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

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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 "Teddybear" 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)

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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		_____		

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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.

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