January (Schreiber & Ashmole 1970). Most other colonies apparently have an annual cycle: Christmas Island, Indian Ocean (Nelson 1969); British Honduras (Verner 1961); Aldabra Atoll (Diamond 1974); Kure Atoll, Hawaii (Woodward 1972). Nelson (1978) reported that, in the Galapagos, the main peak occurs in September-October and a less marked one occurs in February-April but that great annual variation occurs as a result of an erratic food supply.

The timing of breeding seasons is usually considered in terms of ultimate and proximate factors (Baker 1938), the former of survival value and acted on by natural selection and the latter being the bird's environmental cue or cues. In polar and temperate climates, increasing daylength or temperature provides a suitable proximate factor, anticipating an increase in food, the ultimate factor determining breeding success (Lack 1954). In tropical and subtropical regions, changes in daylength and temperature are not so obvious, and so birds tend to use other cues as proximate factors that anticipate food abundance. In Fiji, for example, most terrestrial insectivorous species start breeding in the rainy season, when vegetative growth generally leads to an abundance of insects. In tropical oceanic conditions, where rainfall is not a likely cue for anticipating fish or squid abundance, the breeding seasons of seabirds are not precise. The largest breeding colonies of tropical seabirds are in those areas where cold upwelling currents bring an abundance of nutrients and associated food organisms, but at certain times these currents diverge from their normal course and widespread starvation occurs, as among the Red-footed Boobies on the Galapagos. Under these conditions, food abundance may be both a proximate and an ultimate factor for tropical seabirds. In Fiji, knowledge of seasonal abundance of suitable food organisms is inadequate, especially for a pelagic-feeding species such as the Red-footed Booby, which may take 1 to 3 days to collect food for its chick.

Schreiber & Ashmole (1970) suggested that an internal rhythm or "clock" could explain the synchrony in species breeding at less than annual intervals such as the 9½ month interval of the Sooty Tern (*Sterna fuscata*) on Ascension Island in the tropical Atlantic Ocean (Ashmole 1963). Where seasonal effects occur such as the period of cyclones in Fiji, any internal rhythm must be modified to reduce mortality during breeding.

In birds such as the Red-footed Booby, where a successful breeding cycle needs more than 12 months, a non-annual breeding peak occurs (Nelson 1969). A non-annual peak allows unsuccessful birds to make a second attempt without having to wait a year, provided food conditions are relatively stable and adverse weather is unpredictable. In Fiji, breeding can be attempted twice in less than two years, but these periods tend to avoid those seasons when adverse weather is most likely to occur. Before any firm conclusions can be drawn a more prolonged investigation is needed with enough birds colour-marked for the relaying of both successful and unsuccessful breeders to be followed.

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#### APPENDIX I

##### (a) Other breeding species on Mabualau Island

Reef Egret (*Egretta sacra*) — mainly nesting in mangrove, but some in crevices beneath booby colony

Slaty Flycatcher (*Mayornis lessoni*) — one pair present on all visits and probably bred

##### (b) Non-breeding species on Mabualau Island

Lesser Frigate-bird (*Fregata ariel*) — regular attendant over booby colony

Brown Booby (*Sula leucogaster*) — a few roosted regularly on island



Swamp Harrier (*Circus approximans*) — one record

White-capped Noddy (*Anous tenuirostris*) — roosted on island during non-breeding season (26/5/81 and 8/8/81). In poor light, I estimated that 5000 birds roosted on the island. Probably from Vatu-i-Ra.

Barn Owl (*Tyto alba*) — one record

White-collared Kingfisher (*Halcyon chloris*) — one record

Fiji Shrikebill (*Clytorhynchus vitiensis*) — one record

Vanikoro Broadbill (*Myiagra vanikorensis*) — several records, all males

Jungle Myna (*Acridotheres fuscus*) — several records

Orange-breasted Honeyeater (*Myzomela jugularis*) — several records

Grey-backed White-eye (*Zosterops lateralis*) — several records

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## SHORT NOTE

### NEST OF THE GIANT FOREST HONEYEATER

Neither the breeding nor the nest of the endemic Giant Forest Honeyeater (*Gymnomyza viridis*) of Fiji, nor that of the related Mao (*G. samoensis*), endemic to Samoa, have been described (Watling 1982). In Fiji, *G. viridis* is frequently heard where sufficient areas of mature rainforest remain. The call is a loud ringing sound, often in duet (Diamond 1972) with another bird and often answered by duets given by other birds in the forest which can be heard for at least a kilometre. Despite its conspicuous call, the bird itself is relatively timid, preferring the dense foliage of the rainforest canopy, where it drinks nectar and forages for insects.

On 29 August 1982, while walking along a bulldozed track through the catchment forest of Wailoku near Suva, I noticed two *G. viridis* near the top of a tall tree, one of which was displaying by fanning and raising and lowering its tail. A few minutes later, I saw one bird carrying a dead leaf of a small palm in its bill. The next day, at about 1500 h, I again saw a bird in the vicinity and could discern a nest among the foliage of a tree, *Heritiera ornithocephala*, distinguished by the copper colour of the undersurface of the leaves. The nest was estimated to be about 18-20 m above ground with a diameter of about 20-25 cm. It was like a basket formed of rootlets

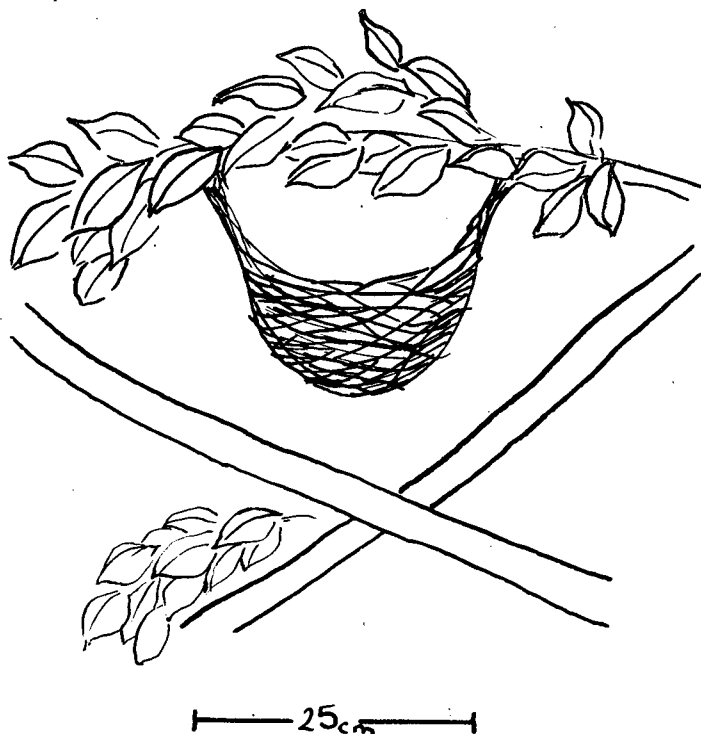


FIGURE 1

(Fig. 1), probably gathered from epiphytes. At this point, as if to confirm my supposition, the bird sat in the nest for about a minute, then left by hopping down the branch before flying down into the forest and disappearing silently. It came back directly at 1509 h and left again. It returned again at 1514 h to add a piece of rootlet to its nest before departing.

On subsequent visits up till the end of October, I saw no further activity near the nest, although I often heard birds calling nearby. I suspect that the nest was an old one and that I had witnessed a brief resurgence of sexual activity. I had earlier seen a juvenile, recognised by its dark streaked and spotted grey underparts about 100 m further along the same track on 9 August.

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# THE ALEXANDRA BLACK-FRONTED DOTTERELS: 1982/83 SEASON

By PETER and MARGARET CHILD

## ABSTRACT

In the 1982/83 season 13 adults of the Black-fronted Dotterel were again found on the Manuherikia riverbed near Alexandra, the same number as in the previous season.

Details of breeding case-histories for five pairs are given. Breeding success was very low because of predation and atypical persistent flooding throughout the season — which was also a very extended one, lasting from territorial occupancy in October to final fledging in April.

The incubation period is not less than 23 days and is likely to average about 26. Some details of eggs, nests and territories, as well as some aspects of behaviour, are described.

## Overwintering

In the 1981/82 season we found 13 adults of the Black-fronted Dotterel (*Charadrius melanops*) on the Manuherikia River above Alexandra, Central Otago (Child 1982). By the end of the summer we knew of five pairs having hatched chicks, and one of these pairs had another brood of three in late February. From these six clutches only one addled egg was found.

On 21 April 1982, 12 adults and 8 immatures were congregated and feeding on the wet muddy and silty islands and backwaters at the confluence of the Manuherikia and Clutha Rivers at Alexandra. By 11 May, when frosts were common and increasing in severity, only one (adult) bird could be found further upstream. June and July were very wintry with weeks of continuous frosts, the margins and shallows of the Manuherikia River being so frozen up that feeding in those traditional areas would have been impossible. It was only the fluctuating levels at the confluence of the two rivers that exposed sufficient areas of soft mud to enable some birds to remain there under such cold temperatures. There was no way that they could overwinter on the riverbed as they tend to do in the North Island (Heather 1973).

From mid-July on, only eight birds in adult plumage remained in the same area all winter. September was mild, and no dotterels were present at this spot on the 26th; presumably they had moved back upriver.

## 1982/83 SEASON: BREEDING CASE-HISTORIES

The 1981/82 season was characterised by dry mild weather with a low river throughout, and breeding success was high in this and other riverbed species (see below under "Breeding Success").

By contrast the 1982/83 season was disastrous for Pied Stilt (*Himantopus h. leucocephalus*) and Black-billed Gull (*Larus bulleri*), and much less successful for the Black-fronted Dotterel. The main reasons for this were as follows:

1. River levels remained at high to flood for about 6½ weeks between 4 November and 24 January (i.e. over the main breeding period), together with an exceptionally high unseasonal flood on 13 January. Black-fronted Dotterels typically nest on shingle banks high enough to escape flooding, but this last flood destroyed at least one nest of three eggs and one clutch of two very young chicks.
2. Potential predators were on the increase, including stoats, feral cats, hedgehogs, Black-backed Gulls (*Larus dominicanus*) and White-backed Magpies (*Gymnorhina tibicen hypoleuca*). Pied Stilts in particular suffered heavily from predation in the 1982/83 season.

In the 1982 spring we again found 13 adults (6 pairs and a loner), although we did not search as much of the river as in the previous season. The following is a brief summary of their breeding histories:

- Pair A* 14/10/82: Believed incubating; nest not found  
 7/11/82: 2 chicks, 2-3 days old  
 18/12/82: 1 new chick only, a few hours old (not in nest)  
 9/1/83: No juvenile found; believed nesting for third time  
 10/1/83: Third nest found, 3 eggs; bird incubating  
 14/1/83: Flooded out on 13th; unseasonal very high flood  
 14, 15, 17, 21/1/83: Parents could not be found
- Pair B* 7/11/82: 3 eggs, incubating  
 30/11/82: All successfully hatched late in the evening  
 9/1/83: 3 flying juveniles; adults present, believed re-nesting  
 15/1/83: 1 egg in nest, cold; had been flooded on the 13th  
 17/1/83: Still 1 egg in nest but warm!  
 21/1/83: 3 eggs, bird incubating  
 14/2/83: All successfully hatched  
 11/4/83: Only 2 juveniles and the parents in the vicinity
- Pair C* 21/11/82: Parents with 2 chicks about 3-4 days old  
 13/12/82: Chicks fledged, one flying, other not yet able; parents upriver  
 20/12/82: Both juveniles flying  
 20/12/82: Renested, 3 eggs, incubating (believed started on 17th)  
 10-11/1/83: Hatching extended from about 7 p.m. to 10 a.m. (2 healthy chicks)  
 14/1/83: Could not find parents or chicks; chicks believed lost in flood on 13th  
 15, 17, 21, 23/1/83: Neither parents nor chicks could be found

- Pair D* 4/12/82: 3 eggs, incubating  
18/12/82: 1 chick hatched, not found; other 2 eggs evidently infertile as no change up to 25th, when eggs still cold  
24/1/83: No sign of parents or juveniles but some footprints on mud
- Pair E* 9/12/82: Believed breeding, but after 3 days watching and searching we gave up!
- Pair F* 3/1/83: Evidently had chicks, almost on fledging, but not found. Watched copulation, trial nest-sitting and other behaviour  
5, 7, 8/1/83: No eggs in this nest and no birds sitting or nearby  
7/1/83: 2 flying juveniles (from first clutch) up and down river  
8/1/83: New nest found (2 eggs) 60 m away; bird incubating  
24/1/83: Both eggs predated

An indeterminate pair which had 2 eggs in a very late (February) nest at a territory between those of A and C lost both to predation. It is possible that Pair A (who appeared to be inexperienced parents and who lost their third clutch of 3 in the mid-January flood) in fact nested a *fourth* time.

#### *Breeding success*

In the very favourable 1981/82 season, of the results known to us

1. Hatching success was 17 out of 18 = 94%, and
2. Fledging success was 12 out of 17 = 71%.

This is much higher than that suggested by Heather (1973) for the birds on the Wairarapa rivers.

The 1982/83 season, however, revealed a very different story. Assuming the normal clutch of three eggs in each of three nests not found early in the season, we have the following results:

1. Hatching success, 17 out of 31 = 55%  
Losses of eggs were: By flood, 3 = 10%  
Addled (deformed embryo), 1 = 3%  
Infertile, 2 = 6%  
Believed predated, 8 = 26%
  2. Fledging success (i.e. fledged to hatched), 9 out of 16 = 56%  
The fate of one hatchling is unknown  
Losses of chicks were: By flood, 2 = 13%  
Believed predated, 5 = 31%
  3. Maximum overall fledging success (i.e. fledged to eggs laid), 9 out of 31 = 29%, but if the one hatchling mentioned above lived to fledge success could have been 10 out of 31 = 32%.
- The contrast with the 1981/82 season is obvious.

### *Incubation and hatching*

*Incubation period:* It is certain that Frith's (1969) time of "about 18 days" is much too short, at least in New Zealand. The only New Zealand record (Hadden 1973) published gives 25-26 days for one nest in the Wairarapa. Our own observations on the Manuherikia give the following picture:

From Pair A, first clutch: Not less than 23 days

From Pair B, first clutch: Not less than 24 days

From Pair B, second clutch: Not less than 25 days; possibly 27

From Pair C, second clutch: Between 23 and 26 days

Further study in New Zealand is still needed. The difficulty on the Manuherikia is that there are too few pairs scattered along the extensive shingle reaches, and so the chance of finding an incomplete clutch is small. Furthermore, the birds are rather mobile, restless and reluctant to return to the nest vicinity until the clutch is complete and incubation has begun.

*Hatching timetable:* The sequence for the first clutch of Pair B was as follows:

28 Nov 1.30 p.m.: No sign of pipping; no sounds from within eggs

30 Nov 1.40 p.m.: No sign of pipping; chicks peeping within eggs

30 Nov 9.15 p.m. (just on dark): One dryish chick; one chick just hatched; other egg unpipped; no egg-shell found

30 Nov 10.15 p.m. (full moon): Third egg well pipped

1 Dec 7.50 a.m. (cool, almost a frost): Three chicks in nest, all dry; no eggshell seen; both parents within 90 m of nest but no distraction display given

1 Dec 11.20 a.m. (sunny, mild): Nest empty; one parent in weedy side-channel 10 m away, probably with the chicks; other parent feeding on mud 90 m away

From the times of the observation and the state of the eggs and chicks we estimated 1-2 hours between 'normal' hatchings; later observations with the second clutch of pair C confirmed this.

For a precocial species there is an obvious survival advantage in hatching late in the evening, when predation is less likely, most of our predators being diurnal species, and chicks can be brooded overnight, allowing them to dry out and gain strength before moving from the nest and foraging with the parents the next morning. (In the above example, the cold dawn probably delayed departure from the nest.)

*Fledging period*

There seems to be a wide variation in this time interval, perhaps governed by such factors as the parents' experience in raising a brood and their degree of attachment to a later nest. The only two periods which we could define were of 40 days and 27 days, both with chicks of first clutches. Both pairs were renesting, but in the first case the parents continued to associate closely with their offspring for several days after they had started to incubate the second clutch. This same pair again showed devoted attachment to their offspring of the second clutch, being still on territory with the two surviving juveniles on 11/4/83, 57 days after hatching, but as this was the end of the 'season' perhaps this time interval is atypical. Further observation is needed.

*Eggs and nests*

From the two seasons we have now seen a total of 10 clutches, eight being full clutches of 3 eggs and two being late-season clutches of 2. The measurements of the 28 eggs are

	Length	Width
Range	27.3 - 31.4	20.4 - 21.7
Mean	28.75	21.15
SD	0.99	0.35

Background colour varied from stone-cream through creamy buff to a fairly bright buffy yellow, superimposed with fine light brown, dark brown and greyish purple or mauve spots and pencillings all over, sometimes forming a distinct wide darker band near the broad end; the general appearance from a distance was thus greyish stone, dun, or yellowish khaki. Eggs of one particular clutch are usually remarkably uniform both in size and coloration (cf. Maclean 1977).

On this riverbed a typical nest is in surface gravels of mixed grades, stones being 1-10 cm across — not the uniformly large cobbles favoured by the Black-fronted Tern (*Sterna albostrigata*) or the homogeneous sandy or gritty substrate sometimes used by the Banded Dotterel. From the nest site there is always a clear view up and down the river, although two nests were surprisingly close (less than 5 m) to marginal vegetation (willows in one case and gorse in the other).

From ten nests, the average distance to the nearest point of the river margin was 32 m (range 11-60 m), while the average distance to the nearest water of any kind (including backwaters, side channels, etc., i.e. more favoured feeding habitats) was 23 m (range 5-48 m).

The nest is a shallow saucer-like depression, about 10 cm in diameter, sometimes partly sheltered by a large stone or two, and with its base lined with fine pebbles about 0.5 cm across. It sometimes contains a few very fine dry twigs, and also shrivelled willow catkins and leaves that have probably been blown in.

Since the eggs are so protectively coloured and hundreds of similar small depressions are along each extensive shingle stretch, the chances of finding a nest casually are very slim.

#### *Territory size and features*

Because the dotterel population is sparse and the shingle reaches of the riverbed are discontinuous, we cannot tell what is the minimum territorial requirement. However, the pairs we studied this season occupied stretches of riverbed from about 145 m to 380 m in length (in a direct line). The average of 9 measured was 216 m. Width on this riverbed, including the river itself, varies from about 30 m to 220 m.

As well as a suitable shingle terrace, bar or island for a nest site, sections of both sides of the river itself are used for feeding, as are these most important subhabitats: very shallow riffles, silty or muddy pool-sides and shallows, stagnant backwaters, seepages and small side-channels. Thus, in general, there are two major feeding substrates: still or slow-moving water shallow enough for probing and fossicking among stones or algae; and damp surfaces of mud, silt or sand.

In changeable, rainy seasons (such as we have just experienced) chicks which were hatched on islands were more likely to become flood victims than those reared on the relatively safer bars and higher terraces bordering the river. When alarmed, chicks often use the sparsely vegetated environs of the subhabitats listed above in which to hide, their cryptic coloration making them very inconspicuous among the stones and weeds. Sometimes the (breeding) adult also stands motionless, back to observer, among these weedy borders. During incubation the off-duty parent is typically found feeding on the opposite side of the river from the sitting bird, and may be up to 100 m or so from the nest.

#### *Differences between male and female*

From Pair F, where copulation was observed several times (see below), we concluded that, in comparison with the male the female had

1. Slightly larger body build — heavier, more robust, wider in cross section through the breast region when viewed from in front;
2. Upper surfaces rather more tawny brown than grey-brown;
3. The black arms of the Y broader up the sides of the neck;
4. The black on the carpal bend more pronounced; and
5. The chestnut on the scapulars wider and deeper in shade.

These differences were confirmed with Pair B from as close as 15 m.

However, much of this may be due to an age difference, the male in each case perhaps being a first breeder not yet having acquired



the full richness of plumage of mature adulthood. Sexes of the other pairs we studied could not be distinguished at a distance in such a manner, but we were unable to view them at such close range. Much further study, with banding, is needed to shed some light on the subject.

### SOME OBSERVATIONS ON BEHAVIOUR

*Copulation:* Copulation of Pair F was seen four times. Compare with Maclean (1977).

1. Both preened for a few minutes on high shingle after feeding on mud; the male then made a fast run to the female (about 3 m away), which adopted a low horizontal soliciting posture. The male mounted immediately; contact lasted only a few seconds; the male dismounted on her left side, stood and stretched his wings upwards; then both trotted quickly back to the edge of the river and resumed feeding.
2. Another day: Both had been feeding among stones at the river's edge; the female then ran towards the male, who walked quietly, about 1 m to meet her, and mounted. After contact for a few seconds he dismounted at the rear, moved away and stood still about 0.5 m away.
3. One minute later: She crouched; he walked up and stood on her back; she rose and took two or three steps; he stayed on, copulated quickly and then stepped off behind. She moved off upriver feeding, and bathed. He stayed put, preened and bobbed, and after a few minutes, continued feeding. Five minutes later he flew off down river and returned 8 minutes later.
4. Sixteen minutes later: She crouched on the shingle; he ran about 2 m and mounted again. After copulation they stood close together, preened and then began feeding. A few minutes later he flew off down river again to what later proved to be a 'false' nest-site. It seemed by subsequent behaviour at this site that he was trying to entice her to lay there, but in fact she later laid two eggs in a nest about 50 m further down river.

No calls were heard during these four encounters.

*During incubation:* The male of Pair B took very long periods, 24-52 minutes, to return to the nest after being flushed. By contrast the female took only 2-10 minutes to return. (On two other occasions a bird from each of pairs B and F took 1½ hours to return to the nest!) During incubation the off-duty bird stayed considerable distances from the nest (up to 90 m, and occasionally nowhere to be seen), feeding, preening and just standing still among the shingle.

While on the nest (as observed from a hide 5 m off) the adult was often restless, with much head-turning, shuffling about on the eggs, ruffling the dorsal feathers, opening and closing the mandibles; at other times 'dozing' with eyes closed, and uttering very quiet

'chittery' noises. On two occasions the bird crouched over the eggs for lengthy periods as if shading them, although the day was not particularly warm. During brooding of two newly hatched chicks and incubating of the third egg, one bird (the male?) of pair C was much less attentive, more nervous and shuffly on the nest than his mate; this restlessness seemed to be transferred to the chicks, which periodically distracted him from incubation by straying off; by contrast the female(?) was able to gather in the chicks much better and keep them calm and quiet for much longer periods.

Brooding intervals: From the second clutch of pair C, where two chicks were being brooded while awaiting the third egg to hatch, and over an observation period of more than four hours, the 'male' averaged 22 minutes per brooding and the 'female' 44 minutes. The overall average for both parents was 32 minutes.

Awareness of potential predator: On one occasion the flushed bird of pair B had almost returned to the nest when a Black-backed Gull appeared, flying down-river about 15 m above the shingle. The dotterel immediately turned 180° and ran very quickly 20 m or so towards the bordering willows. After the gull had passed out of sight the dotterel walked at a cautious steady pace to settle on the nest.

Attachment to brood: An adult of pair C was brooding the two young chicks and incubating the third egg; when PC went out at 11 p.m. to check the state of incubation it remained firmly on the nest while he approached by torchlight, and he was able to pick it up with the two chicks well held by the underwing feathers! This is in marked contrast to their usual timid and furtive behaviour in daylight hours.

Disposal of egg-shell: On one occasion at pair D territory, egg-shell (presumably from the first egg hatched) was found on mud among a clump of sedges 56 m from the nest. (The other two eggs from this clutch were infertile). On another occasion (third egg, pair C) the adult flew 25 m downstream with the shell, seemed to drop it on the shingle or in the water, and returned immediately to the nest.

Attempted 'takeover' by a stranger: During the brooding and incubation of Pair C's second clutch these events were recorded:

- 0731: A strange adult (believed to be the unmated loner from upriver) walked in from the edge of the river with much 'chipping' and attempted to take over the nest from the sitting bird. Much squabbling ensued on the ground, followed by an aerial chase.
- 0736: The stranger appeared again on the shingle close to the car (which was our observation hide c. 15 m from the nest) and the off-duty bird chased it away downstream.
- 0834: Again the strange adult was chased away at the edge of the river by the off-duty bird.

*Possible competition with Banded Dotterel:* By contrast with the conclusion reached by Heather (1973) on the Wairarapa riverbeds, we have the distinct feeling that the Banded Dotterel has suffered on the Manuherikia since its colonisation by the Black-fronted. In fact, in the 1982/83 season we found no Bandeds at all on the stretches of shingle and old adjoining river terraces where there were small numbers a few years ago. Although there has been some deterioration of habitat for this species (encroachment of weeds, disturbance by humans and stock) this could hardly explain their total absence, as some drier pockets of suitable terrain (which the Black-fronted Dotterel does not favour) still remain.

#### ACKNOWLEDGEMENTS

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PETER & MARGARET CHILD, 10 Royal Terrace, Alexandra

# CLASSIFIED SUMMARISED NOTES

30 June 1982 to 30 June 1983

Compiled by D. F. BOOTH

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E & O E

**Abbreviations:** BoP — Bay of Plenty; est. — estuary; FP — Forest Park; FoT — Firth of Thames; H — Harbour; HB — Hawkes Bay; I — Island; L — Lake; NP — National Park; pen — peninsula; R — River; RP — Regional Park; SF — State Forest; SP — sewage ponds.

**BROWN KIWI *Apteryx australis***

Opuawhanga, 1982/83 both male and female calling in bush, often in light rain or mist (JFS). Parakao, 1 chick found during kiwi salvage operations on 26/3 (PdeJ). Little Barrier I, young bird surprised in early morning feeding; others calling at night, 21-25/1 (BB, AH). Taporā, 6 from Northland released between 1/8 and 27/3 and several heard on 16/4 (MJT). Waitakere Valley, occasional reports of calls following releases in area last year (JES). Puketū-Hikuaī Valley, heard on night of 14/9 at 1800, 2200 and 0300 hours (JGH). Otanewainuku, 1 on 3/3 calling at night (PCML). Barrett Lagoon, New Plymouth, 1 heard on 2/2 (TPB). Everett Park, Inglewood, 1 heard and another seen on 2/4 (TPB, RO). Egmont NP, 2 heard near Pouakai Hut on 2/2 (AAB). North Arm, Stewart I, 1 female calling 4/7 (CMM). Masons Bay, Stewart I, many calling 5/7 (CMM).

**YELLOW-EYED PENGUIN *Megadyptes antipodes***

South Bay, Kaikoura, 1 on 18/12 (BE). Stony Bay, Banks Pen., 4 on 4/4 (D. Buzan). Foveaux Strait, 1 on 4/7 (CMM).

**BLUE PENGUIN *Eudyptula minor***

Motukauri, Hokianga, 2 on 7/9 (RMB, AMD). Opoutere-Ohui, 20 found dead on 31/8 (KRB). Waihi Beach to Ohope Beach, over 50 corpses found during Sep 1982 (PCML). Whale and Rurima I, plentiful in adjacent waters during visits 18/9 and 22/6 (WMH). Charleston, flock c.50 on 19/2 (DJO). Kumara Beach, 4 recently used moulting sites located under large logs and tangled growth 3 m above high-tide mark, 20/2 (CSL). Ackers Point, Stewart I, breeding 29/11 (CMM).

**CRESTED GREBE *Podiceps cristatus***

L. Rotorua, Kaikoura, 23/12, 2 seen from 5 positions and so total could be up to 10 (BE), 1 on 30/1 (GIR). Iveagh Bay, L Brunner, 2 on 17/9 (NJW). L Lyndon, 1 adult on 15/8 (PL). L Catherine, 2 adults with 1 small chick on 29/1 (PL). L Moeraki, 1 on 15/3 (HH, BS). L Evelyn, 2 adults on 24/12 (PL). L Selfe, 3 on 10/2, 1 probably juvenile (JHS, BHS). L Murray, 2 on 25/3 (HH, BS).

