

SHORT NOTES

Variation between Redpolls in four southern New Zealand localities

INTRODUCTION

A detailed study was made of the measurements and plumage of the Redpoll (*Carduelis flammea*) in Canterbury (Fennell *et. al* 1985). As an extension to this study, JFMF examined the Redpoll skins of the National and Canterbury Museums. These collections included very few specimens from the North Island but good samples from Southland and Campbell Island.

During a visit to the Snares Islands in January 1984, PMS captured a sample of Redpolls for study. These collections allowed us to make a preliminary comparison of variation in the plumage and measurements of birds in Canterbury, Southland, Campbell Island and the Snares Islands.

METHODS

The study material was as follows: 35 skins (20 male and 15 female) from Gorge Road, Southland (46° 29'S, 168° 42'E); 23 skins (12 male and 11 female) from Campbell Island (52° 32'S, 169° 10'E); 24 adults (10 males and 14 females) caught on the Snares Islands (48° 02'S, 166° 36'E); and larger samples caught in Canterbury (43° 26'S, 172° 09'E). The number of Canterbury birds varied for each character, the minimum sample being 46 birds.

Measurements taken were of wing length, tail length, bill length and depth and tarsus length.

Polls were recorded as having no colour or as being bronze, yellow, orange-red, light red, bright red, dark red or purple. The breast colour of males was assessed subjectively.

Colour variation was continuous and we made no attempt to distinguish small differences between individuals.

RESULTS

Table 1 gives the means and ranges of measurements. The measurements of museum skins may be affected by shrinkage, which must be allowed for if compared with the measurements of live birds.

The larger samples from Canterbury are probably representative of the Redpoll in New Zealand. Although the measurements from the three southernmost populations differ, they all fall within the Canterbury ranges.

Table 2 gives the frequency of poll colours in each sample.

Birds from the mainland (Canterbury and Southland) had the widest range of poll colouring. Male birds from both Canterbury and Southland had a similar frequency of colour types, but the females from Southland had a

TABLE 1 — Measurements of Redpolls from four New Zealand localities; range and means (in parentheses). All measurements are in millimetres

Character	Sex	Canterbury	N	Southland†	Snares Is ††	Campbell I †††
Wing length	Male	65-74(70)	198	66-74(70)	66-71(70)	68-71(69)
	Female	63-72(68)	229	63-70(67)	64-71(68)	64-69(67)
Tail length	Male	47-55(52)	46	50-55(53)	49-56(52)	50-56(53)
	Female	47-56(52)	52	49-54(52)	49-54(52)	48-53(51)
Bill length	Male	8-10(9.1)	66	8.1-9.5(8.9)	9-9.8(9.5)	8.5-9.2(8.9)
	Female	8-10.4(9.1)	63	8.0-9.5(8.6)	8.7-10.6(9.7)	8.5-9(8.7)
Bill depth	Male	5.5-7(6.2)	66	5.5-7(6.4)	5.9-6.4(6.2)	5.2-7(6.4)
	Female	5.1-7(6.0)	63	6.1-7(6.2)	4.8-6.2(5.9)	6-6.7(6.4)
Tarsus length	Male	13.5-16.5(14.8)	49	-	14.9-16.2(15)	13.2-15.5(14.5)
	Female	13.1-17.0(15)	53	-	13.1-16.2(15)	13.2-15(14.4)

Samples sizes † 20 male, 15 female
 †† 10 male, 14 female
 ††† 12 male, 11 female

TABLE 2 — Variation in poll colour (percentages)

Poll colour	Canterbury		Southland		Snares Is		Campbell I	
	Male	Female	Male	Female	Male	Female	Male	Female
No Colour	0	1	0	0	0	0	0	0
Yellow	0	1	0	13	0	0	0	18
Bronze	0	5	0	7	0	0	0	36
Orange-red	4	18	10	60	10	64	83	36
Light red	5	6	5	0	0	0	17	10
Bright red	67	40	70	13	90	36	0	0
Dark red	24	30	15	7	0	0	0	0
Purple	0	1	0	0	0	0	0	0
No. birds	244	299	20	15	10	14	12	11

higher proportion of yellow and orange-red polls. However, the sample is small and more work is needed to investigate this apparent difference.

Poll colour varied least on the Snares Islands with only two colour classes noted in either sex.

The majority (83%) of males from Campbell Island had orange-red polls and no birds had bright red polls, which was the most frequent colour in the other localities.

The male Redpolls from Campbell Island had orange or orange-pink breasts, and none of the birds in the museum samples had the pink or red breasts of the birds from other localities.

DISCUSSION

The island birds had less variation in colour than the mainland birds. The birds from Campbell Island were quite distinctive, particularly the males, by their orange breasts. However, it is interesting that Bailey & Sorensen (1962) made no reference to this colouring, even though Sorenson in 1943 had collected many of the museum skins we examined. On a visit to Campbell Island in 1984/85, G. Taylor (pers. comm) confirmed that birds with orange breasts were frequent, but red and pink breasted birds occurred also.

Banding recoveries of Redpolls have not been analysed, and so we do not know whether Redpolls regularly move long distances. We have assumed that the southern islands were originally colonised by a small number of birds and that continued movement between the islands and the mainland is infrequent. If this is true, these populations could have a narrow genetic base, which might explain the limited variation noted in some of the plumage colour characteristics.

Even if some birds do continue to move infrequently from the mainland to the islands, their genetic contribution to the large local population would be small, unless there were positive selection pressure for some newly introduced character. Alternatively the effects of environment or diet could influence the colour expression, but this requires further study.

ACKNOWLEDGEMENTS

We thank J. A. Bartle for entrusting us with the collection of skins held by the National Museum. G. Tunnicliffe allowed us to examine specimens from the Canterbury Museum. We thank Gillian Eller for her help with mist netting on the Snares Islands.

LITERATURE CITED

- BAILEY, A.M.; SORENSEN, J.M. 1962. Subantarctic Campbell Island. *Denver Mus. Nat. Hist.*
FENNELL, J.F.M.; SAGAR, P.M.; FENNELL, J.S. 1985. Variation within the Redpolls of Canterbury. *Notornis*:
this issue.

JOHN FENNELL, P.O. Box 12, Darfield, Canterbury; PAUL SAGAR, 38a Yardley Street, Christchurch 4