**NEW ZEALAND DABCHICK *P. rufopectus***

L Kereta, S Kaipara, 28 (flock of 9 and rest in pairs) on 8/8; 25 on 18/5 (MJT). L Otatoa, S Kaipara, 34 (2 singles and 16 pairs) some displaying on 12/9; 20 on 18/5 (GAP). Te Kuiti SP, 1 on 5/6 (RG & GPG). Awaiti Wetland Reserve, 17/4, pair with 2 half-grown chicks and lone adult (PCML). Thornton Lagoon, 3 pairs on 27/5 (PCML). Whakatane SP, 3 on 11/1 (RMW). L Rotoiti, Western Arm, 20 adults and 2 subadults on 20/2; many did not dive to escape boat but spread their wings, exposing broad white rear edge, and pattered along surface with feet (PCML). Freshwater Lake, Tasman Pulp & Paper oxidation ponds, 2 pairs on 13/10 (RMW). L Aniwhenua, 3 on 9/1 (RMW), 4 on 28/11 (JGI). Sulphur Bay, L Rotorua, 91 on 21/7, 33 on 28/9, 10 on 8/12, 67 on 30/6 (GAT). L Rotoaira, few at NE end and 2 at S end on 13/2 (TPB, RO). Rototahi, 2 on 4/12, 3 on 18/4 (JCH). Matawhero, 2 on 3/4 (EJJ). Muriwai, Gisborne, 1 on 7/3 (JCH, MAW). Westshore, c.19 on 30/6/82 (KVT). Whirinaki Swamp, pair on 20/11 with nest under

maimai (PWT, MT). L Roto-o-Kiwa, 55 on 8/4 (BDH, KVT). Dannevirke SP, 8 on 5/4 (BDH). Marton SP, 33 on 18/7 (RJW), 26 on 27/2 (BDH). L Koitiata, Santoft, 2 with 1 chick on 27/2 (BDH). Bulls SP, 21 on 27/2 (BDH). Flock House ponds, 2 with 1 chick on 27/2 (BDH). L Kaikokopu, 17 on 18/7 (LJD). Foxton No. 1 L, 14 on 18/7 (LJD). L Horowhenua, 50 on 12/7 (BDH), 12 on 26/10 (AHG), 0 on 14/11; only 4 on 28/1 (BDH). L Papaitonga, 5 on 12/7, 0 on 14/11, 12 on 28/1, 11 on 30/4 (BDH). Rakauhumama Lagoon, 17 on 2/10 (RAC, SEC). Dune L S of Hokio Beach, 4 on 1/6 (RP), 20 in Oct (AKB). Dune L, Ohau, 9 (2 with 2 chicks) on 14/11, 4 on 12/7, 9 on 28/1 (BDH). Waimeha Lagoon, Waikanāe, pair generally present, courting seen but no nesting success 1982-83. Two pairs briefly 24/10. Presence irregular autumn 1983 (CAF, MAF). Waikanāe SP, 36 on 12/7, 71+ on 30/4 (BDH). Pool S of Aotea Lagoon, Porirua, 1 on 23/5 DB, ING). Featherston SP, 3 on 24/4 BDH).

#### HOARY-HEADED GREBE *P. poliocephalus*

Bromley SP, 2 on 28/5 (D. Buzan).

#### AUSTRALIAN LITTLE GREBE *Tachybaptus novaehollandiae*

L Rotokawau, Northland, 20 on 29/1 (DFB, BAE). L Rotorua, Kaikoura, 1 on 20/9 (BE). Charlestown, West Coast, 1 on 9/9 (DJO). St Anne's Lagoon, 2 in full breeding plumage on 12/1 (PMS), 1 on 14/1 (BE), 2 adults and 4 fledglings on 16/4 (PMS).

#### WANDERING ALBATROSS *Diomedea exulans*

Motiti I, 1 adult on 2/6, 13 km N (PCML). Foxton Beach, 3 passing on 29/12; 1 on 23/1 (JLM, MM).

#### NORTHERN ROYAL ALBATROSS *D. epomophora sanfordi*

Petone, 1 on 22/5 storm wrecked and cared for for two weeks (RNC). Tasman Bay, 1 on 17/4 (JMH).

#### NEW ZEALAND BLACK-BROWED MOLLYMAWK

*D. melanophrys impavida*

Foxton Beach, 1 passing on 12/9 (JLM, MM).

#### YELLOW-NOSED MOLLYMAWK *D. chlororhynchus*

Poor Knights to Tutukaka, 2 on 9/5 displaying; first sighting of season according to locals (CMM). Hokianga H, 2 on 10/6/82, 1 km off entrance following and scavenging from fishing boat (DB). Motiti I, 8 adults on 26/6; fortnight later an adult corpse found on Mt Maunganui Beach (PCML).

#### WHITE-CAPPED MOLLYMAWK *D. cauta*

Foxton Beach, 1 passing on 12/9, 6/11 and 19/6 (JLM, MM). Doubtful Sound to Breaksea Sound, 2 on 1/2 (WJC).

#### GIANT PETREL *Macronectes* spp.

Papaaroa, Coromandel, 1 on 28/8 feeding on dead Blue Penguin, 1 km offshore (CMM). Cape Runaway, 2 on 9/7 in flight (WMH). Raurima I, 1 on 18/9 flying north (WMH). Waihou Beach, 1 on 25/9 (BRK). Gisborne, 1 on 22/1 at harbour entrance (BRK). Mokau R mouth, 1 dark plumaged on 23/8 and another on 14/1 (RWW). Port Taranaki, 1 on 26/6 (TPB). Kaihihi Stream,

Okato, 2 dark-plumaged birds offshore on 15/5 (DGM). Foxton Beach, 1-3 passing on 4 dates between 21/9 and 12/2 (JLM, MM). Wellington H, 1 on 23/5 injured in gale and cared for by zoo (DGG). Motueka Wharf, 1 on 14/8 (JMH). Nelson sewer outfall, 1 on 20/8 white phase; 50 during Sep (JMH). Kaikoura Pen, occasional sightings throughout year (BE).

**CAPE PIGEON** *Daption capense*

Waihau Bay, 2 on 9/7 resting on water (WMH). Nelson sewer outfall, c.200 Aug-Sep and 500+ in Oct (JMH). Kaikoura wharf, 9 on 16/7; 29 on 27/5; c.70 on 8/6; c.300 on 23/6 (BE). Doubtful Sound to Breaksea Sound, 4 on 1/2 (WJC).

**GREY-FACED PETREL** *Pterodroma macroptera*

Mt Maunganui, burrow cleaning 14/5; first birds coming in 1750 hours; birds seen on ground and in flight, an estimated 100+ (GAT). 1 on ground on 22/7 and a number flying about at 2100 hours (PCML). Papanui Stream mouth, near Tongaporutu, several burrows on offshore islet in use and one occupied burrow on mainland on 25/8 (RWW).

**MOTTLED PETREL** *P. inexpectata*

Clyde Dam site, 1 picked up alive on 18/5 after cold southerly storm (PC). Front I and Shag I, Dusky Sound, breeding on 4/2 (KM, WJC). L Hauroko, Fiordland NP, breeding (WJC).

**SOFT-PLUMAGED PETREL** *P. mollis*

Petone, 2 on 22/5, 1 alive and the other dead, storm wrecked (SDC).

**COOK'S PETREL** *P. cookii*

Little Barrier I, rough seas brought great numbers of seabirds close inshore on 23/1, including some of this sp. (BB). Many heard at night 28/1-1/2 (JD).

**BLACK-WINGED PETREL** *P. nigripennis*

Pitokuku Point, remains of c.20 birds found on 24/4; cat skeleton also found (ASR, JMR).

**FAIRY PRION** *Pachyptila turtur*

Mt Maunganui to Mayor I, c.25 on 11/12 (PCML).

**BLACK PETREL** *Procellaria parkinsoni*

Little Barrier I, on passage, one clearly observed on 21/1 (BB, AJG).

**WESTLAND BLACK PETREL** *P. westlandica*

Tasman Bay, 2 during April (JMH).

**FLESH-FOOTED SHEARWATER** *Puffinus carneipes*

Burgess I, 2 young on 24/4 in burrows (TH). Sandspit to Little Barrier I, hundreds on 1/2 and 50+ on return trip on 28/1 (JD). Mayor I, 100+ on 11/12 feeding at 1500 hours at SE Bay (PCML). Motu R mouth, small numbers flying NE along coast 20/1 (GAT).

**BULLER'S SHEARWATER *P. bulleri***

Little Barrier I, on passage, 7 on 21/1; on 23/1 many hundreds of seabirds, mainly of this species, close inshore in rough conditions (BB). Mt Maunganui to Mayor I, 11/12, always some in sight from 10 km N of entrance; numbers have increased since mid-1970s (PCML). BoP waters, near Whale and Rurima I, plentiful and increasing, summer 1982/83 (WMH). Tokata Point, Motu R mouth, hundreds flying NE along coast, some within 100 m of shore; numbers peaked before 0800 hours 20/1 (GAT).

**SOOTY SHEARWATER *P. griseus***

Little Barrier I, 1 on 21/1, 5 km SW (PCML). Mt Maunganui to Mayor I, and return, 3 on 11/12, 5 and 10 km S of Mayor I (PCML). Alexandra, single birds picked up alive on 20/5, 26/5 and 5/6 (PC).

**FLUTTERING SHEARWATER *P. gavia***

Oputere, 50 per minute counted passing N, a conservative estimate as only the close inshore stream was noted; others further out not counted; 3/1. Birds returned southward late in day. Weather fine and sea calm (BB). Whitianga to Red Mercury I, c.300 on 24/10 (JD). Mt Maunganui to Mayor I and return, 11/12, numerous within 10 km of inshore waters but scarce or none beyond (PCML). Omanu to Papamoa Beach, 12/82 and 1/83, flocks of 1000+ 1 km offshore (PCML). BoP waters, around Whale, Rurima and White I, common throughout year (WMH). Waihou Bay, plentiful on 9/7 (WMH). Foxton Beach, c.50 on 3/1; also in Apr-May (JLM, MM).

**HUTTON'S SHEARWATER *P. huttoni***

Blenheim township, 1 on 18/3, 1 on 4/4, 1 on 15/4, 1 on 20/4 (WFC). Atia Point, Kaikoura, several flying past closer than usual to rocks; 2 sitting on water close to rocks, 6 further out, on 27/7; hundreds flying past on 25/8 (BE). Kaikoura, c.40 on 19/5 close to shore (PCML). Goose Bay, thousands on 5/10 (BE).

**LITTLE SHEARWATER *P. assimilis***

Mayor I, 2 on 11/12, 10 km S (PCML).

**WHITE-FACED STORM PETREL *Pelagodroma marina***

Sandspit to Little Barrier I, 6 on 21/1 (BB, AJG). Whitianga to Red Mercury I, c.20 on 24/10 (JD). Mt Maunganui to Mayor I and return, 11/12, numerous from 8-10 km N of Maunganui entrance to Mayor I (PCML). BoP waters about Whale and Raurima I, large flocks in summer (WMH).

**DIVING PETREL *Pelecanoides urinatrix***

Little Barrier I to Sandspit, 50+ on 1/2 (JD). Muriwai Beach, 1 on 8/8 alive (CCH). Whitianga to Red Mercury I, c.50 on 24/10 (JD). Mt Maunganui to Mayor I and return, on 11/12 birds seen most of way except for first 4-5 km of inshore waters and immediate vicinity of Mayor I (PCML). Petone Beach, 1 on 22/5 flying offshore (SDC).

**AUSTRALASIAN GANNET *Sula bassana serrator***

Cuvier I, 90+ on 8/3 passing offshore (BB). Northern Wairoa R, 1 on 20/2 at Dargaville, a rare sighting (BC). Muriwai stack,



65 on 2/7, some crooning and neck twining (RBS); 31/10, c.200 with nests (a few fluffy chicks visible); 14/11, 197 occupied nests (IAN). Muriwai mainland cliff, single bird sitting on one egg against newly erected protection fence (MJT). Horuhoru I, Hauraki Gulf, 5/3, 300 adults, 100 immatures, 30+ downy chicks (JD, RGRF). Manukau H census, summer 1, winter 26 (BB). Access Bay, FoT, c.20 on 10/10 fishing in Firth (BB). Mt Maunganui to Mayor I and return, 10 on 11/12 (PCML). Kaituna R, 1 on 31/1 fishing 1 km up river from mouth (PCML). Tarawera R mouth, c.50 on 27/3 feeding 1 km off shore (PCML). Tolaga Bay, 3 on 4/12 off wharf (JCH). Waihai Beach, 5 on 4/9; 1 carrying nest material (BRK). Muriwai, Gisborne, 6 on 7/3 off beach (JCH, MAW). Muriwai Lagoon, Gisborne, 100+ offshore on 12/12 accompanied by porpoises, mollymawk sp., gulls and shearwaters (BRK). Taranaki coast, commonly seen offshore in small numbers (DGM). Cape Kidnappers, c.600 on 31/3, including speckled juveniles, some with traces of white down feathers (KVT). Foxton Beach, recorded most months, maximum 9 on 31/1 (JLM, MM). Pauatahanui Inlet, 2 on 1/8 (AHG), 2 on 20/2 (AKB). Evans Bay, 1 juvenile on 16/4 (RGP). Blackwood Bay, Queen Charlotte Sound, 30 on 1/3 (WFC). Arapawa I, 84 on 7/3 (WFC). Atia Point, Kaikoura, 3 on 23/10 (BE). Kaikoura Pen, 4 on 20/5 (DJB).

#### BLACK SHAG *Phalacrocorax carbo*

Manukau H census, 16 on 14/11, 39 on 26/5 (BB). FoT census, 73 on 5/12, 22 on 17/7 (BB). L Waikare, 60+ on 16/4 resting in a line (KJF). L Whangape, c.50 on 18/1 (PJA). Hamilton L census, 14 on 19/9, 47 on 27/2, 38 on 16/4 (MAB). Aotea H census, 8 on 6/11 (BHS). Kawhia H census, 60 on 11/7, 10 on 6/11, 29 on 26/6 (BHS). Matakana I, 16-18 nests on 25/9 in pines at N end (PCML). Kaituna R, c.4 pairs in spring 1982 nesting among Pied Shags in pines at river mouth (PCML). Sulphur Bay, L Rotorua, 54 on 29/12. Many juveniles with blotchy brown on underparts. Flock disperses in autumn. Only 4 on 30/6 (GAT). Waitangi est, HB, c.45 on 30/6, common along coast (KVT). Pauatahanui Inlet, present throughout year with drop in Oct/Nov. Highest count 84 Apr, lowest 3 Oct (AHG *et al.*). Lower Hutt, roost at Melling Station, present during autumn and early winter (AM). Motueka est, c.100 through winter months (JMH). Nelson Haven, 400+ for 3 hours 17/6 (JMH). Wairua/Tuamarina, 2 on 12/4 (WFC). L Rotorua, Kaikoura, 25 on 30/1 (GIR). Lower Hodder Valley, 1 on 3/9 (GIR). Acheron/Clarence, 4 on 18/2 (GIR). L Brunner outlet, 5 on 17/7 (CSL). Rotomanu, 1 on 21/4 (PJF). Hokitika R mouth, 9 on 6/2 (NJW); 6 on 25/5 in fresh breeding plumage; 4 adults and 1 immature on 21/6 (NJW). Turiwhate, Westland, 1 on 12/3 perched on tree for 4.5 hours (CSL). Worsley R mouth, L Te Anau, 1 disgorged a 30 cm trout on 4/3 (KM).

#### PIED SHAG *P. varius*

Cuvier I, some adults and immatures at Radar Point colony on 5-17/3 (R. Chambers per BB). Taporu, 140 on 19/2 roosting in dead mangroves on McLean's Dam (15 nests) (MJT). Hobson Bay, colony reached a maximum of 28 nests on 12/10 and is now active all year round (MJT). Orakei Creek, colony had 30-40 nests on

24/10 (MJT). Ponui I, c.60 on 5/3 (JD). Karaka, Manukau H, 61 on 26/6, highest count (BB). Manukau H census, 351 on 26/6, 116 on 14/11 (BB). FoT census, 13 on 17/7, 21 on 5/12 (BB). Aotea H census, 0 on 6/11 (BHS). Kawhia H census, 1 on 11/7, 0 on 6/11, 0 on 26/6 (BHS). Mayor I, 10 on 11/12 at SE Bay (PCML). Kaituna R. c.20 nests on 29/8 in pines by river mouth. Some fully fledged young still in nests while others were flying out to sea to fish for themselves on 1/1 (PCML). Tarawera R mouth, highest count, 49 on 7/5 (PCML). Rangitaiki R mouth, highest count, 14 on 12/6 (PCML). Waioeka R mouth, 14 on 18/1 (GAT). Whangaparaoa R mouth, East Cape, 6 on 19/1 (GAT). Wairoa est, 1 on 19/6, rare visitor (GAF). Tory Channel, Sawyers Bay, 36 nests on 7/3 (WFC). Pelorus Sound, Post Office Point, 50 birds and 14 nests on 3/7 (WFC). L Grassmere, 7 on 16/10 repeatedly dived during hail storm (DJB). Kaikoura, L Rotorua, 44 and 27 nests on 5/7, 34 nests occupied with chicks 20/9, 16 nests occupied, adult feeding 2 large chicks on 8/11, nesting over on 23/12 and 9 birds seen (BE). Kaikoura Pen, 47 on 30/5 (BE). Gilbert I, Breaksea Sound, 2 on 2/2 (WJC).

#### LITTLE BLACK SHAG *P. sulcirostris*

L Kereta, Kaipara H, 15 on 8/8 (MJT). Orakei Creek, c.90 in May roosting with nesting Pied Shags; among this flock on 3/5 were four juveniles bearing bands and presumed to be birds from the colony on L Rotorua (MJT). Hobson Bay, 132 on 6/5 at 0830 lined up on a reef probably included those noted at Orakei on 3/5; 178 on 15/5 feeding (MJT). Upper Manukau H, 23 on 25/7 (RBS). Pollock, Awhitu Pen, 26 on 8/8 fishing and lazing in mirror calm (BB). Maioro, Waikato est, 14 on 15/10 in pond (BB, DFB, BAE). Miranda, FoT, 44 on 23/9 (BHS). L Whangape, c.60 on 18-19/1 (PJA). Hamilton L census, 3 on 19/9, 0 on 27/2, 5 on 16/4 (MAB). Aotea H census, 0 on 6/11 (BHS). Kawhia H census, 13 on 11/7, 0 on 6/11 and 26/6 (BHS). Matakana I, 24/7, flock c.60 feeding in Tauranga H off centre of I (PCML). Kawerau freshwater lagoon, Tasman Pulp and Paper ponds, 8 on 13/10, first Kawerau record (RMW). Tarawera R mouth, 20 on 27/3 and 2/4 (PCML). Rangitaiki R mouth, c.45 on 12/6 at Thornton Lagoon (PCML). Sulphur Bay, L Rotorua, colony peaked on 28/1 with 963 nests and estimated 2000-2500 present (GAT). Taruheru R, 20+ within Gisborne City on 6/6 (BRK). Whakaki Lagoon, Wairoa, 45 on 25/4 (BRK). Wairoa est, 110 on 25/4 (BRK). Waitangi est, HB, c.55 on 30/6 (KVT). Ahuriri, c.100 on 16/4 (ARG, ACS, KVT). Manawatu R est, present Jul-Oct and Mar-May, maximum 34 on 30/4. Also 5 on "The Loop" on 25 Sep (JLM, MM). Waikanae est, 3 on 8/4/82 and first for 1983 2 on 26/2 (CAF). Nelson Haven, 1 on 21/8 (JMH). Waimea est, 11 on 16/4 (BE). Kaikoura Pen, 1 on 16/7 with 9 Little Shags (BE).

#### LITTLE SHAG *P. melanoleucos brevirostris*

L Kereta, Kaipara H, 30 on 8/8 including 8 in wholly dark juvenile plumage (MJT). Hobson Bay, colony reached maximum of 47 nests on 3/10 and was active from Aug to Mar (MJT). Manukau H census, winter 59, summer 11 (BB). FoT census, winter 17, summer 5 (BB). L Whangape, c.50 on 18-19/1 (PJA). Hamilton L census, 1 on 19/9, 5 on 27/2, 10 on 16/4 (MAB). Aotea H census, 0 on 6/11

(BHS). Kawhia H census, 13 on 11/7, 2 on 6/11, 16 on 26/6 (BHS). Tauranga H, N end, 17 on Bowentown shellbanks and 20 on adjacent Matakana I shore, 11/7. Single bird on 15/5 at Bowentown was all white but for primaries, tail and narrow black line from nape to mantle (PCML). Tarawera R mouth, highest count of 40 on 4/7 (PCML). Westshore, 24 on 31/8 (KVT). Tukituki R est, 20 on 28/11 (KVT). Pauatahanui Inlet, present throughout year with numbers falling in Oct/Nov; highest count 55 in Jun, lowest 3 in Oct (AHG *et al.*). Tory Channel, Hilaua Bay, 6 on 7/3 (WFC). Kaikoura, L Rotorua, 17+ nests occupied 20/9; 3 nests occupied but nesting nearly over 8/11 (BE). Cobden Lagoon, Cobden, 1 on 9/4 diving frequently (CSL). L Karoro. Greymouth, 1 on 9/4 feeding (CSL). Arahura R mouth, 5 on 13/2 (NJW), 10 on 31/7 on shingle bar (CSL). Hokitika R mouth, 5 on 21/2 (NJW). Ewings, W L Wanaka, 15 on 8/6 (PC).

#### KING SHAG *Leucocarbo carunculatus carunculatus*

Endeavour Inlet, 1 on 1/3; off Long I, 1 on 4/3; Cape Jackson, 3 on 4/3; Pelorus, Te Kaiangapi, 5 on 17/3; 18 (15 immatures) on 26/5; 1 on 26/4; 14 on 30/6; Trio I, c.50 and 40 nests 26/5; Sentinel Rock, c.20 birds and 10 nests 16/5; Duffers Reef, 48 and 26 nests 26/5; 52 and 31 nests on 22/6; 45 and 29 nests 3/7 (WFC).

#### SPOTTED SHAG *Stictocarbo punctatus*

Shag Rock, E Waiheke I, 2000 on 5/3 with adults and immatures present (JD). Manukau H census, 10 on 26/6 (BB). FoT census, 27 on 5/12, 2 on 17/7 (BB). Haumoana, 1 on 20/1 (KVT). Waikanae, 4 on 9/5/82, 2 on 8/8 (CAF). Lake Ferry, 1/7, 6 in breeding plumage, fishing where lake outlet meets sea (BDH). Queen Charlotte Sound, Longfellow Bay, 47 on 1/3; Bay of Many Coves, 6 nests occupied 7/3; Duffers Reef, 4 nests, 1 with 3 eggs 22/6; Post Office Point, 10 nests 3/7 (WFC). Wairau Bar, 300 on 9/5; 50 on 26/3 (PJ); 250 on 9/2 and 10/2, on both occasions all dispersed one at a time (DJB). Kaikoura Pen, 100+ on 25/8 flying past (BE). Perpendicular Point, Punakaiki, 20 incubating eggs, c.30 incomplete nests with building in progress. No immature birds present on 24/10 (DJO). Hokitika R mouth, 3 on 28/2 offshore (NJW).

#### PITT ISLAND SHAG *S. punctatus featherstoni*

Matarakau colony, 200+ on 29/12 (PDG).

#### LESSER FRIGATE BIRD *Fregata ariel ariel*

Whangaroa H, 1 on 3/4 hovering at 15 m above edge of mangroves (TC). Waikanae, 1 on 5/1 (photographed) (AT).

#### WHITE-FACED HERON *Ardea novaehollandiae*

Paua, 50+ on 20/10 (BHS, JHS). Te Matuku Bay, Waiheke I, 18 on 19/2 feeding along channel at low tide (BS). Karaka, 74 on 1/12 and 77 on 25/2, dropping to 22 in Mar and back up to 50 by mid-May (BB *et al.*). Manukau H census, 314 on 13/11, 292 on 26/6 (BB). FoT census, 134 on 5/12, 79 on 17/7 (BB). Rangiriri, 60 on 16/6 on Henderson's farm (MJT). Whale I, 1 on 8/6 (WMH). Gisborne suburbs, 2 pairs regularly nesting in pines until exiled by harassing Magpies, Mar 1983 (JCH, MAW). Gisborne to East Cape, noticeable increase in numbers over the past several years (JCH).

Te Hauke, 17 on 6/7 (KVT). Westshore, 49 on 26/2 (KVT). Manawatu R est, 33 on 21/11, 45 on 27/2 (LJD). Pauatahanui Inlet, present throughout year, highest count 36 in Feb, lowest 12 in Aug (AHG *et al.*). Blenheim, Rapaura, 20 on 1/5 (PJ). Upper Hapuhu Valley, 2 on 17/4 (GIR). Blaketown Lagoon, Greymouth, 3 on 9/4, flew in to feed on mudflats at low tide (NJW). Arahura R mouth, 6 on 13/2 (NJW). Inchbonnie, Westland, 1 on 4/3, 7 on 23/5 (PJF). L Lyndon, 1 on 10/2 (JHS, BHS). Heathcote-Avon est, 22 on 16/4 (D. Buzan). Andrew Burn mouth, S Fiordland coast, 1 on 28/4 (KM).

#### KOTUKU *Egretta alba*

Houhora, 1 on 12/8 (RMB, AMD). Kawakawa, Rangaunu, 1 on 29/6 (RMB, AMD). Jordan's Road, Kaipara H, 5 on 16/10 (BHS, JHS). Gordon's Road, Waiuku, 1 on 8/8 (BB). Tarawera R mouth, 2 on 3/7 (WMH). Matata Lagoon, 1 on 2/3; still present at end of Jun (PCML, BCh). Kawerau, Tasman Pulp and Paper ponds, 1 on 13/10, a first for Kawerau, said by a local to have been there for 3 months; still present on 21/2 (RMW). Muriwai lagoon, 1 Jul-Aug 1982 (JCH, MAW). Whakaki Lagoon, 1 on 24/10 and Apr-May 1983 (BRH), 1 on 6/6 (GAF), 1 on 19/8 (JCH). Tukituki R, 1 on 20/5 (REL). Napier, 2 on 18/7 feeding in corn stubble (PWT, MT). Anderson Park, Napier, 1 on 11/6 (MMc). Foxton No. 1 L, 1 in Sep; Manawatu R est, 3 on 1/5, 1 on 4/6; Foxton "Loop," 1 in Aug and Sep (JLM, MM). Rakauhumama lagoon, 1 on 2/10 (RAC). Dune L S of Hokio Beach, 1 on 1/6 (RP), 1 in Oct (AKB). Waikanae est, 1 on 17/4/82 (CAF, MAF). Orowaiti est, Westport, 1 in Jan-Feb (DJO). Charleston, 1 or 2 present Jul to 23 Oct (DJO). Hokitika SP, 1 on 3/2 (DJO). L Poerua, Westland, 1 on 25/3, 17/4, 18/4 (PJF). L Forsyth, 4 on 3/9 (D. Buzan). L Lyndon, 1 on 28/3 (PL).

#### LITTLE EGRET *E. garzetta*

Paua, 1 on 21/9 (RMB, AMD). Kaimaumau, 2 on 23/9 (RMB, AMD). L Rotomanu, New Plymouth, 1 still present on 7/8 and 16/4 to 12/6 (RWW, REL, TBB, RO *et al.*). Westshore, 1 on 29/10 in nuptial plumage (ARG, LRL, KVT). Foxton No. 1 L, 1 on 18/7 (LJD). Manawatu R est, 1 on 21/11 (LJD). Carters Beach reserve, Westport, 1 on 11/9 well plumed (CSL). Orowaiti est, Westport, 2 or 3 Jul-Oct, 3 on 25/2 (DJO).

#### REEF HERON *E. sacra*

Paua, 1 on 20/10 (BHS, JHS). Parengarenga, 2 on 21/10; Houhora, 2 on 7/3 (RMB, AMD). Whangaroa H, 1 on 31/3 (JFS). Takou Bay, 1 on 11/2 (BS). Rangaunu, 1 on 2/11 (RMB, AMD). Motukaraka, Hokianga, 3 on 7/3 (RMB, AMD). Te Arai, 1 on 26/3 (GJE). Goat I, Leigh, 2 on 26/1 (JRI). Ti Point, 2 on 27/2 (MJT). Wenderholm, 1 on 27/1 (JRI). Orewa, 1 on 24/12 (MJT), 1 on 3/4 (DFB). Motutapu I, 1 on 10/3 (KRB). Otakawhi Bay, Waiheke I, 2 on 21/9 (BS). Te Matuku Bay, Waiheke I, 1 on 14/10 (BS). Great Barrier I, 2 on 30/1 (TPB, RO). Manukau H, Kaiarakihi, 2 on 31/8 (CS), Big Bay, 1 on 12/1 (AS). Manukau H census, 3 on 14/11 and 26/6 (BB). Kawakawa Bay, 1 on 27/9 (RMW). Wharekawa, FoT, 1 on 5/5 (PD). FoT census, 1 on 5/12 (BB).

Opoutere, 2 on 31/8 (KRB), 2 on 14/1 (BB). Kawhia H census, 0 on 6/11, 1 on 26/6 (BHS). Matakana I, 2 on 11/7 N end (PCML). Kaituna Cut, 1 on 11/3 (BCh). Rangitaiki R mouth, 1 on 12/6 (PCML). Whakatane R mouth, resident, seen on most visits during year to 6/83 (WMH). Ohiwa H, 2 on 29/1 (WMH). Waihou Bay, 1 on 9/7 (WMH). Pourewa I, Tolaga Bay, pair nesting in cave in Dec (GAF). Uawa est, Tolaga Bay, 1 on 6/6 (GAF). Tongaporutu est, 1 on 27/8 (RWW). Waiwakaiho est, New Plymouth, 2 on 27/11 (RO). Okato, 4 on 15/5 (DGM). Cape Egmont, small numbers present (DGM, JCM). Spriggs Park, near Napier Port, 1 on 12/6 (PWT, MT). Westshore, 1 on 23/3 (LRL). Pauatahanui Inlet, 1 on 14/7 and 29/7 (KLO), 1 on 1/8 (AHG, AKB), 1 on 24/4 (MLF), 1 on 30/5 (ING). Sinclair Heads, 1 on 1/8 (KLO). Nelson H, 1 on 15/8 (JMH). Kaiteriteri, 2 on 19/4 (BE). Kaikoura Pen, 2 on 17/11 (GIR), 1 on 8/2 (BE). Kaikoura, 5 on 3/5/81 showing interest in patch of kelp; 2 had darker bills than others (TJT). Armers Lagoons, 1 on 20/12, 2 on 16/2 (BE).

#### CATTLE EGRET *Bubulcus ibis*

Paua, 1 on 12/8 (RMB, AMD); 4 on 20/10 with brilliant buff colouring on head, chest and back (BHS, JHS). Helensville area, 32 during 1982 winter (CE), 45 on 18/5 (MJT). Silverdale, 1 on 14/4 could be closely approached (MJT). Mangere SP, 4 on 18/7 (LD). Duder's Beach, 1 on 15/6 near cattle and with White-faced Herons (B. Duder per BB). Clevedon, 9 on 21/5 (B. Duder per BB). FoT census, 25 on 17/7/83 at Piako S (BB). Ramarama, 2 on 22/5 (Mrs Habraken per BB). Maioro, 9 on 24/5 (AJG). Meremere, 5 on 31/5 (TC). Rangiriri (Henderson's farm), 63 on 8/8 (IS), 82 on 29/8 (BHS), 4 on 6/4 (BHS), 85 on 16/6 (MJT). L Ngaroto (near Te Awamutu), 1 on 2/5, in flight (RWD). Marakopa, 8 arrived on 4/6 leaving next day (RG, GPG). Te Kuiti SP, 1 on 5/6, still there on 18/6 (RG, GPG). Katikati, 4 on 14/6 feeding in field without cattle and in company of 5 White-faced Herons. Local reports suggest that birds have been around district for some time and on a particular farm each winter for some years. Another local report tells of about 20 along local highway margins in some years (BC). Awaitei (near Matata), 12 on 3/7 and 4/7, then 14 on 18/7 (PCML, WMH), 1 on 29/12 well coloured (BHS). Tarawera R mouth, 1 on 2/4 feeding with 2 Kotuku in reed-bed (PCML, BCh). Gisborne, 9 on 26/6, reduced this year. The usual flock at this observation point is up to 37 (JCH, MAW). Awamate Lagoon, Wairoa, 1 on 14/5 (BRH). Waerenga-a-hika, 8 on 22/6 (BRK). New Plymouth, L Rotomanu, 5 on 21/4; Barrett Lagoon, 1 on 31/10, 14/4 and 20/4 (RWW, TPB, RO). Beach Road, Omata, 1 on 14/10 and up to 3 seen during Mar/Apr (RWW, TPB, RO). Te Hauke, 3 on 6/7 (KVT). Ahuriri, 6 on 2/10 (MTC). Mosstown, Wanganui, 5 on 19/4/80. Putiki, 2 on 19/4/80 (OCT). Foxton No. 1 L, 22 on 18/7, 19 on 19/9 (LJD, CR & PMS). Manawatu R est, up to 23 from 1/7 to 25/10; 3 birds "summered" from 18/12 to 12/3. Up to 13 from 14 May to 30/6 (JLM, MM). Waingawa, 1 on 14/6 (CES), 3 on 21/6 (TCD). Hokio Sands Road, Levin, 8 on 26/10 (AHG). Mangaroa Valley, Upper Hutt, 1 on 14/6 and 28/6 (ING, AHG). Judgeford, 1 on 22/5 (ING). Boulcott Golf Course, Lower Hutt, 1 on 11/5 (JAG), 1 on

13/5 (AHG). Rai Valley, 2 on 15/5 (BE), 1 in Jun (PDG). Grove-town, up to 14 present Jul-Sep, 7 on 29/9 included 3 with buff on head, chest and back, 3 with buff on head and chest only and 1 all white; 25 all white on 28/5 (DJB). Blenheim SP, 1 on 25/5 with band (JCH). Appleby, 2 on 17/4 (BE), 6 in Jun (MLG). Waimea, 1 on 23/4 (BE). Rotomanu, Westland, 1 on 25/3 (PJF). Kowhiterangi, Hokitika, 1 on 16/9 (CSL). Travis swamp, Christchurch, 2 on 29/5 (D. Buzan). Bromley SP, 5 on 22/5 (D. Buzan), 6 on 16/6 (TC). Earnsclough, Alexandra, 1 on 28/5 which stayed 2 days (PC). West Plains, 11 on 27/6 (RRS). Te Anau, 3 on 26-27/5, 3 on 6/6, 2 on 11/6, 3 on 14/6, 3 on 18/6 (KM, JVM).

#### BITTERN *Botaurus poeciloptilus*

Hokianga H, 39 during full harbour survey 4/9 to 10/3 (RMB, AMD). Mangawhai, 1 on 27/11 (GJE). L Kereta, Kaipara H, on 8/8, 9 including 3 pairs disturbed from a single reed-bed (MJT). Waiwera, 1 on 6/6 (KRB). FoT census, 2 on 5/12, being 1 at Piako E and 1 at Whakatiwai/Kaiaua (BB). Maoro, 2 on 25/10 (BB). Waihi Beach, 1 on 21/3 (BCh). Tuapiro R est, Tauranga H, 26/12, adult flushed in rushes; nearby 2 half-grown young crouching in reeds with number of small eels on ground; parent must have been disturbed while feeding young. No sign of nest on 26/12. Two flushed in same area on 2/2, one of which could not fly (BCh). Waititi Wetlands Reserve, 6 on 29/12 (BHS). Tarawera R mouth, 2 on 18/7, 25/10, 27/3, 12/6 (PCML, WMH). Thornton lagoon, 3 on 6/6 (RMW). L Whakamaru, reported from 14 locations 26/3 (JGI). L Aniwhenua, 1 on 28/11 (JGI). L Rotongata, Okataina Scenic Reserve, 1 on 12/3 (MCS). Tolaga Bay, 1 regularly seen over past 3 years (JCH). Matawhero lagoon, 1 on 15/10, 2 during Mar-Apr 1983 (EJJ). Bell Block SP, 3 on 17/10 (DGM). Beach Road, Omata, 2 on 8/3 (RO). Ahuriri, 2 on 8/10 (KVT). Omanuku lagoon, 1 on 18/7 (LJD, CR & PMS). L Kaikokopu, 2 on 18/7 (LJD, CR & PMS). L Ngakawau, 2 on 17/7 (LJD, RAC). 1 on 27/2 (LJD). Rakauhumama lagoon, 1 on 2/10 (RAC, SEC). L Wairarapa, 10 seen between 23/11 and 30/1 also 6 heard; 12 seen between 8/3 and 6/4 (PJM). Dune L, S of Hokio Beach, 6 on 1/6 (RP). Waimeha Lagoon, Waikanae, 1 on 17/4 (PJM). Orowaiti est, Westport, 1 on 28/1 (DJO). Cape Foulwind, 1 on 15/2 (DJO). Charles-town, 1 on 6/11 (DJO). Martins Bay, 4 on 28/11 (KM, JVM).

#### YELLOW-BILLED SPOONBILL *Platalea flavipes*

Te Whiti, 1 on 22/12/81 (CES) and 24/12/81 (TCD, CES).

#### ROYAL SPOONBILL *P. regia*

Paua, 1 on 12/8; Walker I, Rangaunu, 5 on 24/5 (RMB, AMD). L Waahi, 1 on 18/3 (PJA). Whakatane R mouth, 1 arrived on 20/5 and was still present 30/6 (WMH). Westshore, 2 on 10/7 (PWT, MT), 2 on 8/5 (ACS, KVT). Wanganui R at Wanganui, 1 on 2/6/80 and on 8/6/80 (OCT). Manawatu R est, 1 or 2 from Jul to 9 Oct, then none to 1/2. Present to end Jun — maximum 36 on 1/5 (JLM, MM); 21 on 26/5 (TPB, RO). Porirua H, 1 on 7/4 and 20/4 (KLO). Paramata, 1 on 12/4 (RP), 1 on 21/4 (JHS). Motueka est, 8 on 14/8 (JMH), 12 on 30/4 (BE), 17 May-Jun (JMH). Waimea est, 7 on 8/8 (PM), 12 on 9/4 (BE). Nelson Haven, 1 on 12/11 (GO).

Wairau lagoons, 20 on 9/4 (DJB). Wairau Bar, 8 on 23/4 (WFC). Vernon's Lagoon, Blenheim, 15 on 2/4 (CMM). Christchurch SP, 5 on 4/11, 16 on 17/4/82, 3 on 2/5/82, 1 on 5/6 (D. Buzan); 2 on 21/5 (DJB). L Ellesmere, 6 autumn 1982 (CFJO). Kaituna, L Ellesmere, 3 in breeding plumage on 24/1, 1 carrying sticks (BE); 3 on 25/2 (D. Buzan).

#### PLUMED WHISTLING DUCK *Dendrocygna eytoni*

Lower Waipa R, 4 on 29/5/82 reported by shooters (DAL).

#### MUTE SWAN *Cygnus olor*

L Poukawa, 18 on 3/4 (KVT). Blenheim, 3 on 2/2 (P. Jenkins). Ward, 1 on 1/3 (TJT). Waiuku, 1 on 20/5 (BE). Bromley SP, 4 on 16/6 (TC).

#### BLACK SWAN *C. atratus*

Paua, 200+ on 20/10 (BHS, JHS). Manukau H census, 38 on 26/6, 6 on 14/11 (BB). FoT census, 1 on 17/7, 10 on 5/12 (BB). Hamilton L census, 54 and 7 juv on 19/9, 66 and 4 on 27/2, 52 and 5 on 16/4 (MAB). Aotea H census, 0 on 6/11 (BHS). Kawhia H census, 355 on 11/7, 2 on 6/11, c.800 on 26/6 (BHS). Rototahi, 2 nests on 11/11 with birds sitting; now spreading N towards East Cape (JCH, MAW). Matawhero Lagoon, 18 adults, 12 cygnets, 2 nests 15/10 (EJJ). Muriwai Lagoon, 23 on 12/7 (BRK). L Poukawa, c.300 on 6/7 (KVT). Westshore, 64 on 26/2 (census) (KVT). Foxton No. 1 L, 320 on 5/6 (JLM, MM), 550 on 18/7 (LJD). Foxton Loop, maximum c.150 on 1/8 (JLM, MM). Waimeha Lagoon, incubating 28/8, hatched 29/8 (7 cygnets); pair produced second brood of 3 cygnets about 7 days old on 5/3; 2-6 sometimes in ponds in estuary in Mar (CAF, MAF). L Grassmere, 260 on 25/7 (TJT), 130+ on 16/10 (DJB). Kaikoura, 9 on 3/6 swimming offshore (BE). L Karoro, Greymouth, 2 on 9/4 (CSL). L Brunner, 108 on 17/1 near outlet (CSL). L Poerua, Westland, 5 on 4/3 (PJF). Ahuriri R, 5 nests as early as 28/7 (CFJO). L Selfe, 6 on 10/2 (JHS, BHS). Washdyke Lagoon, 75 on 30/1 (PMS), c.20 on 27/5 (BHS).

#### CANADA GOOSE *Branta canadensis*

Hamilton L census, 4 on 19/9 and 27/2, 3 on 16/4 (MAB). Kaituna Cut, 1 or 2 on 23/10 and 12/2 (PCML, WMH, RMW). Little Waihi, 2 on 18/7 (RMW), 10 on 16/1 (GAT). Matata, 2 on 22/5 accompanied by domestic goose and also on 26/6 (PCML, BCH, AMcC). L Aniwhenua, 4 on 8/8 and 5/9 (WMH). L Rotoehu, 2 adults 1 juv on 6/2 (RWJ). East Cape area, recent arrivals (3 years) but now well established (JCH). Wairoa area, local population grown from c.800 to 1200 in past 12 months (EJJ). Barrett Lagoon, New Plymouth, 65 on 5/3, 83 on 30/4 (DGM, RMW). L Mangamahoe, New Plymouth, 15 on 13/3 (DGM, RWW). Southern Marsh, Ahuriri, 17 on 23/10 (PWT, MT, KVT, ARG). Somes I, 2, Jul to Sep (AJB). Nelson Haven, 6 during winter 1982 (JMH). Lower Wairau, 11 on 26/3 (P. Jenkins). L Elterwater, 90 on 19/5; L Grassmere, 35 on 25/7 (TJT). L Rotorua, Kaikoura, 4 on 8/11 (BE). Bluff Station, 4 on 28/2, only 1 could fly (TJT). Blaketown lagoon, 3 on 9/4 roosting on mudflats (CSL). Ahuriri R, nesting as early as 30/7 (CFJO). Hope-Kiwi Stream, L Sumner FP, 1 on nest with 5 eggs

on 10/10 (BE). Washdyke Lagoon, 24 on 30/1 (PMS), 200 on 22/5 (WJC). L Hauroko, 24 on 6/4 (WJC).

#### PARADISE DUCK *Tadorna variegata*

Te Werahi Beach, 2 on 24/4 (ASR, JMR). Paua, 30+ on 20/10 (BHS, JHS). Helensville, pair on 31/10 with 7 ducklings (MJT). Karaka, Manukau H, 16 on 12/6 (KJF). Manukau H census, 12 on 26/6, 16 on 14/11 (BB). Wharekawa, FoT, 26 on 3/5, an unusually large flock (TGL, RBS). Hamilton L, 1 male on 1/6 (MLDS). Pureora, c.25 on 6/6 mostly in pairs at top of Scott Road (JHS, BHS). Marakopa, 111 on 4/1 (PCML). Matata, numbers lower than they have been since 1977; highest count 26 on 18/7, and pair seen with 5 subadults 7/5 (PCML). Kaituna Cut, 2 pairs on 29/8 (PCML). Te Teko, 1 pair in Spring 1982 with 6 ducklings (RMW). L Aniwhenua, c.60 on 9/1 (RMW). Ohope SP, 12 on 1/1, 3 of which were juv (RMW). Hinemaia R, L Taupo, c.150 on 13/1 on upper hydro lake (WAW). L Rotoehu, Soda Springs outlet, 2000+ on 30/3 (GAT). Te Karaka, Gisborne, 2000+ resting in paddock on 23/4 (JCH, MAW). Uruti Valley, 33 on 2/7 (DGM, ICM, RWW). Mimi R, near mouth, 41 on 24/7 (DGM, JCM, RWW). Barrett Lagoon, 62 on 5/3 (DGM, JCM, RWW). Ahuriri, c.80 on 25/7 grazing in field (ARG, ACS, KVT). L Poukawa, c.300 on 3/4 (KVT). Horseshoe L, c.400 on 14/5 (KVT). Ohakune, 139 on 23/12 (JLM, MM). Kawhatau Valley, Mangakokeke Stream, W Ruahines, 42 on 29/1 (LJD). Fernleigh, 78 on 23/12 (BE). Pauatahanui Inlet, 20 on 30/5 (AHG, ING). Mangaroa and Whitemans Valleys, Upper Hutt, up to 6 pairs present throughout the year (AHG). Maud I, pair in May (WFC). Ward, 290 on 1/6 (TJT). L Poerua, Westland, 16 on 23/2 (PJF). Upper Leader R, 200 in moult on farm pond on 2/1 (LJD, SEG). L Lyndon, 1 pair with 6 juv on 10/2 (JHS, BHS). L Henrietta, c.400 probably moulting on 10/2 (JHS, BHS). Southland, Jan, 14 335 in 14 moulting flocks — estimated population 20 000 and increasing (RRS).

#### CHESTNUT-BREASTED SHELDUCK *T. tadornoides*

The 1983 records are being collated separately.

#### MALLARD *Anas platyrhynchos*

Paua, 50+ on 20/10 (BHS, JHS). Manukau H census, summer 456, winter 2830 (BB). FoT census, summer 203, winter 1387 (BB). Hamilton L census, 352 and 33 juv on 19/9, 2335 on 27/2, 2640 on 16/4 (MAB). Te Kouti L, Cambridge, c.2000 on 5/6 (JHS, BHS). Kawhia H census, 520 on 11/7, 25 on 6/11, 150+ on 26/6 (BHS). Te Kuiti SP, 180+ on 31/8 (AMCD). Papamoa Beach, c.50 on 8/8 about 200 m offshore; Maketu est, c.100 on 29/8; Matata, present all the year, highest count c.1000 on 7/5 (PCML). L Rotoehu, Soda Springs outlet, 2000 on 30/3. This high number perhaps due to birds forced off farm ponds by drought (GAT). Westshore, c.400 on 10/7 (KVT), c.150 on 1/8 in small flocks flying high towards Westshore (ARG, KVT). Hokitika R mouth, 27 on 20/6 (NJW). L Lyndon, 3 on 10/2 (JHS, BHS).

#### GREY DUCK *A. superciliosa*

Karaka, Manukau H, 4 on 29/3 (TC). Manukau H census, 2 on 14/11, 7 on 26/6 (BB). FoT census, 3 on 17/7 (BB). Kauaeranga



Valley, 4 on 26/9 near Forest HQ (RMW). Hamilton L census, 0 on 19/9, 27/2 and 16/4 (MAB). Te Koutu L, Cambridge, 10 on 5/6 (JHS, BHS). L Whakamaru, 12 on 25/3 by dam (BHS). Matakana I, c.10 on 11/7 at wetlands at N end (PCML). Matata, present all year, highest count c.60 on 27/5 (PCML). Ahuriri, 2 on 25/7 (ARG, ACS, KVT). Horseshoe L, 3 on 14/5 (KVT). L. Ngakawau, 10 on 17/7 (LJD). Pauatahanui Inlet, 2 on 20/2 (JHS). Waimeha Lagoon and Waikanae est, up to 4 pairs irregularly seen (CAF). Upper Wairau, 13 on 20/3 (P. Jenkins). L Rotorua, Kaikoura, 16 on 20/9 (BE). Blaketown Lagoon, 9 on 9/4 (CSL). L Karoro, Greymouth, 8 on 9/4 (CSL). L Brunner, 12 on 17/7 at outlet (CSL). L Lynden, 11 on 10/2 (JHS, BHS). L Selfe, 2 on 10/2 (JHS, BHS).

#### GREY TEAL *A. gibberifrons*

Karaka, 14 on 29/3 (TC), 10 on 25/4 (SD). Manukau H census, 2 on 14/11, 21 on 26/6 (BB). Access Bay/Miranda, FoT, 32 on 23/5, 40 on 19/6 (SD). FoT census, 3 on 17/7 (BB). Te Kuiti SP, 1 on 31/8 (AMCD). Matakana I, 2 on 15/5 at wetlands at N end (PCML). Kaituna Cut, present on each of 11 visits made over year, numbers ranging from low of 26 on 1/1 to high of c.150 on 5/3 (PCML, RMW). Kawerau freshwater lake, Tasman Pulp and Paper ponds, pair on 13/10 (a likely first record for Kawerau) (RMW). L Aniwhenua, c.25 on 9/1 (RMW). Awaitei wetlands, 7 on 29/12 (BHS). Awamate lagoon, 15 on 9/7 (BRK). Korito lagoon, Wairoa, 15 on 17/4 (GAF). Wairoa R, 8 on 1/6 (GAF). Westshore, southern marsh, c.170 on 8/5 (ACS, KVT); c.120 on 10/7 (KVT). Horseshoe L, c.150 on 14/5 (PGM, KVT). Foxton No. 1 L, 19 on 27/2 (CRS, PMS, MKT). Manawatu R est, up to 25 from 30/4 to 30/6 (JLM, MM). L Ngakawau, 15 on 27/2 (LJD, RAC, SEC). Pauatahanui Inlet, 6 on 24/4 (AM). L Rotorua, Kaikoura, 23 on 8/11, pair with 4 young; 23/12 pair with 3 young (BE). Fernleigh, 5 on 23/12 (BE). Iveagh Bay, L Brunner, 5 on 18/9 with 24 NZ Scaup (NJW). Hokitika SP, 1 on 3/2 (DJO). Christchurch SP, 140 on 2/5 (D. Buzan). L Te Anau, 27 on 16/6 (JVM). Waimatuku, 90 on 19/3 (KM, JVM).

#### BROWN TEAL *A. chlorotis*

Matakana I, 1 on 25/9 reported by A. Saunders and P. Anderson, Wildlife Service, at wetlands N end (PCML).

#### NEW ZEALAND SHOVELER *A. rhynchotis*

Mangere SP, 4 on 6/12 (RBS). Manukau H census, 3 on 14/11, 7 on 26/6 (BB). FoT census, 18 on 17/7 (BB). Te Koutu L, Cambridge, 2 males and 1 female on 5/6 (BHS, JHS). L Whakamaru, 4 on 25/3 (BHS). Te Kuiti SP, 12 on 31/8 (AMCD). Matakana I, 10 on 15/5 at wetlands N end (PCML). Kaituna Cut/Maketu est, always present; c.20 on 4/6 (PCML). Matata, present throughout year, c.50 on 17/4 (PCML). Little Waihi, c.30 on 18/7 (RMW). Kawerau freshwater lake, Tasman Pulp and Paper ponds, 3 pairs on 13/10 (RMW). L Aniwhenua, 6 on 9/1 (RMW). Te Puia Springs, 4 on 12/9 (JCH). Rototahi, 5 on 13/9 (JCH). Korito Lagoon, Wairoa, 35 on 17/4 (GAF). Bell Block SP, 10 on 30/10, 50 on 24/4 (DGM, RWW, RO, REL). Barrett Lagoon, 6 on 31/10,

14 on 30/4 (DGM, RWW, RO, REL). Westshore, c.200 on 25/7 (ARG, ACS, KVT). L Poukawa, c.300 on 3/4 (KVT). Horseshoe L, c.100 on 14/5 (KVT). L Rotokura, near Ohakune, pair on 20/12 (JLM, MM). Wanganui R at Wanganui, 2 on 15/5 (OCT). Omanuka Lagoon, 93 on 18/7 (JLD, CRS, PMS). Foxton No. 1 L, 153 on 18/7 (LJD, CRS, PMS). Foxton Loop, 80 on 25/9 (JLM, MM). L Horowhenua, 550 on 18/7 (BDH). Waimeha Lagoon, 22 on 9/5/82; 24/10 nest with 9 eggs, rising to 11 before desertion after mower passed over them; 4 ducklings reared by Nga Manu Trust (CAF, MAF); 12 on 23/5 (DJB). L. Horowhenua, 550-600 on 18/6 (AHG, ING). Waikanae est, 2 pairs 9/5/82; 10/7 up to 32; drakes refeathering after eclipse, 5/3 (CAF, MAF). Hapuku, 1 on 18/11 (BE). L Rotorua, Kaikoura, 3 on 18/11 (BE). Fernleigh, 2 on 23/12 (BE). Washdyke Lagoon, c.60 on 27/5 (BHS). L Te Anau, 44 on 16/6 (JVM).

#### BLUE DUCK *Hymenolaimus malacorhynchus*

Ongarue Road near Te Kuiti, 1 pair on 8/6 (RG, GPG). Whirinaki R, pair in Aug (WMH). Manganuku Stream off Waioeka Gorge, pair with 3 young on 17/10 (RMW). L Whakamaru, on adjacent lagoon, 1 present for last three years (JGI). Waitangarua Stream, Motu, 2 on 13/11 (JCH). Mokonui Stream, Rere, 2 on 4/2 (JCH, MAW). Otoko, near Te Karaka, 2 adults with 4 fledged young on 18/9 (BGJ, SCJ). Makatote Stream, 1 on 17/4 (RO). Flora Stream, Nelson, 3 on 1/4 (BE). Blue L, 1 in Jan (SR, JR), 4 on 23/4 (DJB). Lower Sabine, 1 on 22/4 (DJB). Top Valley, Wairau, 2 on 19/6 (P. Jenkins). Branch R, 1 on 21/11 (GIR). Lower Clarence Gorge, 1 on 12/12 (GIR). Acheron, Clarence, 1 on 18/2 (GIR). Totare R, Westland NP, 2 on 8/5 (D. Buzan). Doubtful R, 1 on 27/2 (GW). Lower Spey R, 2 on 4/12 (WJC).

#### NEW ZEALAND SCAUP *Aythya novaeseelandiae*

Waiwera, Straka's Refuge, 5 on 12/12 with 17 ducklings; 14 on 15/5 (MJT). L Kereta, Kaipara H, 12 on 18/8 (MJT). Waipapa Dam, 10 on 27/3 (BHS). Whakamaru, 16 on 25/3 on lagoon NW of dam (BHS). Matakana I, 13 plus a duck with at least 4 ducklings on 6/11 (PCML). L Rotoiti, west arm, 3 ducks with broods (one with seven young) on 20/2 (PCML). L Rotorua, near Sulphur Point, flock of c.330 on 20/2 (only 10 were ducks) (PCML). Matata, present all year, 36 on 17/4 (PCML), 54 on 28/4 (GAT). Awaiti wetlands, 2 on 29/12 (BHS). Thornton Lagoon, 17 on 27/5 (PCML). New Plymouth, Barrett Lagoon, 1 with 4 young on 13/3; 2 on 30/4; L Mangamahoe, 28 on 13/3, 91 on 16/4, 103 on 30/4 (DGM, RWW, RO). Westshore, 2 on 31/8 (KVT). L Tutira, 1 pair with 10 young 27/10 (PWT, MT). Horseshoe L, 200+ on 4/4 (BDH, KVT). Kaitoke, Wanganui, 2 on 18/7 and 2 on 25/7 (OCT). Waimeha, 1 on 6/3 (last record Mar 1980) (CAF), 1 in Apr (PJM). Lower Clarence gorge, 4 on 12/2 (GIR). L Rotorua, Kaikoura, 64 on 20/9; 36 on 8/11 some with young; 1 with 7 young on 23/12 (BE). Fernleigh, 22 on 5/7; 1 with 5 young, 1 with 4 young 23/12 (BE). L Daniels, Lewis Pass, c.25 on 3/7 (DJO). L Kanieré, c.15 on 3/2 included 1 pair with 1 young (DJO); 3 adult and 3 juv plus 1 adult with diving chick on 8/2 (NJW). Christchurch SP, c.44 on 8/5/82, 35 on 28/5 (D. Buzan). Upper Leader Valley, 2 on farm lake on

2/1 (LJD, SEG). St Anne's Lagoon, family groups, 4, 5, 5, 6 and 7 ducklings on 14/1 (BE). L Selfe, 34 on 10/2 (JHS, BHS). Manuherikia and Clutha Rivers confluence, 2 males on 28/5 (PC). L Te Anau, 178 on 18/6 (KM, JVM). L Hauroko, female on nest 21/10 and another on 19/12 (WJC).

#### AUSTRALASIAN HARRIER *Circus approximans*

Opuawhanga, 1 on 27/7 being harassed by small flock of Mynas; 5 on 8/8 circling Pig's Head Trig — courtship displays and calling; 1 on 14/5 caught in cage trap (baited with possum meat for wild cat), released but took some hours to recover (JFS). Te Matai SF (N Rotorua), 3 on 14/6 circling and calling (GAT). Gisborne suburb, 2 reversed usual conduct in attacking and driving off 3 harassing White-backed Magpies 5/2 (JCH). Westshore, 13 on 26/2 (census) (KVT). Kaitoke, 7 on 25/9 soaring at same time (AHG, ING). Upper Wairau, 2, dark coloured, walking round paddock lifting feet high in long grass on 12/2 (P. Jenkins). Blenheim, regularly seen over paddock with clumps of cleared timber (DJB). Ward, 1 on 13/3/82 pursued by 2 Spur-winged Plover; 1 on 27/5/82 using thermal to rise 200-300 m, circling in 10 m circles; 1 on 10/9 pursuing rabbit; 2 on 1/6, 1 examined wind-blown plastic bag and other had Fantail in talons (TJT). Hodder Valley, 1 on 4/9 (GIR). Train Stream, Inland Kaikouras, 2 on 6/9 (GIR). Acheron, Clarence, 1 on 18/2 (GIR). Kaikoura Pen, 1 on 15/12 (BE). Hokitika, 1 on 27/8 displaying (NJW).

#### NEW ZEALAND FALCON *Falco novaeseelandiae*

Pukekawa Road, near Waihi, 1 on 25/5 (A. B. Taylor per BB). Kawhia, 1 on 26/6 E of Oparau, sitting on fence (BJZ). Piopio, 1 on 4-6/6 SE of Piopio flats (RG, GPG). Rangitoto Ranges, 1 on 2/10 calling as it flew overhead, in Cowan Block (JHS, BHS). Manganuku Stream, off Waioeka Gorge, 1 on 17/10 in flight (RMW). Waipakihi R valley, Kaimanawa, 2 on 15/12/81; 1 on 2/1 within 1 km of previous sighting (DR). Rotorua, 1 on 19/10 harassed by Tui (MCS). Okahukura SF, W Taupo, 2 on 18/3 (JWH). Tolaga Bay, 1 on 6/4 in gorge (JCH). Waihirere Domain, Gisborne, 1 on 6/12 attacking 2 Harriers (BRK). Muriwai, Gisborne, 1 on 6/4 chasing small passerines (BGJ, SCJ). Egmont NP, 1 at N Egmont on several occasions (AAB). Marangae area, E Taranaki, 1 in Jun 1982 (J. Clark). Donald R, Kaweka Range, pair with juv and a second female on 1/1 (REW). Puketitiri, 3 on 5/1 (REW). Purity Hut Track, Ruahine Range, 2 on 21/8 (RAC, LJD, CRS, PMS). Rakauhumama Lagoon, 1 on 2/10 (RAC, SEC). Trentham, 1 on 18/7 flying south 10 m above SH2 (AHG, ING). Day's Bay, 1 in Apr (GE). Mt Campbell, 1 on 6/3 (BE). Upper Sabine, 1 in Jan (SR, JR). St Arnaud, 1 on 5/5 (P. Jenkins). Catsears Saddle, Omaka, 2 on 3/4 (CMM). Charlestown, 1 on 25/4 (DJO). Callery Valley, Westland NP, 1 on 11/5 (D. Buzan). Raspberry Creek, W Matukituki Valley, 1 on 5/8 (PC). Cromwell Gorge, 1 on 26/12, could feed on feral pigeons in craggy area (PC). Matukituki Valley E. large female on 23/3 picked up small bird (pipit?), flew off down valley, chased and attacked by 4 White-backed Magpies (PC). Caples Valley, 1 calling and hunting with Harrier along hillside of bracken and manuka on 15/5 (PC).

**CHUKOR** *Alectoris chukar*

Awatere Valley, 4 on 23/4 (GIR). Cromwell, Clutha Bridge, 2 on 3/12 (WAW).

**BROWN QUAIL** *Synoicus ypsilophorus*

Matauri Bay turn-off, 6 on 16/4 (JFS). Wharekawa, FoT, covey of 5/6 in fennel on 4/5 (RBS). Tuapiro est, Tauranga Harbour, 2 on 17/10 (PCML). Kaituna Cut, some birds seen on most visits, highest count a flock of 6 on 12/2 (PCML, RMW). Thornton, 8 on 6/6 (RMW). Galatea, 12 on 8/2 (WMH). Maketu sandspit, c.12 on 16/1 (GAT).

**CALIFORNIAN QUAIL** *Lophortyx californica*

Pauanui, 21 on 14/9 having sandbath (JGH). Tuki Tuki R flat, 9 on 31/8 (KVT). Totara Park, Upper Hutt, 4 on 1/1 (AHG, ING). Ward, fewer clutches raised, though many pairs around Jan 1982; good numbers in Jun 1982 (TJT). Upper Wairau, 1 adult with 4 half-grown young on 19/3 (P. Jenkins). Upper Leader Valley, 4 on 1/1 at edge of kanuka forest (LJD, SEG).

**BANDED RAIL** *Rallus philippensis*

Hokianga H, 284 on full harbour survey 4/9 to 10/3 (RMB, AMD). Puhoi Bridge on SH1, 1 on 13/12 and 30/5 (TC). Milford Marina, 1 on 15/2 in mangroves (BAB). Man-O-War Bay, Waiheke I, 2 adults on 13/1 with three black downy chicks; on 24/1 chicks showing feathers (BS). Southdown, 1 heard on 5/7 (BJG). Soldiers Bay, Birkenhead, sighting of 1-5 birds between 28/3 and 29/9 (MG). Keri Hill, Papakura, 1 at dusk May 1983 (Mr Hutchison, Ranger, per BB). Kawhia H, 2 on 4/1 (FLS). Tuapiro est, Tauranga H, 1 on 6/1 (BCh). Maketu, 1 on 14/8 (PCML). Little Waihi, 1 on 12/2 coming out from reed clump on brief feeding forays at midday (PCML), 2 on 13/10 (GAT).

**WEKA** *Gallirallus australis*

Kawau I, much in evidence around Mansion House on 24/12 (MJT). Waitakere Ranges, recent release of 19 birds reported in *Environment*, Auckland Region Newsletter, Sep 1982 (per MJT). Gisborne, still breeding freely in urban areas 1982/83 (JCH, MAW). Muriwai, Gisborne, slowly returning after absence of several years (JCH). Manganuku R, Waioeka Gorge, 2 on 2/1 (BRK). Ngaruru Bay, Arapawa I, 1 heard on 11/3 (PDG). St Arnaud, 1 heard on 4/6 (P. Jenkins). Paynes Gully, Kumara, 1/8, tame male with one leg seen with mate and chicks (CSL). Entry I, Breaksea Sound, 2 heard and 1 seen 5/2 (WJC).

**MARSH CRAKE** *Porzana pusilla*

Hokianga H, Hobson Road swamp, 1 on 4/9; Te Tio, 1 on 8/12; Rangiahua, 1 on 21/2 and 2 on 22/2 (RMB, AMD). L Roto-kauri, W of Hamilton, 1 on 28/9 (PJA). L Horowhenua, NW corner, 1 on 29/5 responded to tape (RP). Appleby, 3 on 20/2 (BE).

**SPOTLESS CRAKE** *P. tabuensis*

Hokianga H, 17 on full harbour survey 4/9 to 10/3 (RMB, AMD). Matakana I, 2 on 25/9 at wetlands at N end by Wildlife Service (PCML). Tarawera R mouth, seen and heard on visits made

in Jul, Oct, Jan (WMH, RMW). Awaiti wetlands, seen or heard on visits made in Jun/Jul (WMH, RMW). Kaingaroa SF, Kiorenui Road, 1 on 11/7 seen in roadside swamp (WMH). L Whakamaru, in most raupo beds over 0.5 ha in area 26/3 (JGI). Hurworth, near NP, 3 responded to tape calls on 9/3 and 16/3 (RWW, TPB, RO). Peka Peka swamp, HB, 3 called in response to tape 17/7; 1 seen on 4/9 (PWT, MT). JK Donald Reserve, 2 seen, 1 heard on 8/3 (PJM).

#### PUKEKO *Porphyrio porphyrio melanotus*

Shakespear Regional Reserve, Whangaparaoa, very numerous 23/4 (MJT). Karaka, Manukau H, 43 on 7/6 (KJF). Hamilton L census, 5 on 19/9; 11 and 2 juv on 27/2; 13 on 16/4 (MAB). L Rerewhakaitu, 59 on 19/6 in SE arm (GAT). L Poukawa, 90 on 6/9 (KVT). Westshore, southern marsh, 57 on 10/7 (KVT). Ball's Clearing, HB, 1 perching in canopy of rimu tree on 12/9 (KVT). Westshore, c.20 around water trough on 8/5 (KVT). Kelburn, 1 in Nov killed by car (CDC). Hapuku Stream, 3 on 17/4 (GIR). Rotoiti, Kaikoura, pair on 30/1 (GIR). Oligri Station, Galloway, 23 on 14/4 (PC).

#### AUSTRALIAN COOT *Fulica atra australis*

Hamilton L census, 34 on 19/9, 58 on 27/2, 77 on 16/4 (MAB). Te Koutu L, Cambridge, 2 on 5/6 (JHS, BHS). L Aniwhenua, 12 on 9/1 (RMW). Barrett Lagoon, New Plymouth, 2 on 28/1 with maximum of 6 on 5/3; L Mangamahoe, 3 on 10/4; first records of the species from both places (DGM, REL, RWW, TPB, RO). Horseshoe L, HB, 15 on 4/4 (BDH, KVT). Virginia L, Wanganui, 150 including 26 juv on 23/1 (LJD, SEG). Centennial Lagoon, Palmerston N, 15 on 13/3 (LJD, SEG). Waimeha Lagoon, Waikanae, 1 in Nov (PJM). St Anne's Lagoon, 9 on 5/10, 10 on 14/1 (BE).

#### SOUTH ISLAND PIED OYSTERCATCHER

##### *Haematopus ostralegus finschi*

Paua, 65 on 20/6 (RMB, AMD); 15 on 20/10 (BHS, JHS). Houhora, 120 on 29/5; Rangaunu, 64 on 4/4; Herekino, 11 on 13/7 (RMB, AMD). Huia, c.50 on 10/7 (RBS). Cornwallis, 220 on 10/7 (RBS). Karaka, 5000-6000 regularly in non-breeding season; 1 partial albino on 25/2, brownish rather than black with light orange bill (BB). Manukau H census, 4049 on 14/11; 25 587 on 26/6, an increase on the record 1979 count (BB). Hingaia Bridge, Drury Creek, a tidal arm of Manukau H on 12/6, tide half out, little flocks arriving to feed on rocky reefs as these were exposed, activity not seen here before. Birds are seeking new feeding areas as numbers increase (BB). Access Bay, FoT, winter flock c.2500 and up to 3000 on one occasion, 23/5 (BB, SD). FoT census, 1670 on 5/12, 11 446 on 17/7 (BB). Aotea H census, c.90 on 6/11 (BHS). Kawhia H census, 2664 on 11/7, c.90 on 6/11, 2598 on 26/6 (BHS). Bowen-town shellbanks, nearly always some present; high counts of 275 on 11/7, 286 on 30/1 and c.350 on 15/5; drop in breeding season to c.50 in Nov (BCh, PCML). Sulphur Point, Tauranga, 31 on 28/5, not usually seen at S end of H; shooting at N end may have driven them down (BCh). Little Waihi, 12 on 18/7 and 9 on 4/6

among 43 *H. unicolor*. A few winter each year (PCML, RMW). Rangitaiki R mouth, 1 on 3/7 (WMH). Ohiwa, 147 on 20/2 (WMH). Muriwai Lagoon, Gisborne, 14 on 24/1 (BRK). Mokau est, 5 on 17/4 together with an albino with usual coloured bill but noticeable black rings around eyes (B. Stephens). Bell Block SP, 3 on 6/2 (RO). Tongaporutu est, 9 on 27/8 (RWW). Oakura, 30 on 1/1 (JCM). Ngaruroro R, first bird present on 31/8, nest with 2 eggs 26/9 (PWT, MT). Westshore, 16 on 26/2 (census) (KVT). Manawatu R est, 94 on 12/2 (JLM, MM); 98 on 27/2 (LJD). Waikanā est and beach, 18 on 26/3 (CAF, MAF). Grassmere, 41 on 6/10 (P. Jenkins). Cape Campbell, 6 on 30/5/82 (TJT). Hodder, Awatere, 2 on 23/4 (GIR). Acheron, Clarence, 2 on 18/2 (GIR). Kaikoura, c.20 on 19/5 (PCML). Inland Canterbury: Studholm, 7 on 1/7; Pukeuri, 6 on 3/7; inland from L Ellesmere 59 on 14/7; Temuka 5 on 26/7; Duntroon, 2 on 26/7; Ahuriri R up to 200 by 27/7 (CFJO). Waikuku, 454 on 18/6 in swampy paddock (PMS). L. Ellesmere, 85 on 5/9, 102 on 5/3 (D. Buzan). Washdyke Lagoon, 17 on 27/5 (BHS). Masons Bay, Stewart I, 20 on 6/7 (CMM).

#### VARIABLE OYSTERCATCHER *H. unicolor*

Spirits Bay, 54 on 25/4 and 26/4 (ASR, JMR). Te Paki Stream, 142 on 19/12 (RMB, AMD). Paua, 23 on 14/7 (RMB, AMD), 2 on 20/10 (BHS, JHS). Kokota Spit, 90 on 22/9 (RMB, AMD). Rarawa Beach, 4 on 22/10 (BHS, JHS). Rangiputa Bank, 6 on 21/10 (BHS, JHS). Pakiri, 46 on 17/10 (MJT). Papanui Inlet, Kaipara H, 25 on 1/1 (MJT). Waiwera est, 22 on 17/4 roosting with c.150 SIPO (MJT). Te Matuku Bay, Waiheke I, 2 pairs present all year but unsuccessful breeding for last two seasons (BS). Sand I, Waikato R mouth, 2 on 25/10 (BB, DFB, BAE). Karaka, Manukau H, 1 on 5/5 (KJF). Manukau H census, 2 on 14/11, 3 on 26/6 (BB). FoT census, 4 on 5/12 (BB). Opoitere Spit, 2 pairs nesting on 29/12, 1 pair with chicks on 1/1 and second pair with 1 chick being fed and one hidden on same day (BB). Aotea H census, 2 on 6/11 (BHS), 4 and 2 juv on 3/1 at S Head Beach (FLS). Kawhia H census, 3 on 11/7, 2 on 6/11, 2 on 26/6 (BHS); 2 and 2 juv on 3/1 at Karewa Lagoon (FLS). Bowentown shellbanks, pair nested in Nov raising 1 chick; 34 wintering with SIPO 15/5 and 27 previous winter on 11/7 (BCh, PCML). Bowentown ocean beach, 7 on 2/10; 2 were pied, 2 smudgy pied, 1 smudgy, and 2 black, a rare combination for the area (PCML). Matakana I, northern 6 km on ocean beach, 3 pairs on 25/9 holding territories; southern 12 km 12 pairs on 25/9 plus 3 recently shot birds. Harbour side, including sand banks and islands, 13 pairs all appeared holding territories, 24/7 (BCh, PCML). Sulphur Point, Tauranga, 5 pairs nested Nov-Dec, first nest with 2 eggs found 16/11, other 4 nests each 3 eggs; no chicks raised — Black-backed Gulls probable culprits (BCh). Kaituna Cut, 6 on 1/1, pair with subadult on 27/1, 2 pied subadults 16/4 and one chasing SIPOs in flight 5/1 (PCML). Little Waihi, 27 on 5/1, 43 on 4/6 (PCML). Pukehina Beach to Otamarakau, 4 pairs holding territories 19/9 (PCML). Tarawera R mouth, usually a resident pair but 3 birds on 18/7, 2 adults and 1 subadult on 17/4 and 25/4 and 4 adults and 1 subadult on 7/5 (PCML). Ohope Spit, 5 pairs on 24/9 and 9/10 (WMH, PCML). Motu R mouth, 2 on 20/1 (GAT). Whangaparaoa Beach (near East Cape), 6 adults with

2 dependent subadults 19/1 (GAT). Pouawa R outlet, 21 on 12/5 black phase (JCH). Turihaua, East Coast, 19 on 22/5 (BRK). Muriwai Lagoon, Gisborne, 8 on 12/7 (BRK). Mahia pen, 14 on 14/11 (GAF). Rangitikei R est, 5 on 15/5 (GRS). Manawatu R est, 11 on 11/9 (JLM, MM), 8 on 27/2 (LJD). Pauatahanui Inlet, 7 on 10/11 (KLO). Paremata, Ngatitao Domain, during gale force winds and heavy rain, 26 on 30/6 (KLO). Waikanae, 28/3/82, home family still together plus 18 visitors, which varied in numbers subsequently, 7 on 18/4, 18 on 9/5. Home pair had 3 eggs on 30/12, hatched 1/1; one dead at nest 2/1 but others survived; 20/2 juv flying, parents still violently territorial and second pair with single juv visiting estuary (also 26/2); 6/3, juv still with parents; 5/4, c.19 including home pair and 2 immatures hatched 1/1 (CAF). Cape Jackson, 2 on 4/3 (WFC). Grassmere, 2 on 29/1 (P. Jenkins). Marfells Beach, 1 black, 1 smudgy on 19/5 (PCML). Kaikoura, 1 black on 19/5, 3 pied and 3 black on 23/5 (PCML), 9 on 20/5 (DJB). Arahura R mouth, 2 on 13/2 (NJW). L Ellesmere, 1 on 5/3 (D. Buzan). Entry 1, Breaksea Sound, 2 with 2 chicks on 5/2 (WJC).

#### SPUR-WINGED PLOVER *Vanellus miles novaehollandiae*

Te Kao (Tom's Landing), 5 on 30/1 (DFB). Whangape, 2 on 2/9 (RMB, AMD). Karaka, Manukau H. 2 on 1/12 and throughout May (BB). Wharekawa, FoT, nest with 3 eggs on 2/4 (BCh); on 1/5 pair very aggressive, chasing NZ Dotterels and other species (BB); 3 chicks on 4/5 (RBS, TGL, PT); 2 small young on 20/5 (BCh); pair and part-grown chick on 1/6, adults chasing other species (TC). Ngatea, 2 on 9/9 (BSC). Whangamarino swamp, 1 on 23/6, N end (BIZ). L Rotongaro, 2 on 6/4 (PJA). L Karapiro, 1 pair and 2 juv on 3/10 (TC). L Whakamaru, 4 on 25/3 near dam (BHS). Turangi, 4 on 1/5, 8 km S on SH1 (TC). Maketu, 2 adults on 14/8, 2 adults with 2 subadults on 29/8 and 19/9; a nest with 4 eggs on 19/9 (first for coastal BoP); 3 eggs hatched 16/10 (BCh, PCML). L Rotoehu, 7 on 6/2 (RWJ), 2 on 12/4 (CRV). L Aniwhenua, 4 on 12/9 (WMH), 5 on 17/6 (JGI). Waiahou, near Murupara, 4 on 25/3 (RMW). Poronui Station, Taupo S, 5 on 19/4 (JGI). Turangi 4 on 27/5 (JGI). Tolaga Bay, 3 with 7 Rooks 12/5 (JCH). Muriwai, Gisborne, 11 together on 15/9 (BGJ, SCJ), 30 on 10/6 increasing numbers (PGF). Wairoa, 7 on 21/12 (BRH). National Park-Taumarunui, 5 on 13/2 (RO). Mokau, 1 on 3/4 (RWW). Mimi, near Urenui, 2 on 28/11, present for some months (DGM). Bell Block SP, 8 on 10/4 (REL, RO). Puniho Road, near Okato, 3 on 21/10 present for some months (REL). Huiroa, near Stratford, 2-3 birds present for several months (JM). Otaki, 2 on 4/9 (RWW). Te Awanga, 7 came in from across sea on 11/6 (BMT). Westshore, 10 on 29/10 (ARE, LRL, KVT). Wanganui R at Wanganui, 2 on 19/6 (OCT). Turakina, 20 on 4/1 in ploughed field (OCT). Kawhatau Valley, W Ruahines, 2 on 21/8 (LJD). Manawatu R est, at Linton, 9 on 4/7 (LJD, CRS). Foxton No. 3 L, 8 on 27/2 (LJD). Foxton No. 1 L, 13 on 28/12 (JCM, MM), 9 on 27/2 (LJD, RAC, SEC). Te Munga, 9 on 9/1 (CES). Hokio Sands Road, Levin, 12 on 18/6 (AHG, ING). Plimmer Flats, Akatarawa Road, 1 in Jun incubating eggs (RSS, PLH). Maymorn Road, Upper Hutt, pair in Jun (AHG, ING). Waikanae est, 1 on 1/8 (CAF), 4 on 2/1 (AT).

Pauatāhanui Inlet, 7 on 30/5 (AHG, ING). Kennedy-Good Bridge, Lower Hutt, 7 on 30/8 (AHG). Melling Bridge, Lower Hutt, 1 on 14/9 (WAW). Te Whanga Lagoon, 2 on 11/1 (PDG). Upper Buller R, 100 on 11/1 (BDH), 30 on 25/4 (DJB). Maud I, 2 on 20/6 (WFC). Dashwood, pair with 3 young on 8/9; parent spread wings to protect young (BE). Grassmere, pair with 3 chicks on 10/9 (BE). Ward, 2 seen regularly but did not appear to nest summer 1981-82 (TJT). Mt Fyffe Road, Kaikoura, 42 in one paddock on 3/6 (BE). Punakaiki, pair on 8/8 on beach (CSL). Rotomanu, West Coast, 7 on 10/3 (PJF). Arahura R mouth, 37 on 13/2 (NJW). L Lyndon, 4 on 10/2 (JHS, BHS). Washdyke Lagoon, 4 on 30/1 (PMS). Ewing's paddocks, W Wanaka and Matukituki mouth environs, mid-winter census, total 721 (PC). Alexandra Basin, mid-winter census, total 596 (PC).

#### GREY PLOVER *Pluvialis squatarola*

Paua, 1 on 16/11 (RMB, AMD). Houhora, 7 on 23/12 (RMB, AMD). Farewell Spit, 2 on 20/11 (DM).

#### LEAST GOLDEN PLOVER *P. fulva*

Paua, 64 on 23/10 (BHS, JHS), 56 on 10/11 (RMB, AMD). Jordans Road, Kaipara H, 50 on 13/3 (TC). Oyster Point, 17 on 16/10 (BHS), 84 on 3/3 (TC). Karaka, 58 on 1/12 (BB, DGB, TC), c.60 on 3/2 (BB, RBS), 12+ on 31/3 (SD, AR). Manukau H census, 75 on 14/11, 1 on 16/6. Rare to see this sp. in winter here (BB). FoT census, 24 on 5/12 (BB). Matahui Point, Tauranga H, 42 on 26/3, many well into breeding plumage (PCML). Kaituna Cut, birds present from 25/10 to 27/3 with highest count of 40 on 19/12 (PCML, RMW). Ohope Spit, 27 on 21/12 and 7/1, only one left in full breeding plumage on 1/4 (WMH, RMW). Muriwai Lagoon, Gisborne, 36 on 24/1 (BRK). Wairoa est, 5 on 28/12 (GAF). Oraka, Mahia pen, 4 on 11/1 (GAF). Westshore, 24 on 11/12 (MTC, PWT, MT, KVT), 2 on 22/10 with 1 in part breeding plumage (KVT). Southern marsh, Ahuriri, 40+ on 22/10 (PWT, MT). Manawatu R est, present from 23/10 to 1 Apr; maximum 44 on 28/12 and 25/2 (JLM, MM). Rangitikei est, 3 on 27/2 (1 with black chest patches) (BDH). L Wairarapa, E shore, up to 40 through Nov-Jan and up to 76 Mar-Apr (PJM). Grassmere, 2 on 29/1 (DJB). L Ellesmere, 9 on 16/2 (PMS), 51 on 5/3, 1 on 1/4 (D. Buzan). Awarua Bay, 29 on 26/2 (KM, JVM).

#### NEW ZEALAND DOTTEREL *Charadrius obscurus*

Spirits Bay, 4 on 25/4; Te Werahi Beach, 8 on 24/4 (ASR, IMR). Paua, 10 on 14/7; Te Pahi Stream, 27 on 19/2; Kokota Spit, 76 on 15/7 (RMB, AMD). Rarawa Beach, 2 on 22/10, no nesting evident (BHS, JHS). Kowhai Beach, 36 on 19/2 (RMB, AMD). Hcuhora, 2 on 22/10 (BHS, JHS). Rangaunu, 26 on 12/10 (RMB, AMD). Rangiputa Bank, 10 on 21/10 (BHS, JHS). Herekino, 16 on 13/7 (RMB, AMD). Waipoua R mouth, 15 on 17/6/82 (DB). Pakiri, 41 on 27/11 (GJE). Tahuna-Torea Reserve, Auckland, pair nesting in Nov (MJT). Brown's I, 8 on 9/4 (MJT). Karaka shellbanks, 7 on 15/5 (KJF). Manukau H census, 23 on 14/11, 26 on 26/6. A notable sighting was that of 'Wimble,' a male banded by H. R. McKenzie on 20/12/50 at Mataitai, near Clevedon. He was retrapped by S. M. Reed at Seagrove, Manukau H, on 10/11/76 and banded WB/M.



It was 32.5 years old when seen by TRH and PD on 26/6 (BB). FoT census, 6 on 5/12, 13 on 17/7 (BB). Aotea H census, 2 on 6/11 (BHS). 2 and 1 juv on 3/1, S Head Beach (FLS). Kawhia H census, 10 on 6/11, 22 on 26/6; 1 nest with 3 eggs on Te Motu 1 on 6/11 (BHS). Kawhia H, 2 and 1 juv on 3/1, Karewa Lagoon (FLS). Bowentown ocean beach, pair on 2/10 (PCML). Matakana I, northern 6 km of ocean beach, 5 pairs and 3 singles on 11/7; nest with 3 eggs 6/11. Southern 12 km, 7 pairs on 25/9. Harbour side, including sand banks and islands, 21 birds on 24/7 (BCh, PCML). Sulphur Point, 4 pairs nested Nov/Dec; first nest, 3 eggs, found 6/11; pair with running chick seen 2/12 and 4/12 and 1 subadult with 4 adults on 30/1 (BCh, PCML). Pukehina Beach to Otamarahau, 3 pairs on 19/9 (PCML). Tarawera R mouth, usually 1 pair present but 3 birds on 18/7 (WMH, PCML). Rangitaiki R mouth, pair on 9/6 and 12/6; on 12/6, male observed feeding on horse mussel flesh (WMH, PCML). Waiotahi-Hikuiwai Beaches, 13 on 18/1 (GAT). Whangaparaoa Beach, East Cape, 4 on 19/1 displaying territorially (none seen on E BoP estuaries and beaches N of Waiawa est) (GAT). Ohope Spit, 70 on 30/3 (GAT). Manawatu R est, 1 on 12/2 and 13/2 (JLM, MM). Ohau, 1 well-coloured male, 14/11 (BDH). Motueka, 1 on 15/6 (BE).

#### BANDED DOTTEREL *C. bicinctus*

Spirits Bay, 4 on 25/4; Te Werahi Beach, 8 on 24/4 (ASR, JMR). Paua, 2 on 20/10 (BHS, JHS). 276 on 28/5 (RMB, AMD). Houhora, 92 on 21/6 (RMB, AMD). East Beach, 18 on 25/2 (RMB, AMD). Karaka, 289 on 26/6 (BB). Manukau H census, 3 on 14/11, 1039 on 26/6 (BB). Whakatiwai, FoT, 62 on 1/6 (TC). FoT census, 2 on 5/12, 255 on 17/7 (BB). L Waahi, 7 on 20/3 (PJA). Aotea H census, 8 on 6/11 (BHS). Kawhia H census, 0 on 6/11, 453 on 26/6 (BHS). Bowentown ocean beach, 1 nest with 3 eggs on 20/9 was deserted a few days later. Wintering flock, 226 on 29/5 (BCh). Matakana I, southern 12 km of ocean beach, 7 pairs (1 nest with 2 eggs) on 25/9. N end ocean beach, 2 pairs on 6/11 (1 nest with 3 eggs) (BCh, PCML). Sulphur Point, 3 pairs each with a nest, 2 with 3 eggs, 1 with 2 eggs Nov/Dec (BCh, PCML). Maketu, c.40 feeding in field with Pied Stilts, among cattle, 4/6 (BCh, PCML). Ohope Spit, 3 pairs on 24/9 and 1 nest with 3 eggs (PCML); c.615 on 30/3, 516 on 28/4 (GAT). Muriwai Lagoon, Gisborne, 50 on 21/2 (BRK). Wairoa est, 54 on 28/5 (GAF). Korito Lagoon, Wairoa, c.100 on 17/4 (GAF). New Plymouth airport, 34 on 11/3, 58 on 16/4, 52 on 18/5, 1 on 14/6 (RO). Westshore, 10 on 26/2 (census) (KVT). L Poukawa, c.30 on 3/4 (KVT). Wanganui R at Wanganui, 1 on 25/1/81 (OCT). Rangitikei R est, 50 on 27/2 (BDH), 67 on 15/5 (GRS). Manawatu R est, maximum 92 on 25/2 (JLM, MM). Waikanae est, 3 on 10/10 (AT), 25 on 27/2 (MLF, RNC). Pauatahanui Inlet, 7 on 14/6 (AHG, ING). Grassmere, 2 with chicks on 16/10 (DJB), 2 on 29/1 (P. Jenkins). Ward, first sighting for spring on 12/9 (TJT). Kowai R, pair with 2 chicks on 26/11, 1 chick plunged into river and swam (BE). Blaketown Lagoon, 19 on 9/4 on mudflats at low tide (CSL). Kumara Beach, 3 on 20/2 (CSL). Lower Hodder Valley, 2 on 4/9 (GIR). Armers Beach, 22 on 6/1 (BE). Ashley est, c.40 in flighty flock on 12/2;

17 on 27/3 (PMS). Bromley SP, 40 on 12/7 (D. Buzan). Washdyke Lagoon, 14 on 30/1 (PMS). Outer Gilbert I, Breaksea Sound, 2 on 9/2 (B. W. Thomas per KM). Masons Bay, Stewart I, 16 on 6/7 (CMM).

#### MONGOLIAN DOTTEREL *C. mongolus*

Karaka, 1 from 19/9 to 31/3 (BDH, RBS), 2 on 1/12 (BB, DGB, TC) and on 31/3 (SD, AR). On 1/12, 1 bird had larger breast tabs but both were pale (BB). Manukau H census, 1 on 26/6 at Kirk's farm (AJG, DAL). Access Bay, FoT, 1 on 1/6 with solid eye-patch and well-marked breast tabs (TC); 1 on 17/6 (BCh).

#### LARGE SAND DOTTEREL *C. leschenaultii*

Karaka shellbanks, 2 on 13/2 (BB, RBS), 2 pale birds on 28/4 (KJF, AS, BB). Taramaire, FoT, 1 on 7/11 (TC), 1 on 20/2 (SD, AR, PS). Ashley est, 1 on 12/2 in non-breeding plumage (PMS).

#### ORIENTAL DOTTEREL *C. veredus*

Greymouth airfield, 1 on 24/9 to 2/10 (CSL).

#### BLACK-FRONTED DOTTEREL *C. melanops*

Kaituna Cut, 2 on 15/7, 1 on 14/8 (GAT, PCML), 1 on 4/6 (BCh, PCML). Ahuriri, c.10 on 25/7 (ARG, ACS, KVT). L Poukawa, 21+ on 3/4 (BDH, KVT). Turakina R est, 1 on 28/2/82, 9 on 28/3/82, 1 on 10/7 (OCT). Omanuka Lagoon, 2 on 18/7 (LJD, CR, PMS). Manawatu R at Linton, 13 on 4/7 at muddy edge of small stream with 4 fronting up to one another using their chests and emitting a whirring noise (LJD, CRS). Waitarere, 3 on 10/6 (RP). L Wairarapa, W and N shores, up to 12 Nov-Jan, Mar-Apr (PJM). Greytown SP, 4 on 24/4; Featherston SP, 8 on 24/4 (BDH). Hokio Beach, 3 on 1/6 (RP). Waikanae Beach, 1 on 16/5 (AT), 1 from 23/5 to 12/8 at est (CAF). Wellington airport, 1 on 14/4 feeding on grass between runways with small flock of starlings (AHG). Lower Wairau, 3 on 22/3 (WFC). Elterwater, 2 on 19/5 (PCML). L Ellesmere, 1 on 7/11 (D. Buzan). Ahuriri R, 1 on 8/82 (CFJO). Orari R mouth, 10 adults and 2 juv on 29/3 (KM, JVM). Spider Lagoon, 3 adults on 21/2 (PMS). Opihi R mouth, 1 adult on 28/12 (PMS), 7 on 29/3 (KM, JVM).

#### WRYBILL *Anarhynchus frontalis*

Paua, 94 on 14/7; Kokota Spit, 107 on 11/8; Kowhai Beach, 56 on 19/2; East Beach, 45 on 10/8 (RMB, AMD). Browns Bay, 1 on 4/1 feeding at high tide among sunbathers (DFB). Manukau H, downstream from Favona causeway, 400+ on 25/7 (RBS). Mangere SP, c.800 on 1/2 and 10/2 (RBS). Manukau H census, 15 on 14/11, 895 on 26/6 (BB). FoT census, 5 on 5/12, 2500 on 17/7 (BB). Kawhia H census, 0 on 6/11, 2 on 26/6 (BHS). Matahui Point, c.40 on 24/7 (PCML). Rangitaiki R mouth, 2 on 26/1 (GAT). Ohope Spit, 2 on 6/10, 1 on 5/11 (GAT). Bowentown ocean beach, 1 from 14/5 to 11/6 (BCh). Sulphur Point, Tauranga H, 43 on 30/1, 101 on 29/1 (BCh, PCML). Kaituna Cut, some present, usually 3, 14/8 to 4/6, but high of 10 recorded on 5/1 (PCML). Muriwai Lagoon, 46 on 12/7 (BRK). Wairoa est, 7 on 25/4 (BRK). West-shore, 3 on 2/3 (ARG, NBMc, KVT). Waitangi, HB, 1 on 28/5 to 28/6 (PWT, MT, KVT). Whangaehu R mouth, 2 on 4/1 (OCT).

Manawatu R est, maximum 25 on 25/2 (JLM, MM, LJD), 21 on 29/6 (KLO). L Wairarapa, E shore, 1 on 15/1 (PJM). Hokio Beach carpark, 2 on 11/6 (RGP). Waikanae est, 3 on 12/9 (AHG, ING). 2 on 15/1 (MAF, KAW). Nelson Haven, 1 on 25/1 (JMH). Grassmere, 6 on 29/1 (DJB). Ashley est, 3 on 14/10, 5 on 14/1 (BE), 2 on 12/2, 1 on 27/3 (PMS). L Ellesmere, 3 on 1/8, 2 on 8/8, 21 on 1/9, 39 on 2/9, 18 on 5/9, 10 on 10/10 (D. Buzan); 69+ on 16/2 (PMS); 43 on 5/3 (D. Buzan); 139 on 1/4 (KM, JVM). Hunter R, L Hawea, 14 adults on 23-24/10, nesting in progress (PC).

#### FAR-EASTERN CURLEW *Numenius madagascariensis*

Paua, 4 on 20/10 and 23/10 (BHS, JHS), 5 on 23/2 (RMB, AMD). Karaka, 2 on 4/2 (RBS). Manukau H census, 5 on 26/6 at Kirk's farm (BB). Kaiaua, FoT, 4 on 3/5 (RBS). FoT census, 5 on 5/12, 6 on 17/12, 19/2 and 3/3 (BC, SD, BHS). Ohope Spit, 1 (probably overwintered) on 17/10 and 27/11; 2 on 21/12 and 28/2 (WMH, RMW). Tolaga Bay, 1 on 18/1 (GAF). Ngamotu Lagoon, Wairoa, 1 on 31/10 (GAF). Manawatu R est, present from 23/10 to 16/5; maximum 3 on 31/1 and 26/2 (JLM, MM), 1 on 1/5 (SEC, RAC), 1 on 15/5 (CRS, PMS). Farewell Spit, 4 on 20/11 (DM). Nelson Haven, 1 on 31/1 (JMH). Ashley est, 1 on 14/10, 20 on 26/1 (BE). Heathcote-Avon est, 1 on 20/3, 2/4 and 22/5 (D. Buzan).

#### ASIATIC WHIMBREL *N. phaeopus variegatus*

Paua, 16 on 20/10 and 23/10 (BHS, JHS). Kokota Spit, 4 on 22/9 (RMB, AMD). Jordans Road, Kaipara H, 12 on 27/2 (SD). Manukau H census, 4 on 14/11 (BB), 1 on 5/3 (KJF). Kawhia H census, 0 on 6/11 and 26/6 (BHS). Sulphur Point, 2 on 30/1 (buff spots on wing coverts and scapulars suggest subadults) with large flock of Bar-tailed Godwit (PCML, GAT). Kaituna Cut, 1 on 5/3 and 16/4 (WMH, PCML). Ohope Spit, 2 on 1/3 (none on 28/4) (GAT).

#### AMERICAN WHIMBREL *N. phaeopus hudsonicus*

Paua, 2 on 20/10 (BHS, JHS).

#### WHIMBREL sp.

Walker I, 19 on 19/11 (RMB, AMD). Karaka, singles on 1/12, 1/1, 3/2 and 27/3 (BB *et al.*). Miranda, FoT, 1 on 17/12 (BCh). Westshore, southern marsh, 1 on 11/12 (MTC, PWT, MT, KVT). Ashley R est, 1 on 21/3/82 (D. Buzan).

#### LITTLE WHIMBREL *N. minutus*

L Wairarapa, N end, 1 on 31/1 on lakeside "field" of coarse sand (BDH).

#### ASIATIC BLACK-TAILED GODWIT *Limosa limosa melanuroides*

FoT census, 1 on 5/12 at Piako (BB). Matahui Point, 2 on 21/4 (BCh). Manawatu R est, 3 on 10/7, 1 in Sep-Oct, 2 from 7/11 to 1/4 both attaining summer plumage, 1 departed but other still present at 30/6 (JLM, MM); 1 on 13/3 had gained dark crescentic flank feathers but no red plumage (CAF).

HUDSONIAN GODWIT *L. haemastica*

Ohope Spit, 1 on 23/9, 24/9 and 27/11 among flock Bar-tailed Godwit (GAT, WMH, PCML).

EASTERN BAR-TAILED GODWIT *L. lapponica*

Paua, 4530 on 13/10 (RMB, AMD), 1000 on 23/10 (BHS, JHS). Kokota Spit, 2040 on 13/10 (RMB, AMD). Houhora, c.211 on 22/10 (BHS, JHS), 2100 on 19/2 (RMB, AMD). Rangaunu, 4800 on 20/12 (RMB, AMD). Herekino, 2 on 13/7 (RMB, AMD). Onoke, Hokianga, 140 on 6/1 (RMB, AMD). Manukau H census, 12 849 on 14/11, 1424 on 26/6 (BB). FoT census, 7204 on 5/12, 665 on 17/7 (BB). Aotea H census, c.900 on 6/11 (BHS). Kawhia H census, 207 on 11/7, c.2500 on 6/11, 173 on 26/6 (BHS). Matahui Point, c.150 on 24/7, c.1500 on 9/1, c.400 on 26/3; during Apr numbers down due to illegal shooting (BCh). Sulphur Point, Tauranga H, 2000-2500 on 4/12 and 30/1 (PCML). Ohope Spit, c.1200 on 24/9 rising to c.3500 on 21/12 dropping to 300 by 18/4 (WMH, PCML). Muriwai Lagoon, Gisborne, 256 on 15/11 (BRK). Ngamotu Lagoon, 140 on 10/10 (GAF). Wairoa est, c.250 on 28/12 (GAF). Westshore, 36 on 1/8 (ARG, KVT), 290 on 26/2 (census) (KVT). Rangitikei R est, 13 on 27/2 (BDH). Manawatu R est, 385 on 21/11 (CRS, PMS), maximum 420 on 13/2 (JLM, MM), 33 on 10/6 (RP). L Wairarapa, E shore, 10 Nov-Jan (PJM). Pauatahanui Inlet, 2 on 23/10 (AM). Waikanae est, 2 on 16/10, 1 on 28/12 (CAF). Vernon Lagoons, 160 on 1/2; Grassmere, 6 on 29/1 (P. Jenkins). Armers Lagoon, 2 on 29/10, 4 on 5/11, 3 on 26/11; usually only single birds seen (BE). Orowaiti est, Westport, 2 on 11/9 (CSL, DJO), 3 on 25/2 (DJO). Okari Lagoon, near Westport, c.10 on 13/1 (DJO). Taramakau R mouth, 2 on 20/2 (CSL). Heathcote-Avon est, 205 on 3/7, 768 on 14/2, 87 on 26/3 (D. Buzan). L Ellesmere, 5 on 8/8, 4 on 31/8 (D. Buzan), 20 on 26/9 (PMS), 6 on 10/10, 17 on 12/2 (D. Buzan), 1 on 1/4 (KM, JVM). Riverton est, 221 on 19/3 (KM, JVM). Awarua Bay, 360 on 26/2, 8 on 25/4, 1 on 24/6 (KM, JVM).

LESSER YELLOWLEGS *Tringa flavipes*

Boggy Pond, 1 on 16/1 and 19/1 (PJM).

GREENSHANK *T. nebularia*

Karaka, Manukau H, 1 on 15/5 calling and well seen (KJF). Matahui Point, Tauranga H, still single bird present on suitable tides roosting with Pied Stilts; it was lame in April but appeared all right again by late May; seen on 17/7 and 24/7 and still present in Jun; same bird as that seen 11/77? (BCh, PCML). L Wairarapa, 1 on 27/1, 14/3 and 16/3 (PJM). Boggy Pond, 1 on 5/4 (PJM). Awarua Bay, 1 on 26/2 (KM, JVM).

MARSH SANDPIPER *T. stagnatilis*

Westshore, 1 from 17/2 to 4/3 and on 16/4 (KVT, DA). Marfells Beach, 1 in Feb (TJT).

WANDERING TATTLER *T. incana*

Cuvier I, 1 on 2/1 on rock, NW side, seen from boat (BHS, JHS).

SIBERIAN TATTLER *T. brevipes*

Paua, 1 on 20/10 (BHS, JHS). Rangiputa Bank, 1 on 21/10 (BHS, JHS). Oyster Point, Kaipara H, 1 on 11/4 (probable sighting on 3/3) (TC). Karaka, 1 on 2/11 (TC). Armers Lagoon, 1 on 29/10, first sighting since Jan; double whistle before flying; 4 double whistles in flight; 1 on 5/11, 2 on 6/1; 1 on 30/5 uttered 4-note whistle followed by 2 double whistles (BE). Awarua Bay, 2 feeding beside a Curlew Sandpiper; *ter-wee* calls heard several times on 26/2 (KM, JVM).

## TATTLER sp.

Paua, 2 on 23/2 (RMB, AMD). Karaka, 1 from 23/10 to 18/3 (BB *et al.*). Access Bay/Miranda, FoT, 1 on 4/5 to 17/6 (BCh, SD, RBS).

TEREK SANDPIPER *Xenus cinereus*

Kokota Spit, 2 on 20/1 (RMB, AMD). Oyster Point, Kaipara H, 3 on 3/3 and 11/4 (TC). Tamaki est, 1 on 20/11 feeding with other waders (MJT). Karaka, 1 from 23/10 to 1/12 (TC). Manukau H census, 1 on 14/11, 3 on 26/6, the most seen here (BB). Access Bay/Miranda, FoT, 2 on 7/11 (TC). Singles 10/11 to 29/4 (BB *et al.*). FoT census, 2 on 5/12 (BB). Kaituna Cut, 1 on 5/1 and 16/4 (BCh, PCML). Manawatu R est, 1 from 27/12 until 15/5 (JLM, MM, LJD, RAC, CRS, PMS). Ashley R est, 1 on 18/12/82 (D. Buzan). L Ellesmere, 1 on 12/3 and 10/4 (D. Buzan).

TURNSTONE *Arenaria interpres*

Paua, c.400 on 20/10 (BHS, JHS), 600 on 26/2 (RMB, AMD), 6 on 26/4 (ASR, JMR). Kokota Spit, 253 on 13/10 (RMB, AMD). Houhora, c.550 on 22/10 (BHS, JHS), 240 on 7/3 (RMB, AMD). Rangaunu, 595 on 25/2 (RMB, AMD). L Ohia, 6 on 23/10/81 (DB). Karaka/Kirk's farm, 190+ on 23-24/10 (BB *et al.*). Manukau H census, 441 on 14/11, 164 on 26/6 (BB). Whakatiwai/Access Bay, FoT, 290 on 2/4 (BB, TC). FoT census, 158 on 5/12, 67 on 17/7 (BB). Kawhia H census, 9 on 6/11, 0 on 26/6 (BHS). Matahui Point, not a regular roost but c.30 on 25/3 and c.80 on 26/3, mostly well into breeding dress (BCh, PCML). Kaituna Cut-Maketu, 2 (overwintered) 29/8; 30 on 2/1 and 31/1 (PCML). Extraordinary count of 74 on 13/2 on the move (WMH). East Clive, HB, 14 on 7/12 (ARG, ACS). Manawatu R est, 1-3 from 21/8 to 26/2 (JLM, MM), 1 on 15/5 (CRS, PMS). Waikanae est, 2 on 10/10 (AT), 2 on 17/10 (AHG, ING). Ashley R est, 10 on 18/12/82 (D. Buzan), 3 on 26/1 (BE), 1 on 12/2 (PMS). Cape Campbell, 30 on 30/5, 30-40 throughout Jun 1982 (P. Jenkins). Kaikoura, always present, groups 40-50 in Nov/Dec; 12 on 16/11 (P. Jenkins); 5 on 19/5 and on 23/5 (PCML); c.20 on 20/5 among Black-fronted Terns (DJB). Waitangi West Beach, Chathams, about 50 on 26/12 (PDG). L Ellesmere, 2 on 19/2 (D. Buzan), 1 in breeding plumage on 31/3 (KM, JVM). Riverton est, 35 on 19/3 (KM, JVM). Waimatuku est, 10 on 19/3 (KM, JVM). Awarua Bay, 227 on 26/2, 6 on 25/4, 5 on 24/6 (KM, JVM).

KNOT *Calidris canutus*

Paua, 6000 on 13/10 (RMB, AMD), c.800 on 23/10 (BHS, JHS). Kokota Spit, 1920 on 16/11 (RMB, AMD). Houhora, c.2450

on 22/10 (BHS, JHS), 2500 on 19/2 (RMB, AMD). Rangaunu, 5000 on 20/12 (RMB, AMD). Onoke, Hokianga, 2 on 6/1 (RMB, AMD). Karaka, c.2000 on 19/9, of which 5% were in broken colour; 5000+ on 23/10, 8000 on 1/1, 500+ on 31/3 (BB *et al.*). Manukau H census, 13 506 on 14/11, 826 on 26/6 (BB). Access Bay, FoT, c.4000 on 27/9, 8000 on 10/10, 230 wintering on 23/5 (BB *et al.*). Aotea H census, 3 on 6/11 (BHS). Kawhia H census, 0 on 6/11, 1 on 26/6 (BHS). Matahui Point, 24 on 9/1, 80 on 21/3 (BCh). Kaituna Cut, some present throughout summer with a high count of 55 on 5/3; only 8 left on 16/4 (PCML). Muriwai Lagoon, Gisborne, 3 on 24/1 (BRK). Manawatu R est, present from 31/7 until 19/6 with maximum 196 on 28/1 (JLM, MM). L Wairarapa, 18 max Nov-Jan (PJM). Waikanae est, 1 on 12/8 (CAF), 1 on 10/10 (AT). Heathcote-Avon est, 6 on 25/10 (D. Buzan). L Ellesmere, 10 on 26/9 (PMS), 38 on 19/2, 40 on 5/3, 33 on 10/4 (D. Buzan). Awarua Bay, 500-600 on 26/2, 42 on 24/6 (KM, JVM).

#### SHARP-TAILED SANDPIPER *C. acuminata*

Paua, 16 on 20/10 (BHS, JHS), 7 on 16/11 (RMB, AMD). Kokota Spit, 24 on 21/12 (RMB, AMD). Rangaunu, 3 on 21/1 (RMB, AMD). L Ohia, 2 on 23/10/81 (DB). Mangere SP, 6 on 6/12 (RBS), 10 on 9/3 with other waders (MJT, RBS). Karaka, 33 on 27/3 (BB, DGB, KJF). Manukau H census, 2 on 14/11, 3 on 26/6 (BB). Access Bay, FoT, 43 on 4/1 (BCh), 43 on 20/2 (SD, AR, PS), 42 on 2/4 (BB, TC), 25 on 9/4 (SD). FoT census, 10 on 5/12, 12 on 17/7 (BB). Kaituna Cut, 9 on 23/10 building up to 30 present from 2/1 to 27/3 but falling to 5 on 16/4 and 1 on 4/6 (PCML). Awaiti wetlands, 2 on 29/12 (BHS). Westshore, 22 on 26/2 (census) (KVT). Manawatu R est, present from 6/11 to 1/5; 22 on 25/2 and 13/3 (JLM, MM); 23 on 27/2 (LJD). L Wairarapa, up to 82 in Jan (PJM), 1 on 2/4 (PJM, CP, CCO). Pauatahanui Inlet, 1 on 19/9 (NH, RSS). Nelson Haven, 1 on 1/10 (JMH). L Ellesmere, 14 on 13/3, 13 on 1/4 (KM, JVM).

#### PECTORAL SANDPIPER *C. melanotos*

Kokota Spit, 6 on 20/1 (RMB, AMD). Miranda, 1 on 11/3 (RO). Access Bay, FoT, 2 on 7/11 (TC), 1 on 5/12 (BB). Kaituna Cut, 4 on 22/12 (WMH), 2 on 5/1 to 16/4 (PCML). Matata, 2 on 4/2 (DAL). Westshore, 3 on 23/1 to 23/3 (KVT). Turakina R est, 2 on 28/2 (OCT). L Wairarapa, 2 on 6/1 (PJM, CP), 2 on E shore on 9/3 (PJM, CCO), 2 at Boggy Pond on 6/1 (PJM, RP). Waikanae est, 1 on 20/3 in breeding plumage (CAF, MAF).

#### CURLEW SANDPIPER *C. ferruginea*

Paua, 2 on 20/10, 7 on 23/10 (BHS, JHS), 4 on 21/12 (RMB, AMD). Kokota Spit, 13 on 17/4 (RMB, AMD). Jordan's Road, Kaipara H, c.20 on 16/10 (BHS). Manukau H census, 2 on 14/11, 3 on 26/6 (BB). Miranda, 18 on 29/1 (RO). Access Bay, FoT, 30+ on 8/5 (MH, GT), 8 on 23/5 all pale (SD). FoT census, 21 on 5/12, 33 on 17/7 (BB). Kaituna Cut, 3 on 22/12 (WMH) but only 2 on 5/1 to 3/3 (PCML). Oraka, Mahia pen, 3 on 11/1 (GAF). Westshore, 10 on 6/2 (PWT, MT, KVT). Waitangi, HB, 9 on 25/6 (PWT, MT, ALH, ACS). Manawatu R est, 1-2 from 25/9 to 19/6 (JLM, MM), 3 on 21/11 (CRS, PMS, GRS). L Wai-

rarapa, E shore, 3 on 27/1 (CP), 4 on 2/4 (PJM). Grassmere, 3 on 29/1 (DJB). L Ellesmere, 2 on 11/7 and 1/8; 30+ on 5/3 (D. Buzan), 34 on 1/4 (KM, JVM). Awarua Bay, 37 on 26/2, 1 on 25/4 (KM, JVM).

#### RED-NECKED STINT *C. ruficollis*

Paua, 2 on 13/10 (RMB, AMD), 10 on 23/10 (BHS, JHS). Kokota Spit, 8 on 11/8 (RMB, AMD). Rangiputa Bank, 13 on 21/10 (BHS, JHS). East Beach, 2 on 12/1 (RMB, AMD). Manukau H census, 12 on 14/11, 10 on 26/6, but 21 on 12/6 and 20 on 11/7, 26 on 1/12 and 1/1 (BB, DGB, TC, KJF). Access Bay, FoT, 8 on 27/9 (BSC), 18 on 8/5 (MH, GT). FoT census, 6 on 5/12, 13 on 17/7 (BB). Sulphur Point, Tauranga, 1 on 16/11, 2 on 28/11, 3 on 4/12 (BCh, PCML). Kaituna Cut, 21 from 2/1 to 27/3, when there were 23; then 22 on 16/4 and 7 on 4/6 (PCML). Muriwai Lagoon, Gisborne, 4 on 20/12 (BRK). Westshore, 9 on 23/1 (ARG, ACS, KVT). Rangitikei R est, 3 on 27/2 (BDH). Manawatu R est, present from 6/11 to end of Jun with max 5 on 6/11 and 21/1 (JLM, MM). Noticeably colouring up 13/3 (CAF). Grassmere, 20 on 29/1 (DJB). L Ellesmere, 4 on 1/9 (D. Buzan), 26 on 26/9 (PMS), 70 on 10/10 and 5/3 (D. Buzan), 79 on 31/3 (KM, JVM), 71 on 1/4 (D. Buzan). Awarua Bay, 6 on 26/2 (KM, JVM).

#### SANDERLING *C. alba*

Kokota Spit, 1 on 8/3 (RMB, AMD). Karaka, 1 on 31/3 (SD, AR). Turakina R est, 1 on 12/1 (OCT). L Ellesmere, 2 on 12/2 and 19/2; 2 possibly 3, on 5/3 (D. Buzan).

#### PIED STILT *Himantopus himantopus leucocephalus*

Te Werahi Beach, 25 on 24/4 (ASR, JMR). Paua, 465 on 20/6 (RMB, AMD). Houhora, 15 on 22/10 (BHS, JHS), 314 on 29/5 (RMB, AMD). Mangere SP, 1000 on 6/12 (RBS). Manurewa Botanical Gardens, 11 on 2/10 at the new lake (JD). Manukau H census, 1240 on 14/11, 4131 on 16/6 (BB). Miranda/Wharekawa, nests along stream banks on 10/10 (BB). FoT census, 1487 on 5/12, 2514 on 17/7 (BB). Aotea H census, 12 on 6/11 (BHS). Kawhia H census, 487 on 11/7, 73 on 6/11, 193 on 26/6 (BHS). Bowentown shellbanks, 28 on 11/7, highest count for year (PCML). Matahui Point, c.550 on 17/7, highest count for year (BCh). Tarawera R mouth, 165 on 2/4 (PCML). L Aniwhenua, c.40 on 8/8 (WMH). Sulphur Bay, L Rotorua, 88 on 22/5 (RWJ). Muriwai, Gisborne, c.600 on 28/12 (GAF), c.280 on 7/3 (JCH, MAW). Barrett Lagoon, New Plymouth, 20 on 31/10 (RWW). Cape Egmont, 4 on 15/5 (DGM, JCM). Inglewood SP, 50 on 5/9 (J. Clark). Westshore, 818 on 26/2 (census) (KVT). L Poukawa, c.1500 on 3/4 (BDH, KVT). Manawatu R est, 111 on 21/11 and 194 on 27/2 (LJD), 425 on 1/5 (JLM, MM). Waikanae est, 72 on 27/2 (MLF, RNC). First seen incubating 16/10, 7+ nests with eggs 2/1 and 1 brood of feathered chicks not yet flying; few clutches survived but total rose from c.30 (Jan) to over 90 including 13 immatures (Feb) and to over 100 on 1/4. An increase on 1982, maximum of c.60 (MAF, CAF. Batty's Road, Blenheim, 3 including 1 immature regularly at milking shed outfall; 10 during Apr drought (TJT). Grassmere, 250 on 25/7 (TJT), c.30 on 12/6, 300 on 29/1 (DJB), 325 on 13/4 (TJT).

Cobden Lagoon, 3 adults and 3 juv on 9/4 (CSL). L Ellesmere, 10 000+ on 18/8 (CFJO). Ashley est, 43 on 27/3, 29 on 24/2, 30 on 18/6 (PMS). Washdyke Lagoon, 129 on 30/1 (PMS), c.100 on 27/5 (BHS).

#### BLACK STILT *H. novaezeelandiae*

Jordan's Road, Kaipara H, 1 on 14/3 smudgy (BB *et al.*). Oyster Point, Kaipara H, 1 on 14/3 showing some white (RBS). Waimahia Inlet, Manukau H, 1 seen 9 times from 6/3 to 7/5 (KJF). Matahui Point, 1 on 17/7, 2 on 22/8, 1 on 28/8 and last seen 5/9; 1 bird had white patch at bill base, a few white belly feathers and white undertail coverts, the other was all black but for white undertail coverts (BCh). Manawatu R at Linton, 1 smudgy with 40 Pied Stilts on 4/7 (LJD, CRS). Manawatu R est, 1 smudgy from 25/9 to 10/10 and again on 21/1 (JLM, MM). Grassmere, 1 smudgy on 16/11 joined huddled flock of Pied Stilts during hailstorm; 1 black in exactly same place on 29/1 (DJB). Upper Ahuriri R, up to 32 on 27/7-14/8 (CFJO). L Poaka, 2 on 14/8 (CFJO). L Ellesmere, 2 on 14/7 (CFJO). L Wanaka, Makarora, 1 on 31/1, smudgy; local farmer reported pure black resident end Nov (PC).

#### SOUTHERN GREAT SKUA *Stercorarius skua lonnbergi*

L Ellesmere, 1 flew low over a pool scattering Wrybills and stints on 31/3 (KM, JVM). Foveaux Strait, 1 on 4/7 (CMM).

#### ARCTIC SKUA *S. parasiticus*

Kokota Spit, 1 on 20/1 (RMB, AMD). Off Karaka shellbanks, 1 on 13/2, 29/3 and 31/3 (BB, TC, SD, RBS). Papamoa, 2 (1 dark, 1 pale) offshore harrying White-fronted Terns on 11/1 and 28/1, 8 0.5 km offshore again harrying the terns on 20/3 (PCML). Tarawera R mouth, c.10 (1 pale) sometimes 3 chasing 1 tern on 25/4 (PCML). Whale I, 2 or 3 pale phase most of summer (WMH). Ohope Spit, 1 resting on beach 30/3 (GAT). Muriwai Lagoon, Gisborne, 1 on 24/1 patrolling tern roost (BRK). East Clive, 1 white phase patrolling near White-fronted Tern nesting site on 23/1/83 (KVT). Foxton Beach, 7 on 25/2, singles until 4/4 (JLM, MM). Waikanae est, 1 on 13/5 (AT), 1 on 27/2 (MLF, RNC). Arapawa I, S end, 1 on 7/3 (WFC). Pelorus Sound, 2 on 22/6 (WFC). Tawere Point, 1 on 22/6 (WFC). Charlestown, 3 on 28/1 (DJO). Arahura R mouth, 1 on 13/2 (NJW). Hokitika R mouth, 2 on 24/2 (NJW). L Ellesmere, 9 on 24/4 (CMM).

#### BLACK-BACKED GULL *Larus dominicanus*

Houhora, 424 on 21/4 (RMB, AMD). Rangiputa Bank, c.50 on 21/10, many immature (BHS, JHS). Walker I, 364 on 19/11 (RMB, AMD). Manukau H census, 332 on 14/11, 1207 on 26/6 (BB). Miranda, FoT, 50 immatures on 27/3 (BB). FoT census, 502 on 5/12, 986 on 17/7 (BB). Kawhia H census, 71 on 11/7, 43+ on 6/11, 75 and 6 juv on 26/6 (BHS). Matakana I, 400-500 pairs nesting 25/9 and 6/11 (BCh, PCML). Tukituki est, c.900 on 18/3 (KVT). L Poukawa, c.200 on 6/7 (KVT). Hitaua Bay, Tory Channel, c.780 on 7/3 (WFC).



**RED-BILLED GULL *L. novaehollandiae scopulinus***

Rangiputa Bank, c.250 on 21/10, 50 nests, 1 egg only (BHS, JHS). Manukau H census, 49 on 14/11, 1207 on 26/6 (BB). FoT census, 93 on 5/12, 1564 on 17/7 (BB). Aotea H census, 4 on 6/11 (BHS). Kawhia H census, 94 on 11/7, 70 on 6/11, 72 on 26/6 (BHS). Mayor I, small colony on port side cliff entering SE Bay, 11/12 (PCML). Tarawera R mouth, c.200 on 18/7 and 7/5, day roost (PCML). Rangitaiki R mouth, c.300 on 18/7 (PCML). Westshore, 89 on 26/2 (NBMcK). Tukituki est, c.200 on 1/6 (KVT). Paremata, Ngatitao Domain, 480 on 30/6 during gale force winds and heavy rain (KLO). Naenae College playing field, 2500-3000 on 1/9 during wet southerly weather; large gathering usual during wet windy weather but this was largest concentration seen (AHG). Grassmere, 500+ on 29/1 (DJB). Taramakau R mouth, 6 on 26/3 (CSL). Hokitika R mouth, 8 including 3 juv on 8/1 (CSL).

**BLACK-BILLED GULL *L. bulleri***

Miranda, FoT, c.100 on 3/12 (BB). Access Bay Spit, FoT, 100+ mating and "looking" at shellbank nesting sites on 23/9 (BHS); on 7/11, 82 birds, 32 nests and 2 single eggs (TC). FoT census, 93 on 5/12, 32 on 17/7 (BB). Kawhia H census, 2 on 11/7, 0 on 6/11, 5 on 26/6 (BHS). Tarawera R mouth, 14 (2 subadults) on 27/5 and 12/6, 7 on 4/7 (PCML). L Rotoiti, west arm, 10 on 20/2 (PCML). Ohiwa-Ohope Spit, 46 on 24/9 (PCML), 52 on 5/11 (GAT). Waiawa est, Opotiki, 5 adults and 8 nearly fledged chicks 18/1 (GAT). Wairoa est, c.250 pairs nesting on 11/12; most with young on 22/12 (GAF). Waitara est, 1 on 14/5 and 6/6; rarely seen in Taranaki (RO, DGM). East Clive, HB, c.500 at nesting site on 16/12 (KVT). L Horowhenua, 180 on 28/1, 100+ on 30/4 (BDH). Waikanae est, present most of year, reaching c.40 on 9/5/82; 45 on 1/4 (CAF). L Wairarapa, N end, 60+ on 30/1 (BDH). Cobden Lagoon, 3 on 9/4 (CSL). Taramakau R mouth, c.15 on 26/3 (CSL). Hokitika R mouth, c.200 on 16/2, c.130 on 25/5, 50+ on 20/6. Flocks contained some Red-billed Gulls, which were outnumbered 10:1 (NJW).

**BLACK-FRONTED TERN *Sterna albostrata***

Miranda, 1 adult on 3/5, resting on mud, then flew inland (TGL, RBS). Matahui Point, Tauranga H, 1 on 10/7, 2 on 25/3 (BCH). Tarawera R mouth, 43 on 3/7 and 18/7, 4 on 1/8 (WMH, PCML), 1 on 10/4, increasing to 31 by 27/5. Sometime in Jun, main flock moved to Rangitaiki R mouth (PCML). Waitangi, HB, 62 on 16/7 (KVT). Waimarama Beach, 1 on 29/5 (PWT, MT). Napier, Marine Parade Beach, 21 on 25/6 (PWT, MT). Rangitikei R est, 2 on 15/5 (GRS). Manawatu R est, 2 on 29/6 (KLO), 1 on 31/7 and 1/8 (JLM, MM). Rakauhūmama Lagoon, 1 on 2/10 (RAC, SEC). Onoke Spit, 170 on 29/5 (GAW). Hokio Sands Road, Levin, 2 on 18/6 (AHG, ING). Waikanae est, 2 on 3/4 (CAF), 15 on 10/4 (BDH), 82 on 22/5 (AT). Pauatahanui Inlet, 300+ on 22/5 in fields 1 km E of inlet during violent storm. Small groups of up to 6 seen on other areas around inlet (AHG, ING, AT, AM). Petone Beach, 2 on 21/5 and 23/5 (SDC). Wairau Valley, 3 on 3/10 chasing Harrier (P. Jenkins). Wairau between Branch and

Hillesden, 55 on 21/11 including 6 or 7 nesting pairs, 1 running chick (DJB). Seddon, Awatere, 40+ on 20/5 feeding over paddock (DJB). Grassmere, coming and going from sea during Aug (DJB). Marfell's Beach, 5 on 23/5; Kaikoura, c.300 on 19/5, 5 on 23/5 (BDH, JMH, PCML). Kaikoura pen, c.100 on 20/5 included 6 immatures at hightide roost (DJB). Lyall Creek mouth, 22 on 29/1, 11 on 26/5 (BE). Kowhai R mouth, c.15 feeding half mile offshore on 23/5 (PCML). Orowaiti est, Westport, 1 immature on 28/1 (DJO, NJW). Hokitika R mouth, 1 juv on 1/2, 2 immatures on 16/2, 1 immature on 21/2, 1 on 14/3, 1 immature on 20/6 (NJW). Upper Leader Valley, 2 on 31/12 (LJD, SEC). L Selfe, 1 feeding over lake on 10/2 (JHS, BHS). Ashley est, 9 adults on 18/9, 3 adults on 12/1, 6 adults and 2 juv on 27/2, 11 on 18/6 (PMS). Ashley Gorge, 4 on 24/8 hawking insects over paddock (MLB). Bromley SP, 25 on 22/3 (D. Buzan). Opihi R mouth, 6 adults on 28/12, 11 adults and 6 juv on 19/2 (PMS). Foveaux Strait, 2 on 4/7 (CMM).

#### WHITE-WINGED BLACK TERN *Chlidonias leucopterus*

L Horowhenua, 1 on 21/1 (JLM, MM) and 28/1 (BDH), 2 on 30/4, one of them in partial breeding plumage (BDH); 1 on 11/6 (AHG, ING). Spider Lagoon, 6 in non-breeding plumage on 19/2 (PMS). L George, 2 on 29/1 (RRS).

#### GULL-BILLED TERN *Gelochelidon nilotica*

Ahuriri, outfall channel, 2 on 2/10, still present on 12/6 (ARG, KVT). Manawatu R est, 1 from 22/12 to 1/1 (MKT, JLM, MM).

#### CASPIAN TERN *Hydroprogne caspia*

Paua, 10 on 29/10; Rangiputa Bank, c.130 on 21/10 (BHS, JHS). Walker I, 254 on 19/11, breeding (RMB, AMD). Mangawhai Spit, c.80 pairs on 9/12 and 19/12, 71 pulli banded G-M (MJT). S Kaipara Head, 80-90 nests with eggs 23/12 increased to 160 sitting birds on 1/1, and 110 pulli were banded R/W-M on 16/1 and 5/2 (MJT). Tahuna-Torea Reserve, Auckland, 12/2, roosting flock consisted of 34 adults (12 wearing bands) and 5 juv (3 banded at Mangawhai as above) (MJT). Mangere SP, 13/2, roosting flocks consisted of 51 adults 7 juv (3 banded at Mangawhai) (MJT). Karaka shellbanks, 70+ on 25/2 (BB, RBS *et al.*). Manukau H census, 41 on 14/11, 172 on 26/6 (BB). FoT census, 18 on 5/12, 74 on 17/7 (BB). L Waahi, 1 on 26/3 (PJA). Kawhia H census, 21 on 11/7, 50 on 6/11 (13 nests on Te Motu I), 20 on 26/6 (BHS). Bowentown shellbanks, 30 pairs nesting 30/10, 58 pairs by 28/11. Due to bad spring weather, fewer than 20 fledglings (BCh); 60 on 15/5 roosting (PCML). Ohiwa H-Uretara I, 25 nests with 23 eggs on 12/12; 41 on 12/1 (WMH). Waiaua est, Cape Runaway, none along this stretch of coast 19/1 and 20/1 (GAT). L Rotorua, 26 on 17/4 (RWJ). L Aniwhenua, 3 on 19/6 (JGI). Muriwai Lagoon, Gisborne, 4 on 10/1 (GAF). Westshore, 21 on 26/2 (census) (KVT). Tukituki R est, 20 on 26/6 (PWT, MT, KVT). Manawatu R at Linton, 2 on 4/7 (LJD, CRS). Manawatu R est, 42 on 25/2 (JLM, MM), 51 on 27/2 (LJD). Ruakoka Bay, Queen Charlotte, 1 on 7/3 (WFC). Wairau R near Tuamarina, 8 on 12/4 (WFC). Kaikoura, 1 on 2/7 (BE). Blaketown Lagoon, 1 on 9/4 (CSL). Taramakau

R mouth, 1 on 26/3 (CSL). Arahura R mouth, 2 on 16/2 (NJW). Hokitika R mouth, 1 on 1/2, 2 on 20/6 (NJW). Heathcote-Avon est, 10 on 14/12/81, 47 on 13/2 (D. Buzan). Ashley est, 3 on 24/4 (PMS). Brooklands Lagoon, 14 on 13/2 (D. Buzan). L Ellesmere, pair with nestlings on 24/1 (BE). Washdyke Lagoon, 1 immature on 30/1 (PMS).

#### CRESTED TERN *Sterna bergii*

Waikanae est, 1 on 2/10, 1 on 5/1 (AT), 1 on 15/1 (MLF, KAW), 1 on 13/3 (CAF, MAF). Paraparaumu Beach, 1 present early April (RGP). Pauatahanui, 1 on 20/3 (AKB). Petone Beach, 1 present week 8/11 (JF). Scorching Bay, 1 mid-Nov (CDC).

#### ARCTIC TERN *S. paradisaea*

Tarawera R mouth, 1 subadult on 18/7 with flock of White-fronted Terns (PCML).

#### FAIRY TERN *S. nereis*

Waipu R Wildlife Res, 26/1, adult feeding juvenile on shell-bank and water; young bird could have been one of two chicks few hours old on 19/12 (A & AG). Mangawhai Spit, 2 on 27/11 (GJE), 2 on 9/12 (MJT). South Kaipara Head, pair on 23/12 and 1/1 defending well-grown chick (MJT).

#### LITTLE TERN *S. albigifrons*

Paua, 1 on 20/10 (BHS, JHS). Kokota Spit, 1 on 23/2 (RMB, AMD). Rangiputa Bank, 7 on 21/10 (BHS, JHS). Walker I, 45 on 20/12 (RMB, AMD). Seagrove Point, Manukau H, 2 on 24/10 (RBS). Karaka, up to 6 in summer (BB, KJF). Manukau H census, 4 on 14/11 (BB). Access Bay, FoT, 5 on 20/2 (SD, AR, PS). Miranda, 3 on 3/5 (RBS). FoT census, 3 on 5/12 (BB). Sulphur Point, Tauranga H, 1 on 28/11 (PCML). Tarawera R mouth, 1 on 27/3 with White-fronted Tern (PCML). Ohope Spit, 2 between 5/11 and 16/1 (GAT, WMH). Waitangi, HB, 2 on 28/12 and 3/1 associating with nesting colony of White-fronted Terns (PWT, MT). Tukituki est, 1 on 29/5 fishing along breakers (KVT). Manawatu R est, 2 on 27/12 (JLM, MM). Motueka, 1 on 23/2, 4 on 19/3 (BE), 3 during Apr (JM).

#### WHITE-FRONTED TERN *S. striata*

Rangiputa Bank, c.100 on 21/10, mating but not nesting (BHS, IHS). S Kaipara Head, colony of 1000 on sandspit on 23/12 was inundated by tides on 30/12, but 780 birds were sitting or tending small chicks on 1/1 (MJT). Muriwai, 28 nests on 24/11, mostly with 1 chick, on ledges of the Mototara Rock stack (IAN); on 23/12, c.40 nesting birds on the stack and c.100 on adjacent mainland cliff (MJT). Karaka shellbanks, 93 on 16/2 (KJF). On 13/2, 62 adults and 12 immatures. Birds had not bred there (BB, RBS *et al.*). Manukau H census, 54 on 14/11, 46 on 26/6 (BB). Access Bay spit, FoT, c.200 on 16/5 (BB); c.250 on 23/9, flying around and mating, then flew off (BHS); 100+ on 7/11, some courtship feeding and high flights, no eggs (TC); 512 on 5/12 (BB). FoT census, 540 on 5/12, 104 on 17/7 (BB). Kawhia H census, 1 on 11/7, 14 and 6 juv on 6/11, 0 on 26/6 (BHS). Sulphur Point, Tauranga H, 50

nests each with 1 egg on 16/11; 74 nests (70 with 1 egg, 4 with 2 eggs) on 4/12; 63 juv and chicks on 22/1; 130 adults with 34 juv on 30/1 (BCh, PCML). Otamarakau-Waitahanui R mouth, c.500 on 7/5 (PCML). Ohope Spit, nesting (first time for some years) 340 and 70 eggs on 21/12; c.400 adults and c.100 juv on 29/1 (WMH). Motu R mouth, 89 adults and subadults, nesting completed on 20/1 (GAT). Muriwai Lagoon, Gisborne, 100+ on 4/4 (BRK). Wairoa est, c.250 pairs nesting and eggs to well-developed young on 11/12 (GAF). Bell Block, 1 on 10/3 chasing Pied Stilt (JCM). Waitangi, HB, c.800 on 22/9 (KVT). Tukituki R est, c.120, 75% being juv with some showing mottled plumage on 28/11 (KVT). Rangitikei R est, 16 on 15/5 (GRS). Manawatu R est, c.300 on 31/1 (JLM, MM), 61 on 27/2 (LJD). Waikanae est, c.300 on 23/5 (DJB), c.1500 on 27/2 (RNC, MLF). Arapawa I, c.200 on 7/3 at S end (WFC). Kekerangu, c.200 on 20/5 (DJB). Kaikoura pen, c.200 on 20/5 (DJB). Taramakau R mouth, c.150-200 on 26/3 roosting on shingle bank (CSL). Hokitika R mouth, 300 on 2/2, c.90 on 24/2, 25 on 21/6 (NJW). Ashley est, 590 on 14/10 (BE), 252 adults and 14 juv on 12/2, 63 adults and 2 juv on 27/3, 84 adults and 11 juv on 24/4 (PMS). Resolution I, 12 on 2/2 off NW coast (WJC). Invercargill est, Dec/Jan, 225 nests at colony (MLB).

#### NEW ZEALAND PIGEON *Hemiphaga novaeseelandiae*

Waima SF, 20+ on 28/12 (RMB, AMD). Kaihu SF, 18 on 30/10 (RMB, AMD). Hapuakohe Track, near Kaihere, scarce but present on 15/8 (BB *et al.*). Hunua Gorge, Papakura, Mr Hutchinson, City Ranger, reported seeing 40-50 on 26/5, flying overhead and on up the Hunua Gorge. 12 had been around for a few days and c.18 fed on privet on 29/5 (BB). Mt William Walkway, Bombay Hills, 3 on 29/5 in patch of bush (BB *et al.*). Kawhia, 6 on 26/6, eating tree lucerne near Te Kauri Lodge (TBST). Raurimu, 19 on 23/10, eating plum and willow tree shoots in snow (ASR). Mayor I, 1 on 11/2 in western valley (PCML). Otanewainuku, 10+ on 23/4 (PCML). Hillcrest, Whakatane, 2 resident (WMH). Mohi Bush, Maraetotara, c.12 on 17/4 feeding on tawa berries (ALH, KVT). Gollins Stream, Wainuiomata, 1 on 21/1 incubating in nest on beech branch 5 m above ground (AJB). Blenheim, 1 on 13/6 in rimu, 1 on 17/6 in totara, 1 on 19/6 in lacebark (MM). Rotomanu, Westland, 6 on 24/2 (PJF). Inchbonnie, 2 on 9/3 in flight (PJF). Kaniere, 9 on 18/2 in flock (NJW). Kaniere SF, 2 on 24/5 feeding on new leaves of broom (NJW). Banks Pen, Little Akaroa, 8 on 11/4 in totaras (D. Buzan).

#### MALAY SPOTTED DOVE *Streptopelia chinensis*

Papaaroa, Coromandel, 1 on 15/5 (CMM).

#### KAKAPO *Strigops habroptilus*

Little Barrier I, 24/1 (Thumb Track at 250 m), evidence of feeding with pieces of gahnia pulled out and lower ends chewed (BB).

#### WHITE COCKATOO *Cacatua galerita*

Kumeu (Ross Lane), 7 living in area, Jul (KMPF). Ngataringa Bay, 1 seen several times, Sep (KB). Glen Murray, 40 on 3/5 (SVG, RAG). Matira, 4 on 19/10 (SVG, RAG). Matakawau Road, Awhitu pen, 2 on 26/6 (VR). L Rotoiti, Hell's Gate thermal area,

4 on 21/5 wheeling among trees (JGI). New Plymouth, 1 reported near Barrett Lagoon in May 1982 may have been an escaped cage bird (AAB). Westmere L, Wanganui, 5 on 25/7 (OCT). Charles-town, 2 during Feb (DJO). Marsden Reserve, Greymouth, 1 on 7/3 in kahikatea regrowth. An escaped cage bird has been reported around the district for about three years (CSL).

#### KAKA *Nestor meridionalis*

Waima SF, 1 on 28/12 (RMB, AMD). Waitakere (Jonkers Road), 1 on 11/12 (JES). Opoutere, 1 on 5/1 at 0230 calling as it flew in from sea (Mayor I) and circling (BB). Pureora Forest, 1 seen, others heard on 6/6 Bismark Road (JHS, BHS), 5 on 15/6 (ASR, PJ, MLDS, FN). Mayor I, party of 3 near SE Bay, others heard on crater rim 11/12 (PCML). Otanewainuku, 1 on 23/4 flying NE (PCML). Arataki, Mt Maunganui, 1 on 14/5 to 16/5 in beach-front garden and sand dunes, roosting in pine trees (AMcC, PCML). Motu Reserve, 3 on 13/11 in bush (JCH). Gisborne, observed in several suburban gardens 1982/83 (JCH, BGJ, SCJ). St Arnaud, 5 on 5/12 (PJ). Worsley Valley, L Te Anau, 2 on 5/3 and 12/3 (KM). Disappointment Cove, Resolution I, 4 on 7/12 (KM). Sunday Cove, Breaksea Sound, 5 on 7/12 (KM). Stick Cove, Wet Jacket Arm, 3 on 4/12 (KM). Long I, Dusky Sound, 1 on 5/12 (KM).

#### KEA *N. notabilis*

*Erratum: Notornis* Volume 30 Part 1, March 1983. Page 60 KAKA line 14 insert "*KEA N. notabilis*" after "fluting at dusk (KM)."

Scotts Knob, Raglan Range, 1 on 20/11 (GIR). Upper Hodder Valley, Awatere, 2 on 5/9 — 1 adult and 1 immature (GIR). Woodpecker Bay, West Coast, 1 on 25/7 flying over coastal bush (NJW). Rotomanu, Westland, 2 on 4/3 in gum tree (PJF). Inchbonnie, 2 on 23/4 in rata (PJF). Otira Gorge, 1 on 10/4 (PJF).

#### CRIMSON ROSELLA *Platycercus elegans*

Central Park, Brooklyn, pair observed over 5 years living in Park at winter and feeding on older acorns on ground. In spring, birds move to Kelburn/Highbury suburbs and feed on shoots of English lime trees, taupata, *Coprosma repens*, flowers of wattle, tree lupin and broom. In 1977 & 1980, immature bird seen and in May 1982, 3 immatures. Observed feeding on Lawson cypress seeds on ground along with Greenfinches and Chaffinches in Karori reservoir area (AY).

#### EASTERN ROSELLA *P. eximius*

Tapuwai R, Hokianga, 2 on 11/10 in mangroves (RMB, AMD). Mt William Walkway, Bombay Hills, 2 on 29/5 in bush at S end of track (BB *et al.*). Puketui-Hikuai Valley, 9 on 14/9 (JGH). Ngauawahia, 1 on 11/6 in kanuka tree (ALE). Rukuhia (S Hamilton), 2 on 29/5 (JHS). Hauturu, Kawhia, pair on 22/5, feeding at roadside verge (ASR). Awaroa Valley, 2 pairs on 22/5 (ASR). Te Kuiti, pair on 7/8 in kahikatea, 5.5 m due S (AMCD). Putara, NE Tararua Range, 2 on 17/2 (RAC), 4 on 2/4 (CRS, PMS). Mitre Flat, Holdsworth, 3 pairs in Mar (AJB). L Ponui, 60 on 18/3 (AJB). Q. Elizabeth Park, Paekakariki, 2 on 24/7 in kahikatea (CCO). Mangaroa Valley, Upper Hutt, 7 on 28/6 (AHC, ING).

RED-CROWNED PARAKEET *Cyanoramphus novaezeelandiae*

Onekura, Puketi, 1 on 4/1 (RMB, AMD). Mangahorehore, Puketi, 1 heard on 5/1 (RMB, AMD). Opuawhanga, 1 on 17/7, 7/9, 17/12, 25/12, 4/6 (JFS). Omaha Valley, 2 on 7/7 feeding on puriri berries (SC). Kawau I, pair in vicinity of Mansion House (ranger per MJT). L Ponui, 1 on 13/3 (RW).

YELLOW-CROWNED PARAKEET *C. auriceps*

Little Barrier I, 1 on 11/11 (SVG, RAG). Pureora Forest, 3 on 6/6 (JHS, BHS). L Marion, 1 on 8/10 (BE). Lewis Pass tarn, 2 on 4/2 (JHS, BHS). Andrews Stream, present on 5/2 (JHS, BHS). Arthurs Pass township, 2 on 4/4 (GW). Arthurs Pass, 12 on 19/3 (CMM). L Summer, SFP, 2 on 19/5 (GW). Lee I, Te Anau, 1 on 12/3 (KM). John I, Breaksea Sound, 1 on 2/2 (KM). Pigeon I, Dusky Sound, 1 on 7/12 (KM).

## PARAKEET sp.

Havelock, 2 on 14/1 (DL).

SHINING CUCKOO *Chrysococcyx lucidus*

Tapuwae, Hokianga, 4 on 9/11 in mangroves (RMB, AMD). Opuawhanga, 3 on 27/11 calling and chasing one another, then perching on branches in full view for some time (JFS). Little Barrier I, 3 on 14/11 feeding together (SVG, RAG). Waiheke I, first heard for season on 20/9 (BS). Orapiu Valley, Waiheke I, on 21/1 young bird being fed by 2 Grey Warblers (BS). Oakei, young bird on 7/2 squeaking and attracting Grey Warbler (MJT). Remuera, frequently whistling on 28/9 (RBS). Howick, 1 on 29/8 (CMM). Hamilton, 2 or more birds heard calling at night on 5/10, call without final descending note (JNC). Rangitoto Ranges, 1 heard on 2/10, in Cowan Block (BHS, JHS). Otanewainuku, 3 on 30/10 (PCML). Waimana R valley, Urewera NP, very common (WMH). Te Matai SF, first call heard on 21/9 (GAT). Tangarakau, near Whangamomona, first call 26/9 (JGI). Gisborne suburbs, first call heard 28/9 (MAW). Juvenile stripping caterpillars from kowhai (JCH). Muriwai, Gisborne, adult-sized bird being followed and fed by Grey Warblers on 14/3 (BGJ, SCJ). New Plymouth, first heard on 16/9; well-grown young being fed by Grey Warblers on 18/2 (DGM, JCM). Te Popo, near Stratford, first heard 29/9 (JM). Turakina Valley, 1 heard on 29/9 (LJD). Purity Hut track, W Ruahine Range, 3 seen on 29/1 (LJD). Tawa, 1 on 3/10 (JHS). Makara, 1 on 3/10 (JRM). Ward, first heard on 18/10 (TJT). Rotorua, Kaikoura, 1 seen on 8/11 and 9 heard; 1 on 23/12 (BE). Christchurch, first heard on 30/9 (DJO). Greymouth, 1 on 20/9 (CSL). Hokitika, first heard 18/10, last seen 31/3 (NJW). Christchurch, 1 gleaning caterpillars off kowhai on 26/3 (PMS).

LONG-TAILED CUCKOO *Eudynamis taitensis*

Kaihu SF, 1 on 30/10 (RMB, AMD). Mt Te Aroha, 1 on 12/2, on Tui Saddle (PJ). Otanewainuku, 1 on 2/10 calling just below summit, mobbed by Whiteheads; 1 calling in flight 19/12 (PCML). Tarawera Forest, 1 on 7/11 being mobbed by 4 Chaffinches (RMW). Urewera NP, Ogilvie's Bridge, seen and heard 18/12 (WMH); 5 in flight and very vocal, 28/1 (RMW). Te Matai SF, first call heard on 8/10; present until early Mar (GAT). L Okataina Scenic Reserve,

first call heard 10/10 (JGI). Motu Reserve, 4 on 13/11 in bush (JCH). Manganuku R, Waioeka Gorge, at least 7 on 2/1 (BRK). Totara Reserve, Pohangina Valley, 1 on 15/10 (CHL). Herepai Hut Track, NE Tararua Range, 1 on 17/2 (RAC). Khandallah Reserve, 2-3 calling Oct-Feb; no Whiteheads present (RNT). DSIR Research Station, Orongorongo Valley, 3 calling (one seen) 9/1; Whiteheads also seen in area (AHG, ING). Waikanae sand-dune gardens, 1 on 1/1 calling as it moved inland at midday (MAF). Charlestown, 1 on 17/12 calling at night (DJO). Punakaiki, 1 on nights 5/11 and 11/11, thought to be flying over area (DJO). Greymouth, young bird found in exhausted condition and released after 2 days' care and feeding (CSL). Lewis Pass tarn, heard calling on 4/2 (JHS, BHS).

#### MOREPORK *Ninox novaeseelandiae*

Motukaraka, 2 on 10/2 in mangroves (RMB, AMD). Remuera, repeated calls during night, 26/4 (RBS). Hamilton, 1 on 12/4 diving at cat; 1 on 2/5, 4/5 and 7/5 in suburban garden; pellets were weta remains and bird bone (ASR). Otawainuku, 1 on 23/4 being scolded by Blackbird, Fantail, Silvereye, Bellbird and Grey Warbler (PCML). Papamoa Beach, 1 on 29/5 and 30/5 in garden for first time (PCML). Round Bush, Foxton, 1 on 3/1 (JLM, MM).

#### LITTLE OWL *Athene noctua*

Tuamarina, 1 on 18/5 flying at 1430 hours (KVT). Hodder, Awatere, 1 on 23/4 heard at dawn (GIR).

#### NEW ZEALAND KINGFISHER *Halcyon sancta vagans*

Matahui Point, large numbers use power line crossing Tauranga H to Matakana I as roost and vantage point during autumn and winter to feed on mud crabs — at times as many as 50 (BC). Ohope SP, 1 on 1/1 hitting skink on stone (RMW). Hawkes Bay, widespread and readily seen (KVT). Wanganui R, at Wanganui, c.20 on 1/6/80 (OCT). Benmore, 1 in Nov 1981 found dead with mouse in throat (TJT). Ward, 1 on 3/6 with Redpoll in bill, which was later released but died (TJT). Inchbonnie, 4 on 21/2 (PJF). Invercargill coastal area, last sighted 14/10, first sighted 24/1 (MLB). Cascade Cove, Dusky Sound, 1 on 17/5 (KM).

#### KOOKABURRA *Dacelo gigas*

Helensville, small numbers in area, Aug (CE). Little Barrier I, 1 on 21/11 (KRB).

#### BROAD-BILLED ROLLER *Eurystomus orientalis*

Westhaven Inlet, 1 on 8/3 (JMH). Blenheim, 1 on 31/3 shot in vineyard (WFC).

#### RIFLEMAN *Acanthisitta chloris*

Little Barrier I, party 18/1 in kanuka forest above Pied Shag colony (RL). Party at 1400 feet on Summit Track 19/1 (PCML). Species more common than on previous visit made 11/74 (RL, PCML). Pirongia, present on S side of mountain on 14/5 (BJZ). Pureora Forest, pair on 25/9, near Bismark Road (BHS). L Rotorua Scenic Reserve (N of lake), 2 on 6/2 seen in rimu/tawa/kohekohe forest (GAT). Makatiti Dome, near L Tarawera, several pairs seen

on 26/4 (MCS). Mohi Bush, Maraetotara, c.15 on 17/4 (PWT, MT). Gibson, Clarence, 3 on 11/12 (GIR). Rotorua, Kaikoura, 4 on 20/9, 4 on 8/11 (BE). Lewis Pass tarn, seen and very quiet, on 4/2 (JHS, BHS). Little Akaloa, Banks Pen, 2 on 5/9 (PL). Gunns Bush, Waimate, numerous on 12/2 (JHS, BHS).

**ROCK WREN** *Xenicus gilviventris*

Moss Pass, Nelson Lakes, 3 on 24/4 (DJB). Mt Burnett area, Dusky Sound, pair in scrub at 988 m, patches of snow 10 cm deep, on 23/5 (KM).

**SKYLARK** *Alauda arvensis*

Waiheke I, plentiful on hills at Orapiu (BS). Muriwai Lagoon, Gisborne, 1 on 15/11 on ground giving repeated quiet chirrup, ending in convincing mimicry of Banded Dotterel *pink* (BRK). Hawkes Bay, common (KVT). Waikanae est, 1 on 12/9 at surf's edge feeding like wader (AHG, ING). Hodder, Awatere, 6 on 4/9 (GIR).

**AUSTRALIAN TREE MARTIN** *Hylochelidon nigricans*

Nelson Haven, 1 on 23/11 (JMH).

**WELCOME SWALLOW** *Hirundo tahitica neoxena*

Waihi Beach, c.30 on 26/5 feeding along coastal cliffs and dunes (GAT). Sulphur Bay, L Rotorua, flock started gathering early May; 55+ on 6/5, 700 on 18/6 (GAT). Hatepe, Taupo, constantly seen along shore line (WAW). L Rotowhero, near Rainbow Mountain, c.150 on 19/6 (GAT). Muriwai, Gisborne, increasing numbers with successful breeding noted 1982-83 (PGF). Cape Egmont, flock of at least 50 on 5/6 (DGM). Westshore, 86 on 26/2 (census) (KVT). L Poukawa, c.100 on 3/4 (KVT). Hutt R, Kennedy-Good Bridge, 30+ on 18/5 (AHG), c.100 late Jun (JAG). Buller R, nesting 9/10 (P. Jenkins). Avon, Waihopai, 2 adult and 4 young sunbathing on dirt track on 11/1 (P. Jenkins). Paynes Gully, Kumara, 12+ on 1/8 (CSL). Turiwhate, 15 on 12/3 (CSL). Hokitika, irregular after April — 2 on 31/5 and 1 on 2/6 (NJW). Rangitata R, 8 on 23/5 (PC). Inchelutha, 18 on 29/5 (PC). Awarua Bay Road, in vicinity of Jan 1982 nest site, 1 on 12 of 15 visits between 17/8 and 18/2. Not seen on 4 visits after 18/2. Nearest known birds 50 km away at Round Hill (MLB). Te Anau, 11 sightings of 1-8 birds 22/5-30/6; Mararoa Dam and Mararoa R mouth, 33 feeding over water on 29/5 (KM, JVM).

**NEW ZEALAND PIPIT** *Anthus novaeseelandiae*

Piha, 2 on 18/10 running down to kelp from sand dunes (BS). Waiheke I, 4 on 29/1 at first light; often seen along hill tops (BS). Otamarakau, Waitahanui R, 1 on 1/8 (PCML). Mohakatino est, 1 on 6/6 (R. Eliason). Mimi est, 1 on 24/7 (DGM). Te Popo, near Stratford, often observed during summer (JM). Clifton, 3 on 31/3 on beach (KVT). Western Ruahine Range, 6 in subalpine area above Purity Hut on 21/8 (LJD). Manawatu R est, 1 on 13/3 (JLM, MM). Upper Hodder, Awatere, 4 on 5/9 (GIR). Trail Stream, 6 on 6/9 feeding (GIR). Hokitika, winter visitor, first seen first week of Jun (NJW). Park Pass, Rockburn, 6 on 27/12 at 3950 feet (PC). Matukituki R, good winter flocks of a dozen or so along margins on 23/6 (PC).



**DUNNOCK** *Prunella modularis*

Opuawhanga, 1 on 7/6 feeding on earthworms and insects (JFS). Muriwai, 2 females on 15/10 singing in scrub on slopes above the gannetry (RBS). Te Matai SF, first song heard 31/3 (GAT). Gisborne suburbs, thrush-like tugging of worms from lawn and eaten with gusto 20/7; 2 very vocal 4/11; mating 5/11 (JCH). Herepai Hut Track, NE Tararua Range, 1 on 17/2 in bush (RAC). Ward, 1 heard on 10/9 and 11/9 at 1330 hours giving short song (TJT). Kaniere SF, most common bird; c.16 in year-old radiata plantation 24/5 (NJW).

**FERNBIRD** *Bowdleria punctata*

Tapotupotu, 4 on 25/4 (ASR, JMR). Paua, 2 on 20/10 (BHS, JHS). Hokianga Harbour, 400 4/9 to 10/3, full harbour survey (RMB, AMD). Pollen I, 12-15 pairs in spring 1982 (DR). Meremere/Island Block Road, on 16/4, in good numbers in swamp (BB, JD *et al.*). L Waahi, 1 on 20/3 (PJA). Mangatepopo R, Tongariro NP, pair on 13/2 (TPB, RO). Matakana I, wetlands at N end, present in scrub around ponds 25/9 (PCML). Athenree, present in harbour-edge vegetation 2/10 (PCML). Tuapiro R est, Tauranga H, 3 seen on 17/10, many heard and nesting behaviour noted (BCh, PCML). Tarawera R mouth, Matata, 2 on 31/7 (WMH). Awaiti wetlands, seen and heard 29/12 (BHS). Kaingaroa SF, Rangitaiki R bank, 2 on 30/7 (WMH). Waipapa Ecological Area, Pureora SF, several in swamps 7/8 (JRL). Egmont NP, 12 near Lake Dive on 30/10 (R. Zuur); several near Holly Hut on 2/2 (AAB). Waiwakaiho-Mangaoraka Tracks, N Egmont, 9 on 20/2 (RWW). Kaitake Ranges, 11 on 30/1 (RWW). Blowhard, c.9 on 4/12 (DA, MR, AR, BMT). Top House, Nelson, seen and heard in Jan (RAF). Paynes Gulley, Kumara, on 1/8, 1 calling loud and clear in cutover scrub (CSL). Awatuna, Westland, 1 on 31/7 flew across road from flax to scrub (CSL). Turiwhate, Westland, 5 on 27/3 (CSL). Martins Bay, several locality records on 28-29/11 (KM, JVM). Big L, Te Anau Downs, 3 on 14/4 (KM). Waituna Lagoon, 1 on 22/2 (WJC).

**BROWN CREEPER** *Finschia novaeseelandiae*

Ramshead Saddle, Omapu, 50+ on 4/4 (CMM). Ward, seen and heard on most days in Aug and first half Sep (TJT). Rotorua, Kaikoura, 17 on 20/9 (BE). Mt Fyffe, groups of 4 and 5 from 500 m to 900 m in snow on 26/8 (BE). Upper Leader Valley, 6 on 1/1 seen in kanuka (LJD, SEG). Gunns Bush, Waimate, several flocks of 7-8 moving through canopy and coming lower, even to ground to feed (JHS, BHS). Entry I, Breaksea Sound, 12 on 5/2 (WJC).

**WHITEHEAD** *Mohoua albigilla*

Tokoroa E, common on 16-17/4 in pine forest and in mixed podocarps (JCD). L Whakamaru, 2-3 on 26/3 in pine forest (BHS). Pukeora Forest, 15+ and 8+ on 6/6, moving through 30 m rimu canopy (BHS, JHS). Rangitoto Ranges, 10 seen or heard on 2/10 in Cowan Block (JHS, BHS). Otanewainuku, 4 on top ridge 21/8 (BHS); group on N-side track 2/10 (PCML); 3 on 2/10 mobbing Long-tailed Cuckoo; 2 on E-face track feeding high in tawa (PCML). Kaingaroa SF, Ngapuketurua, 5 on 22/5/82, 18 on 11/7; 20+ on 28/11 (WMH). Hatepe, L Taupo, maintaining numbers in kanuka

bush and scrub 1-14/1 (WAW). Tauranga-Taupo R mouth, 12/1, family group in large willow (WAW). Waikaremoana, 3 on 16/10 on Ngamoko Track (JCH). Matawhero, 1 on 23/3, rare visitor (EJJ). Raupunga, 6 on 25/3 in small bush area (GAF). Ball's Clearing, c.13 on 12/9 (KVT); 20 on 27/11 (AHG, ING). Boundary Stream Reserve, HB, 3 on 12/12 (KVT).

#### YELLOWHEAD *M. ochrocephala*

Caples Valley, upper, several seen/heard in beech forests on 13/5 (PC). Hawden Valley, Arthurs Pass, 17 on 19/3 (CMM).

#### GREY WARBLER *Gerygone igata*

Unahi, Rangaunu, 2 on 10/12 in mangroves (RMB, AMD). Te Karae, 5 on 6/12 in mangroves (RMB, AMD). Gollins Stream, Wainuiomata, 21/6, fully feathered bird being fed by male (AJB).

#### FANTAIL *Rhipidura fuliginosa*

Waitiki Channel, 2 on 18/11 in mangroves (RMB, AMD). Kauaeranga Valley, 1 black on 29/5/82 (JB). L Whakamaru, 2 on 26/4, both black, in pine forest. Said to be common (JGI, BHS). Te Puia Springs, flock of 27 hawking over the lake, swallow-like, on 6/4 (JCH). Mohi Bush, Maraetotara, 7 on 17/4 (KVT). Horse-shoe L, 6 on 14/5 (KVT). Arthurton, Canterbury, black pair on 24/8 with nest 45 feet up in pine tree (MLB).

#### PIED TIT *Petroica macrocephala toitoi*

Waima SF, 10+ on 28/12 (RMB, AMD). Russell SF, 5 males on 15/11, Te Rangi Track; 4 males on 6/12, track to WTC Hut (JFS). Glenburvie SF, N reaches, 7 males on 28/4/81 on part of Herman's Track (JFS). Opuawhanga, 1982/83, 10 territories identified (JFS). Dome Valley, 1 on 15/3 and 17/4 heard and seen (BAB). Waitakere Range (Cascades Track), 1 on 19/2 (MG). Kirikiri Saddle, Kopu, 2 on 14/9 (JGH). Kauaeranga Valley, present on 26/9 (RMW *et al.*). Waharau RP, Kaiaua, 4 on 1/5 calling (BB *et al.*). Hamilton, 1 on 27/1, in garden near lake (MLDS). Tokoroa E, small number on 17/4 in mixed podocarp forest in Pukerimu ravine (JCD). Rangitoto Ranges, common in Cowan Block, 2/10 (BHS, JHS). L Whakamaru, 2-3 on 26/3, in pine forest (BHS). Matakana I, 1 male on 11/7 (PCML). Otanewainuku, 2 pairs on 30/10 showing nesting behaviour, and male carrying food (PCML). Waiioeka Gorge, Manahuku Stream, 17/10, saw hen leave nest containing eggs, another nest adjoined (RMW). Urewera NP, Ogilvies Bridge, 4 on 29/1 (RMW). Motu Reserve, 11 on 13/11 in bush (JCH). Rangiwhia Ski Club Hut Track, W Ruahine Range, 8 on 25/7 seen on bush walk (LJD). Totara Reserve, Pohangina Valley, 1 on 4/3 (CHL).

#### YELLOW-BREASTED TIT *P. macrocephala macrocephala*

Ramshead Saddle, Omaka, 4 on 4/4 (CMM). Rotorua, Kairakourua, 2 males on 30/5 (BE). Mt Robertson, 4+ on 17/4 (DJB). Lewis Pass tarn, seen 4/2 (JHS, BHS). Harris Bridge, near Turiwhare, Westland, 1 on 12/3 and 27/3 in roadside tree (CSL). Inchbonnie, 1 on 31/3 and 9/4; 1 on power wires on 23/4 (PJF). Taipo, Westland, 1 on 23/3 on manuka (PJF). Upper Leader Valley, 8 males

seen in kanuka on 31/12 (LJD, SEG). Gunns Bush, Waimata, numerous on 12/2 (JHS, BHS).

#### NORTH ISLAND ROBIN *P. australis longipes*

Tokoroa E, small number on 27/4 in mixed podocarp forest in Pukerimu ravine (JCD). L Whakamaru, 2 on 26/3 in pine forest (BHS). Rangitoto Ranges, 2 on 2/10 (JHS, BHS). Pureora N block, 1 on 6/6, heard across valley, responding to a squeak bottle (JHS, BHS). Pureora Forest, 2 on 15/6, near Bismark Road (ASR, PJ, MLDS, FN). Otanewainuku, female on 25/10 plucking fibres from ponga crown (PCML). Kaingaroa SF, Kiorenu, 2 on 22/5/82 (WMH). Urewera NP, Ogilvies Bridge, 5 on 27/12 (WMH), 2 on Te Waiti Track 30/1 (RMW). Rainbow Mountain, 1 on 15/9 in forested crater (BDC). Kaipo R, Kaimanawas, abundant in April (JGI). Manganuku R. Waioeka Gorge, 3 or 4 singing on 2/1 (BRK). Mangataniwha, pair on 2/10 (PWT, MT).

#### SOUTH ISLAND ROBIN *P. australis australis*

Ramshead Saddle, Omaka, 8 on 4/4 (CMM). Gibson, Clarence, 5 on 11/12 (GIR). Snowflake, Kowhai, 1 on 27/2 (GIR). Lewis Pass tarn, 1 on 4/2 heard (JHS, BHS). Andrews Stream, present on 5/2 (JHS, BHS). Upper Leader Valley, 1 seen at edge of kanuka on 5/1 (LJD, SEG).

#### STEWART ISLAND ROBIN *P. australis rakiura*

Freshwater Flats, 6 on 5/7 (CMM).

#### SONG THRUSH *Turdus philomelos*

Tapuwae, 3 on 9/11 in mangroves (RMB, AMD). Remuera, starting to sing on 13/4 (RBS). Tuapiro, Katikati, heard mimicking calls of Long-tailed Cuckoo and Spur-winged Plover, both rare in district, and Pukeko, which is common (BCh). Papamoa Beach, first loud territorial song heard 26/6 (PCML). Te Matai SF, first tentative song on 31/3 (GAT). Hastings, nest lined with filtered ends of cigarettes! (KVT). Haumona, nest with rim extending 12 mm, inside made of very fine grasses (KVT). Picton, 29 on 24/5 in wet grass (KVT, PCML).

#### BLACKBIRD *T. merula*

Tapuwae, 5 on 27/9 in mangroves (RMB, AMD). Orakei, 1 on 26/11 taking feijoa flowers and feeding to fledgling (MJT). Papamoa Beach, pair raised 5 chicks in my garden, Nov (PCML). Murupara, 1 male with two narrow white neck bands 28/7 (WMH). Gisborne suburbs, 1 on 12/11 catching and dunking worms repeatedly in honey set out at ground level for Silvereyes (JCH, MAW). Reefton, 1 albino on 27/5 (DJO). Paynes Gully, Kumara, very common in light bush and open areas on 1/8 (CSL).

#### SILVEREYE *Zosterops lateralis*

Motukaraka, 2 on 10/9 feeding on mangrove flowers (RMB, AMD). Tuapiro, Katikati, numerous nests on our property between late Oct and Jan, 1.5-3 m from ground, sometimes as close as 6 m to one another (BCh). L Okareka, still flocking on 27/9 (JGI). Hastings, 1 at syrup dish took 31 sips continuously on 20/8 (KVT). Wakamarina, Pelorus R, c.150 on 9/3 feeding on fivefinger berries

(GIR). Mill Creek Ridge, Kaikouras, several on 24/7 at 2975 feet in 16 cm of snow (BE). Lewis Pass tarn, seen on 4/2 (JHS, BHS). Charlestown, migration seen or heard; c.200 on 19/4; 30 on 20/4; flock very high 23/4 and 11/6 — N/NE direction; c.400 on 19/6 low down in valley E-W (DJO). Alexandra, after an exceptionally cool, windy, changeable spring and summer 1982/3, appeared in gardens in late Jan/early Feb about two months earlier than usual (PC). Mt Burnett area, Dusky Sound, flocks feeding in subalpine scrub on 19-25/5 (KM).

#### BELLBIRD *Anthornis melanura*

Army Bay, Whangaparaoa Pen, 1 on 20/1 heard calling from akeake (JRJ). Shakespeare Regional Reserve, 22 from Tiritiri I and Cuvier I released to establish breeding colony on Whangaparaoa Pen, Mar 1983 (JLC). Otanewainuku, plentiful 2/10 (PCML). Mayor I, 11/12, most common bird, fully fledged young still being fed by parents, a high pitched 'tweet tweet' call given to attract adults (PCML). Rotorua, Kaikoura, 15 on 20/9 (BE). Lewis Pass tarn, seen on 4/2 (JHS, BHS). Upper Leader Valley, 20+ seen/heard on 1/1 (LJD, SEG). Hanmer Springs, heard in exotic forest on 1/1 (DJB). Gunns Bush, Waimate, numerous on 12/2 (JHS, BHS). Shag I, Dusky Sound, 2 juv being fed by 2 adults 4/2 (WJC). Disappointment Cove, Resolution I, heard 2/2/83 (WJC).

#### TUI *Prosthemadera novaeseelandiae*

Tapuwae, 2 on 27/9 roosting and singing in the mangroves (RMB, AMD). Mayor I, far less common than Bellbirds; a few seen from W valley to SE Bay (PCML). Mohi Bush, Maraetotara. c.12 on 17/4 eating tawa berries (MTC, BMT).

#### YELLOWHAMMER *Emberiza citrinella*

Panguru, 2 on 24/11 in mangroves (RMB, AMD). Karaka, 4/2, nest with 2 eggs; 2 young on 13/2 (RBS). Purity Hut Track, W Ruahine Range, c.50 on 21/8 in clearing in cedar forest (LJD).

#### CIRL BUNTING *E. cirrus*

Waiherere Domain, Gisborne, 1 singing on 6/12 (BRK). Tuaheni Point, Gisborne, 1 singing on 10/12 (BRK). Nelson Haven, 8-12 during winter 1982; about 8 during Apr/Jun (JMH, GQ). Motueka, 2 on 25/2 (BE). Rough I, 1 on 9/4 (BE). Taylor Dam, Blenheim, 1 on 9/9 (BE). Elterwater, 2 on 19/5 (PCML). Ward, 2 hours before dark on 3/1 pair with 2 young (out of nest about 2 weeks); female present but male fed young 3 small dark grubs and about 5 seeds from barley grass; 9 on 11/9 in group (TJT). Cascade SF, South Westland, 1 on 18/6 (CFJO). Manuherikia R. Galloway, 1 male on 3/2 (PC).

#### CHAFFINCH *Fringilla coelebs*

Motuti, 4 on 23/11 in mangroves (RMB, AMD).

#### GREENFINCH *Carduelis chloris*

Tuapiro, Katikati, pair nested in same place in same tree on 10/11/82 as they did on 7/11/81; dates are first days hen seen carrying nesting material to site (BCh). Gisborne suburbs, mating first noticed on 5/7 (JCH). Hastings, 2 eating suet, bran and honey cake in 1982 winter (KVT). Purity Hut Track, W Ruahine Range,

4 on 21/8 in cedar forest (LJD). Vernon Lagoons, c.10 on 9/4 (DJB). Cobden Lagoon area, 1 calling on 9/4 (CSL). Inchbonnie, 2 on 6/3 (PJF).

#### GOLDFINCH *C. carduelis*

Motukauri, 20+ on 22/11 in mangroves (RMB, AMD). Te Karaka, Hokianga, pair nesting in mangroves 2/12 (RMB, AMD). Remuera, still feeding on liquidamber seeds on 13/7 (RBS). Tuapiro, Katikati, c.12 pairs nested on our property, first found on 27/10, young ready to leave last nest 19/3 (BC). Thornton Wildlife Management Reserve, charm of c.300 feeding on weed seeds 16/6 (RMW). Waihora, W Taupo, 60+ on 26/7 feeding in forest clearing (JGI). Gisborne suburbs, first flocking (42 birds) noted 27/7. Increased to 178 by 28/9 (JCH, MAW). Blenheim, 40 in Jun (MM). Ward, 150+ in May in fathen (TJT). Maui Street, Kaikoura, on 30/12 nest with 4 chicks and 1 egg; 2 chicks on 1/1; 1 on 12/1 and none on 14/1 (BE). Turiwhate, c.25-30 on 27/3 feeding in swamp (CSL). Central Otago, 1982-83 evidently good season — many prominent flocks in many areas, after previous decline (PC).

#### REDPOLL *C. flammea*

Access Bay, FoT, present on 4/5 (TGL, RBS). Matakana, N end, pair with subadult 15/5 (PCML). Purity Hut Track, W Ruahine Range, c.20 on 21/8 in cedar forest clearing (LJD). Kowhai R, c.50 in 30/8 excited by squeak bottle (BE). Turiwhate, c.10 on 27/3 (CSL).

#### ZEBRA FINCH *Poephila guttata*

Wellington Zoological Gardens, 7 on 4/8 flying free; not kept at gardens for at least 6 years (DG).

#### STARLING *Sturnus vulgaris*

Remuera, young on wing among wild cherries 11/11 (RBS). Outer Gilbert I, Breaksea Sound, 2 on 3/2 (WJC).

#### INDIAN MYNA *Acridotheres tristis*

Hokere, 10+ on 2/3 in mangroves (RMB, AMD).

#### NORTH ISLAND KOKAKO *Callaeas cinerea wilsoni*

Omahuta SF, 1 on 7/2 heard calling and in flight but not seen (D. Bartram per PB). Little Barrier I, 24 released before May 1983 (MJT); Tirikakawa Stream mouth, 22/1, mew cell heard 8 times (BB). Kohukohunui Track, Hunua Ranges, 1 reported on 29/3 at 1200 m mark (RPS). Hapuakohe Track, near Kaihere, 1 on 15/8 (BB *et al.*). Kawhia SE, 3 on 10/4 in tawa forest near Dome (ASR). Pureora Forest, 3 in early April, off Ringinui Road, in cutover bush (RWD); 1 on 15/6 in podocarp forest near Bismark Road; 1 pair and 2 juv on 30/6 (FN, BJZ). Otanewainuku, Loop Track, 25/10, pair observed feeding on kohekohe grove about 1330 hours, appeared to be hunting insects just below canopy; were silent but one frequently flicked its wings. Pair with fully fledged bird feeding on supplejack berries 3/3. Same group seen 23/4. High on N side, pair feeding on tawa berries with NZ Pigeons 23/4 (PCML). Horohoro Forest, Mamaku, pair seen, others heard 16/4 (PCML). Moki SF, Taranaki, up to 6 heard and 3 seen late December

1982; estimated that c.20 pairs present in about 400 acres of dense rimu-predominant forest (J. Clark).

#### WHITE-BACKED MAGPIE *Gymnorhina tibicen hypoleuca*

Hokianga S, scattered but never more than 3 seen together (DB). Rotorua City, first birds in "at least 30 years" heard singing regularly in residential area 21/7 (GAT). Arahahi Lagoon, Whirinaki SF, 8 on 30/4 (JGI). Rotoiti, Kaikoura, 1 on 20/9 (BE). Alexandra Basin, mid-winter census on 30/7, 205; first arrived in district 20 years ago (PC). Southland, continuing to increase slowly over whole of district (RRS).

#### ROOK *Corvus frugilegus*

Helensville, 4 sighted during winter 1982 (CE). Miranda, 8 on 2/4 (BB), 55 on 23/5 (SD). Tokoroa/Lichfield, 2 on 18/12 (JCD). Tihiroa (N of Otorohanga), 1 on 11/7, sitting on fence with White-backed Magpies (RWD). Gisborne City, 8 on 21/7 cawing in flight (JCH, MAW). Tolaga Bay, 7 on 12/5 paddock feeding with 3 Spur-winged Plover (JCH). Wairoa, 3 on 28/12 among driftwood on beach; 2 over town on 19/6 (GAF). L Poukawa, c.30 on 6/7 (KVT). Mangatahi, 80+ on 21/12 and following 2 evenings at dusk, flew across Ngaruroro R to roosting place (PWT, MT). Makuri Valley, Pahiatua, c.50 with nests on top of pine shelter belt on 10/10 (LJD, RAC, SEC). Kaikoura, 13 and 3 nests in gumtrees on 16/9; 6 and c.5 nests on 30/10; 16+ on 5/11 (BE). Lumsden, 1 on 8/4 (S. A. Sutherland per RRS).



## SHORT NOTES

### BELLBIRDS IN AUCKLAND AND NORTHLAND

*History:* Early reports (e.g. Buller 1873) suggest that Bellbirds (*Anthornis melanura*) were once abundant throughout New Zealand, including Northland and Auckland. In the early 1860s, numbers began to decline rapidly, starting in the north and progressing southwards. In North Auckland numbers diminished rapidly from 1862 (Buller 1888), whereas the low in Canterbury was not recorded until the early 1900s (Stead 1927). Subsequently, Bellbird numbers have increased in most regions with the notable exception of Auckland and Northland, where they are absent. Bellbirds have persisted, apparently without decline on the following northern offshore islands: Arid, Poor Knights, Hen & Chickens, Mokohinau, Little Barrier and Tiritiri Matangi. Until the 1950s Bellbirds were also known on Motuihe Island and the Cavalli Islands.

*Present status:* Sporadic reports of Bellbirds on the mainland in Auckland and North Auckland can be found in the literature (Turbott 1953; Classified Summarised Notes in *Notornis* Vol. 6, 7, 8, 9, 19, 20, 22, 23, 24, 26) but many of these are sightings of a few birds in places close to the above offshore islands (Fig. 1). The rare reports of Bellbirds within Auckland City or on the West Coast localities may have been misidentified song of Tui (*Prosthemadera novaeseelandiae*).

•• = THREE KINGS I.

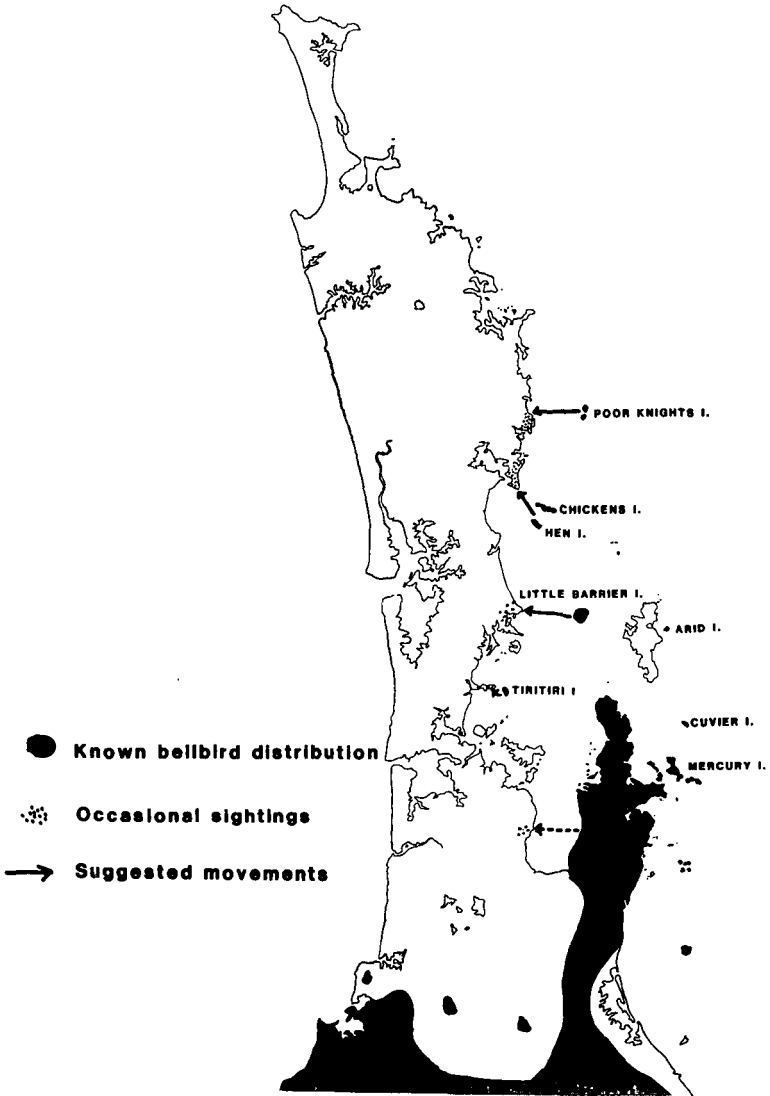


FIGURE 1

One exception to these sporadic reports appears to have been the establishment of Bellbirds in the Hunua Ranges near Moumoukai (C.S. Notes, *Notornis*). They were reported in 1942 and apparently increased until 1952, spreading to Clevedon by 1948. The population then declined rapidly and only occasional sightings of single birds now occur.

*Reasons for failure to re-establish — differential movement:* Given that Bellbirds died out in Northland, the only way they could re-establish naturally is by birds moving in from other areas. Bellbirds do move, as is shown by the above sightings, but it appears that there is differential movement by the sexes. There are many positive reports of males, but few females have been seen. Thus males appear to move much more often than females, and without an influx of good numbers of both, recolonisation is impossible.

Female Bellbirds are less conspicuous in some seasons and hence they may be missed by inexperienced observers. This may explain some but not all of the above records, but it does not explain the following results.

In the winter of 1982, we heard and saw many Bellbirds on the end of Whangaparaoa Peninsula opposite Tiritiri Island. As males and females sing sexually distinctive songs, all records could be assigned to one sex. Of 19 records only one was a female. Similarly, in late August 1982, Bellbirds moved into Waihi Beach, primarily to feed on *Pittosporum crassifolium* flowers. Bellbirds are not normally present in the town but do occur 10 km north of it. All the 14 "sight and sound" records were of males. Movements to mainland areas near Tutukaka (presumably from the Poor Knights Is) are also mainly by males (J. G. Buckleton, pers. comm.).

Since 1974 we have been studying a banded population of Bellbirds on Tiritiri Matangi Island. There, both males and females move to get food. At a single food source, access is determined by a linear social hierarchy with males dominating females and often excluding them from food. We have previously argued (Craig *et al.* 1981) that, as a result, males move more than females as the latter can recoup the costs of moving only if males are absent. Such a pattern seems to exist on Tiritiri with males making daily trips to concentrated food sources. Females do move but only infrequently, except when they do not have to compete with males. A recently established feeder on the island is used by many male but no female Bellbirds. This pattern also occurs at the Little Barrier honeyeater feeder.

Furthermore, playback of songs within one forest patch will attract both males and females, but only a male will visit other forest patches when his mate's song is played there.

Thus, there seems a clear pattern of greater movement by males, and it appears that most Bellbirds seen on the Auckland/North Auckland mainland are males moving from offshore islands or the Coromandel



TABLE 1 — Important nectar sources for Bellbirds on Tiritiri Matangi Island and the end of Whangaparaoa Peninsula

Species	Approximate Occurrence on	
	Tiritiri	Whangaparaoa
<u>Meterosideros excelsa</u>	c	c
" sp.(rata)	-	o
<u>Leptospermum</u> spp.	a	a
<u>Eucalyptus</u> sp.	-	f
<u>Sophora microphylla</u>	-	c
<u>Knightia excelsa</u>	o	c
<u>Phormium tenax</u>	a	c
<u>Cordyline australis</u>	c	a
<u>Dysoxylum spectabile</u>	c	f
<u>Vitex lucens</u>	o (2)	c
<u>Pseudopanax</u> spp.	o	f
<u>Elaeocarpus dentatus</u>	o (1)	o
<u>Pittosporum crassifolium</u>	o	c
<u>tennifolium</u>	-	c
<u>eugeniodes</u>	-	c
<u>Beilschmiedia taraire</u>	f	f
<u>Myoporum laetum</u>	f	c
<u>Parsonsia heterophylla</u>	f	f
Decreasing scale of abundance: a = abundant, c = common, f = frequent, o = occasional (n) = actual number of trees		

Peninsula. As females rarely move such distances, Bellbirds are unlikely to re-establish naturally.

*Re-establishment:* Planned release of Bellbirds seems to be the only way that breeding populations of this species can be established in Auckland and North Auckland. One attempt was made in 1931, when 15 birds were released in the Waitakeres. No regular monitoring or follow-up release was done and this attempt failed.

Releases should involve a minimum of 20 birds (10 of each sex) and should be into small areas of forest, where short-range dispersal will not reduce the density of birds and make pairing difficult. This may have occurred in the Waitakere release and at Moumoukai.

*Trial release area:* The end of Whangaparaoa Peninsula makes an ideal area for a trial release as it is already visited by Bellbirds. In Shakespear Regional Park and the adjacent Armed Services land, there is 30-40 ha of mature forest plus at least three times this in scrub. This forest has a far greater diversity of nectar sources than Tiritiri and the recent plantings by the Auckland Regional Authority has extended this diversity (Table 1). A release of 10 males and 12 females was made into this area in March 1983. All birds were colour banded and joined at least two unbanded males that had moved to the area the year before. Subsequent checks have shown that many birds are still alive and that some pairs seem localised in particular areas. Regular monitoring is planned to determine the success of this re-establishment and supplementary releases are planned.

*Effect of removal:* Will removal of birds from other areas deplete these populations? Close monitoring of one forest patch on Tiritiri Island has shown very little turnover of adult birds. Of the resident pairs, many of the birds present in 1977 were still present in 1980. Four of the more dominant males were still dominant in 1981 with the two most dominant males having been present since 1975. Thus there appears to be a slow turnover of adults and most of the 2-4 chicks raised per pair annually disappear. Removal of birds in February-March, when the number of juveniles is high, is therefore not likely to reduce spring densities.

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#### CHICK FEEDING AND ATTENDANCE IN THE WHITE TERN

Holyoak & Thibault (1976) suggested that the frequency of chick feeding in the White Tern (*Gygis alba*) required study because, whereas they observed feeding at all times of the day in French Polynesia, Dorward (1963) observed it only at dusk on Ascension. On 17 December 1979 at Norfolk Island I saw chicks 5-15 days old fed throughout the day.

Two of the chicks were on horizontal branches of Norfolk Island pines (*Araucaria heterophylla*) and one was on a horizontal section of the trunk of a white oak (*Lagunaria patersonia*). They were on branches of 8-25 cm diameter, 6-20 m above ground (19-33 m a.s.l.) and 5-15 m from the shore. Their feeding behaviour and their parents' associated behaviour were recorded from sunrise to 15 minutes after sunset.

Chick one received 12 feeding visits, lasting 1-109 min (average 20). As one to six fish were delivered on each of eight trips (average 3.1), the chick was fed an estimated 37 fish for the day. It was left alone for periods of 21-92 min (average 44). Observations on the second chick were continuous only until 1200 h, by which time it had been fed twice. One visit lasted 180 min, the longest of any observed and the period between visits was 7 min, the shortest of any observed. The third chick was visited nine times (possibly ten), providing 24-27 fish for the day. The feeding parent remained from one-half to 15 min and left the chick alone for periods of 10-20 min.

Chick behaviour during parent absence, apart from moving along the branch, was limited to one period of wing flapping and a rapid head shake in one chick and one period of gaping in chick three, during a period of exposure to direct sunlight.

Feeding behaviour was as follows. Parents sometimes circled before landing and sometimes flew straight in to the chick. Either way the chick would watch its parent approach and land, then move up to it with head lowered and bill upturned in a begging posture. The fish would be taken one at a time from their crosswise position in the parent's bill (see Fig. 1) and swallowed. Once, when a fish was dropped on to the branch, it was retrieved by the parent and fed to the chick. Judging from the number of fish on the ground below nests, fish dropped to the ground are seldom retrieved.

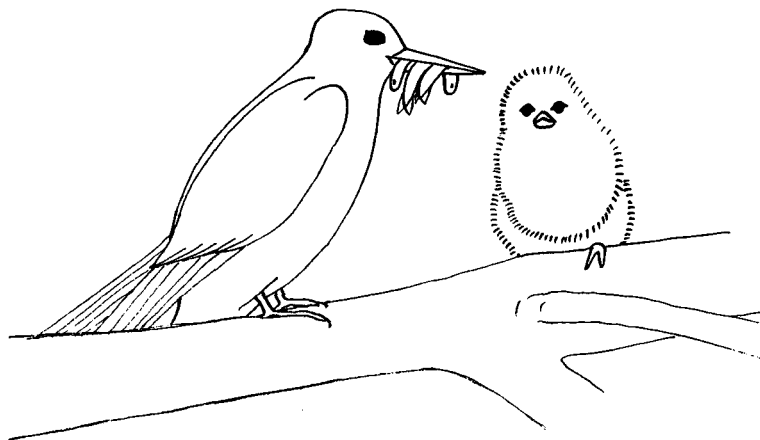


FIGURE 1

Calls made by an approaching parent were heard only twice, bringing an alert standing response with gaping bill from the chick. No calls were heard from the chicks either during feeding or when alone. The same was found on Ascension Island and was normal in French Polynesia. However, Holyoak & Thibault (1976) reported hearing a feeble but distinct cry attracting a chick's parent to its hunger. Thibault proposed that this lack of feeding calls and the presence of protective coloration in the chick for its first 3 weeks both serve against predator detection. There are no bird or mammal predators on many of the islands on which this bird breeds. However, on Norfolk, feral cats take numbers of older chicks and adults, leaving their wings over much of the island. In addition, the Australian Kestrel (*Falco cenchroides*), which became resident on Norfolk in 1978, has been seen to take chicks from the branches (Owen Evans, pers. comm.). The future will judge whether the chicks' camouflage through cryptic coloration, survival without a nest, and practice of not defaecating on its roost will be sufficiently adaptive to enable it to cope with these predators.

After feeding, begging and bill jabbing by the chick were common and seemed on several occasions to hasten the parents' departure out to sea. Once, a parent encouraged bill jabbing from its chick by holding its own bill in front of the chick before settling over it.

Adult preening varied. In the first pair, one parent did not preen and its mate preened only once. The preening ceased when the chick nudged up close causing the parent to sit over it. The second pair engaged in a moment's allopreening at sunrise and, although such behaviour may strengthen the pair bond, it was the only preening by this pair. The third pair, however, preened more often. The first sequence started with preening of the chest, followed by axillaries, secondaries, wing coverts, primaries, wing coverts, uropygium (oil gland), primaries, wing coverts, and uropygium and concluded with wing coverts. This sequence started at 0543 h and also concluded when the bird sat over the chick, at 0552 h. This parent or its mate started a second preening sequence at 1457 h and continued until 1524 h. It was similar to the former but began by a head shake and concluded by placing its bill behind its wing to sleep. However, the chick nudged under one side, causing the parent to move. The chick and parent repeated this for 2 min, before the parent obtained half a minute's "sleep." The chick again took the parent's attention, to the point of receiving a jab back. This allowed the parent to gain 1 minute's sleep with head under wing. This last sequence was repeated several times over another 7 min, before the parent flew out to sea. Further observations need to be made to determine whether chick nudging precedes brooding more often than it precedes departure on a fishing trip.

Another difference between these birds and those on Ascension relates to courtship flights. Dorward (1963) said that there seemed to be no courtship flights with fish at Ascension, although he quotes Ashmole as having seen courtship feeding on Christmas Island (Pacific).

On Norfolk the sight of pairs pursuing nuptial flights to heights of 400-500 m was common in December of 1978 and 1979.

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### THE AGE OF KERGUELEN PETRELS FOUND IN NEW ZEALAND

In 1981 occurred the greatest number of Kerguelen Petrels (*Pterodroma brevirostris*) so far recorded in one year in New Zealand (Reed 1981, Powlesland, in press). As usual, most were cast on to North Island west coast beaches in August-September. Reed (1981) examined 26 corpses and found that all but one would be considered adult, aged by the fused ends of the tibiae (unfused in young birds) but that only one male and no females had enlarged gonads. I examined six, of which five showed very uniform plumage with no moult, the other having a mixture of new (grey) and old (brownish) wing coverts, from which I concluded that only the last was more than 1 year old. Moult, other than of the quills, is a protracted process in this group of petrels and so, at the beginning of the breeding season, and notably in species with grey plumage (which browns with wear), birds over 1 year old rarely have that very uniform plumage typical of first-year birds.

The breeding biology of Kerguelen Petrels has been most studied on Possession and East Islands in the Crozet group (Mougin 1969, Despin *et al.* 1972). The breeding birds return for courtship and mating in late August - early September, often spending the daytime in burrows. Activity gradually diminishes towards the prelaying exodus in late September. Laying takes place about 10 October, within a period of days rather than weeks. Although the incubation period is of normal length (c.50 days) for a petrel of its size, chick-rearing takes only about 60 days, thereby resembling that of fulmars and prions more than of other petrels. Thus, chicks depart mainly at the end of January. The colonies are not then deserted, however, as adults (of uncertain status but presumed to be initially non-breeders and failed breeders) almost immediately reoccupy burrows in which no chicks have been reared. Visits to all burrows continue intermittently throughout winter, showing that adults are almost sedentary.

As most Kerguelen Petrels are found on New Zealand coasts when the sedentary breeders are occupying burrows over 8000 km to the west, obviously it is birds in their first few years of life that move eastwards during winter. This behaviour is, of course, not confined to Kerguelen Petrels: the winter to early spring occurrences of Salvin's Prions (*Pachyptila salvini*), Narrow-billed Prions (*P. belcheri*), Blue Petrels (*Halobaena caerulea*), Antarctic Fulmars (*Fulmarus glacialis*) and Antarctic Petrels (*Thalassoica antarctica*) are characterised by starving youthful birds with a majority in their first

year (Harper 1980, Veitch 1980). It seems that the fulmars and their close relatives, which feed predominantly or extensively on crustaceans during the breeding season, are capable of high breeding-success rates but that their populations are controlled by mortality, particularly affecting the young, in winter to early spring after food has become scarce. Species of petrel that feed at a higher level of the food chain, mainly on squid, which apparently have a relatively low calorific content (Croxall & Prince 1982), breed less successfully but find a more even supply of food throughout the year: their mortality is highest before fledging and within a few weeks after fledging, but thereafter it does not vary much with age.

It may be debated whether Kerguelen Petrels and the other species listed above, which drift eastwards to New Zealand in winter, do so voluntarily (i.e. by migration) or are blown this way. However, all these species are moving into an area (essentially the Tasman Sea) already well stocked with competitive species. Kerguelen Petrels encounter Grey-faced Petrels (*Pterodroma macroptera*), White-headed Petrels (*P. lessonii*), Cook's Petrels (*P. cookii*), and three species of *Procellaria* competing for squids and various species, but particularly prions and Cape Pigeons (*Daption capense*) competing for crustaceans. Thus, wind-drift of birds weakened by starvation seems the best explanation.

As Kerguelen Petrels hatch in late November or early December, they must be at least 8 months old when found in New Zealand in August-September. Fusion of the tibial ends probably occurs before then and so perhaps cannot be used to distinguish birds of the year at 8-9 months.

I examined part of the collection of Kerguelen Petrel skins in the National Museum of New Zealand. Of 11 skins, 3 aged "immature" on the labels and showing no moult would be first-year birds; 2 aged "sub-adult" on the labels but showing no moult would be first-year birds also; of 6 showing moult, 3 had been aged "adult", 1 "sub-adult", and 2 had not been aged. The skin collected earliest in the year, on 31 May 1959, was an adult just completing moult of its primaries, the outer two being markedly short. Thus, looking for presence or absence of moult in Kerguelen Petrels during the period (May-September) when they occur in New Zealand seems the most accurate way of distinguishing between birds of the year and older birds.

Kerguelen Petrels of breeding age probably rarely occur here. Breeding is likely to begin in birds older than four years, by analogy with my observations of age at first breeding in Grey-faced Petrels, and data of Guillotin & Jouventin 1980 on Snow Petrels (*Pagodroma nivea*), which are only slightly larger than Kerguelen Petrels. The sample of skins which I examined indicates that about half of previous specimens have been first-year birds, the others probably not much older. Judging by the small sample of six corpses I examined, in the big 1981 wreck more than 80% were in their first year.

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## A 'YELLOW-CROWNED' PARAKEET ON CHATHAM ISLAND

At 1330 h on 29 December 1982 I saw a 'yellow-crowned' parakeet at Sore-tooth Spur (near the Taiko Camp) on the south bank of the Tuku a tamatea River, Chatham Island. The bird, which was alone, was seen briefly as it flew towards me, the red forehead and yellow crown being very conspicuous. The bird disappeared from sight and was not seen again. It was seen through 10 x 40 binoculars in bright light conditions. Parakeets were not uncommon around the Taiko Camp in December 1982 and early January 1983, up to eight birds being seen at one time, but all others seen closely were Red-crowned Parakeets (*Cyanoramphus novaezelandiae chathamensis*).

From this brief view the bird appeared to be a typical Chatham Island Yellow-crowned or Forbes' Parakeet (*C. auriceps forbesi*). At the time of observation I was unaware of the range of characters exhibited by hybrids between this taxon and the Red-crowned Parakeet. Taylor (1975) noted that hybrid *C. n. chathamensis* x *C. a. forbesi* on Mangere Island vary considerably, and of eight specimens of aviary-bred *C. n. novaezelandiae* x *C. a. auriceps* in the Canterbury Museum, Christchurch, only one is an 'obvious' hybrid, showing an orange back to the crown and red ear patches (pers. obs.). Some Mangere Island hybrids are "Forbes'-like," but differ from Forbes' by having "faint yellowish-orange spots behind the eyes" (Taylor 1975). This feature was not looked for on the bird which I saw and so I cannot determine whether it was Forbes' or a hybrid.

This is the first record of a Forbes'/Forbes'-like Parakeet from Chatham Island. There are historical records of Forbes' Parakeet from Pitt, Mangere and Little Mangere Islands but not from Chatham Island (Travers & Travers 1873, Fleming 1939). More recently, Taylor (1975) noted Forbes' Parakeets and hybrids being restricted to Little Mangere and Mangere Islands.

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INCUBATION BEHAVIOUR OF THE RED-TAILED TROPICBIRD  
(*Phaethon rubricauda*) ON NORFOLK ISLAND

The four birds whose behaviour is described here were nesting at the base of Norfolk Island pines (*Araucaria heterophylla*) on ground sloping between 30° and 50° some 8-40 m from the sea. Two nests were on the seaward side and one on the landward side of their respective trees. The fourth was against the same tree as one of the seaward nesters but at 90° to and half a metre above it.

I took up an observation position on 17 December 1979 at 0445 hours (17 minutes before sunrise), from which I continuously watched these four birds until 1930 hours (15 minutes after sunset). From this position, where the birds were not disturbed by my presence, I noted three incubating postures. The most common was the *bill down* posture where, with wings folded close to the body, the head is pointed forward with bill lowered. The *bill up* posture was least common, similar but with the head pulled back into the body feathers and the bill pointing sharply upwards. Fleet (1974) found that Hawaiian birds adopted this position during rainfall, but no rain fell nor was any appreciable wind felt on this day. One bird was reacting to flies while in this position and eventually placed its head under its wing. The third position, in which the head is placed under the upper rear edge of the folded wing, I called the *head under wing* position. In the first two positions the eyes were sometimes open, sometimes closed, but in the last were completely shielded from view.

On other days when the birds were approached for banding and measuring, they adopted the *defence posture*, in which the tail is fanned, the wings are held away from the body and the open bill is held up with the loud raucous call sometimes given. These birds rarely gave the volume of threatening call and the aggressive lunging that I found in the Sugarloaf colony (Tarburton 1977), despite the fact that the Sugarloaf birds are rarely troubled by predators whereas Norfolk birds are attacked by cats, a large number of which roam the island. I found three tropicbirds that had been killed by cats, along with Wedge-tailed Shearwaters, White Terns, a Grey Noddy and a Black-winged Petrel that had suffered the same fate.

The above four postures are shown in Figure 1 and the time each bird spent in these is shown in Figure 2. The birds were not relieved of their incubatory duty on this day and the wide range in time spent awake may have been due to the varying time each bird had been on its incubatory shift. Bird three spent much time asleep and so may have been recently returned, and bird four, which was awake most of the day, could well have been nearing the end of its shift, which averages 6 days on Aldabra (Diamond 1975) and 8 days in Hawaii (Fleet 1974).

That bird three was the only one to preen at all (which it did for 25 minutes) may also indicate its more recent arrival. That the



other three birds did not preen may not be abnormal. Firstly, Elder (1954) and Thomson (1964) have shown that after experimental removal of the uropygium some species remain unaffected even though others exhibit deterioration of their feathers, beaks and leg scales and the development of rickets. Secondly, McKinney (1965) has shown in ducks that preening is not normal during incubation, though at other times they preen 2-17 times a day.

Between posture changeovers the bird would occasionally make a 180° turn on the nest, using the bill and wings as levers to do so. Once one bird was seen to turn the egg and then settle down as do birds that have a brood patch. The feet were behind the egg and so were not used for incubating, as they are in the Sulidae. Correct

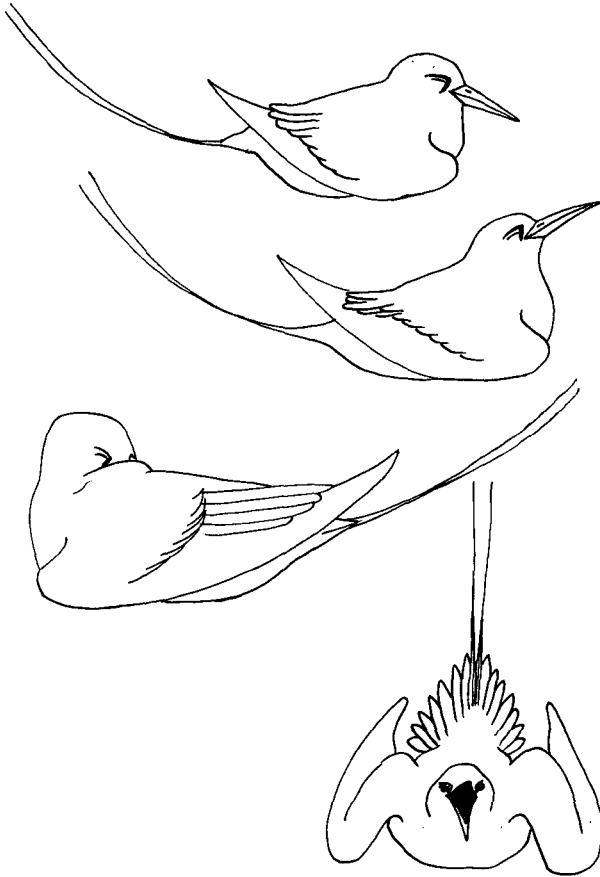


FIGURE 1

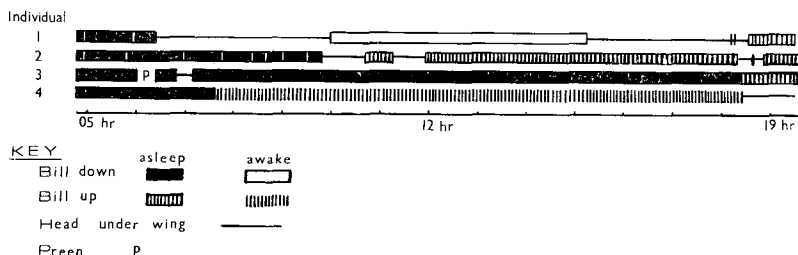


FIGURE 2 — Diurnal behaviour of incubating Red-tailed Tropicbirds

temperature seems to be maintained by placing the egg among the breast feathers with side-to-side and forward-to-back movements as the bird lowers itself over it.

As this species has a strong attachment to its nest site and its mate (Tarburton 1977), it is interesting to note the prebreeding behaviour at three nearby "nest sites." The sites were similar to those in this study except that one was at the base of a 3-metre cliff. In this behaviour, the birds prospecting for sites do aerial courtship and repeated landing circuits, all of which are easily observed and which I had used the previous season to estimate the more hidden portion of Norfolk Island's incubating birds (Tarburton 1979). At the first site a bird landed after four "trial landings" and spent the most of 7 h 16 min asleep in the bill-down position before departing at 1430 h. At the second site nine "trial landings" were made but no actual landing. A pair of birds made two successful landings and then many "trial landings" at the third site. Six days later I found an egg at only one of the sites.

The previous year, while estimating the population on inaccessible portions of the coast, I noted an apparent increase in birds involved in prebreeding behaviour between 1130 and 1530 h. To check this assumption, I made periodic counts of birds involved in this behaviour on the nearest 200-250 metres of coast. At 1025 h, there were two birds; at 1045 h, none; 1155 h, four; 1305 h, nine; 1330 h, 12; 1400 h, seven; 1410 h, five; 1510 h, none; and 1520 h, one. Thus the increase was real.

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### BREEDING OF THE WHITE-FACED HERON IN COASTAL MANAWATU

During the 1979-80 and 1980-81 breeding seasons I visited nests of White-faced Heron (*Ardea novaehollandiae novaehollandiae*) in coastal Manawatu between the Manawatu and Rangitikei Rivers (Lo 1982). The nests were either solitary or loosely aggregated in stands of trees, commonly *Pinus radiata*, and were usually built above 10 m and away from the trunks.

Eggs were laid from about late July to about mid-October, but mostly during September, although elsewhere laying may extend from June to December (Falla *et al.* 1979). The clutch size in five nests was 3, 3, 4, 4 and 5 eggs (the usual range, according to Falla *et al.* 1979). The measurements of 21 eggs from nine nests averaged  $45.5 \pm 0.50$  mm long by  $33.4 \pm 0.31$  mm wide, and the size range was 41.2-48.8 mm by 31.2-37.5 mm. These Manawatu eggs are both shorter and narrower on average than those from Western Australia 48 x 35 mm,  $n = 17$  (Serventy & Whittell 1967); south-eastern Australia 48-51 x 34.3-35.1 mm,  $n = ?$  (Hancock & Elliott 1978); Tasmania 48.5 x 34 mm, 47 x 33.5 mm,  $n = 2?$  (Oliver 1955); and the Chatham Islands 47.9 x 36.1 mm,  $n = 4$  (Wright 1979). The small samples, however, suggest that little significance can be attached to the size variation among these localities.

Incubation lasts approximately 25 days, and the young fledge at about 6 weeks (Falla *et al.* 1979). Of 13 nests for which the breeding outcome was known, eight were abandoned, although some pairs probably renested. Two nests raised one chick, two fledged two chicks, and one nest raised three young. I found dead chicks at all stages of development beneath nests, including one with a deformed bill (Lo 1981). Over the nestling period chicks receive progressively fewer feeds per day (Moon 1967), and I did not see young being fed once they had fledged and had begun foraging for themselves, although what appeared to be family groups did feed together. Immature birds had paler plumage and lacked long dorsal plume feathers, but contrary to Oliver (1955) and Stonehouse (1968), they also lacked the distinctive white face of adults. Louissou (1972) observed the same differences between juveniles and adults.

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## GRASS WHISTLING DUCK IN WAIKATO DELTA

On 8 April 1982, Peter Howard, the senior field officer of the Auckland Acclimatisation Society, and I observed a flock of nine Grass Whistling Ducks (*Dendrocygna eytoni*) at the Elbow landing on the north side of the lower Waikato River near Puni. These birds had been first seen on 6 April by workers at the adjacent sand extraction plant. Although we saw 9 birds, the workers reported that at other times there were up to 11 birds.

The birds, when first seen, were perched along the trunk of a willow tree inclined at a slight angle, 6-8 metres above the water. They were very wary and any approach closer than 20 metres would put them to flight. In flight they had a slow deliberate wing beat, on rounded wings, with legs trailing behind (not unlike a Pukeko). After flying around for several wide circuits, occasionally giving a shrill whistle, they landed back in the same tree, alighting on the trunk with little difficulty.

The following descriptive notes were taken:

*Head and neck:* Light greyish brown, although some birds had a brighter brownish tinge on the back of the head and neck.

*Wings:* Dark brown, as were the tail and rump, although when the birds were in flight a white bar was visible across the rump.

*Breast:* Chestnut with dark barring. Once again some birds were more brightly coloured than others.

*Abdomen:* White. Along the flanks were long white plumes which were most obvious when the birds were roosting.

*Legs and bill:* Pink.

Despite further visits by DAL and other South Auckland members the birds were not seen again. However, the sand plant workers reported that they were occasionally seen until the start of the duck shooting season on 1 May. The area where the birds were living is subject to intense hunting pressure and so they were probably dispersed. After some publicity in the press and through Acclimatisation Society bulletins, unconfirmed reports were received in early May from several areas — of five birds at the junction of the Waipa and Waikato rivers, two birds at Kinleith and one bird shot at Te Aroha. There have been no further reports since that time.

Because of the extreme wariness of the birds and the large number in the flock, they were most unlikely to have been escaped captive birds but were probably stragglers from Australia.

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