WILLOW WARBLERS AT DARVILL, PIETERMARITZBURG, NATAL

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As part of a long-term project initiated by Dr D. Johnson of the Natal Parks Board, I carried out a ringing programme at Darvill 29°35S, 30°26E, in the summer of 1982/1983. During the course of this project unusually large numbers of Willow Warblers *Phylloscopus trochilus*, were trapped. This report documents briefly the subspecific status and mensural data from these birds in order to allow comparison with previously published information, notably that of Hopcroft (1984) who worked in the Transvaal.

The study areas consisted of approximately 20 hectares of mixed bushland and reed beds surrounding the maturation ponds of the Darvill Sewage Works. The trees and shrubs consisted mainly of exotics, particularly Poplars *Populus canescens*, Bugweed *Solanum mauritianum*, *Eucalyptus saligna* and *Lantana* sp., with the occasional native *Acacia*. The understorey consisted of a mixture of rank grasses and exotic herbs such as Stinging Nettle *Urtica dioica* and Dock *Rumex obtusifolius*. Extensive reed beds of *Phragmites* and bullrushes *Typha* surrounded the maturation ponds. The proximity of large areas of shallow, eutrophic water and the prolific growth of vegetation (presumably resulting from the abundance of water and the leaching of organic nutrients from the ponds) may have been responsible for the abundance of insects with an aquatic larval stage as well as various Hymenoptera and Lepidoptera which lived among the vegetation. The insect densities in turn may have attracted the large numbers of insectivorous birds, notably European Swallows *Hirundo rustica* as well as the Willow Warblers.

Trapping was undertaken on seven days from December 1982 until mid-March 1983, usually at weekends, using approximately 10 x 4-shelf mistnets spread around the site. The total catch of all species was in excess of 1 000 individuals. The weight, wing length and moult stages of primaries and tail were recorded using standard techniques. Subspecies were identified from criteria in Williamson (1976). No attempt was made to sex Willow Warblers in the field.

A total of 197 Willow Warblers was ringed in a period of three-and-a-half months (4 December 1982 - 12 March 1983) which is a very high number compared with the 104 ringed by Hopcroft (1984) over a four-year study period in the Transvaal. Almost all (97%) were captured in February and March 1983. Only two birds were retrapped, both on the last day of the study. If, as published evidence suggests (Rowan 1964; Hopcroft 1984), there is fidelity to wintering grounds among Willow Warblers and they

remain in a particular area then, using a Lincoln Index*, the recaptures indicate a population size for the Darvill area of about 4 000 birds. However, the low recapture rate (1%) also suggests that movement of birds through the study area may have been taking place, as also postulated by Hopcroft (1984). Dr D. Johnson has advised (pers. comm.) that the site at which Willow Warblers were caught in 1983 has not since then been netted as frequently as some other sites. It has, nevertheless, been apparent that the numbers of Willow Warblers at Darvill have not approached 1983 levels in any subsequent year.

The percentage occurrence of the three subspecies in the Darvill samples and the mensural data are shown in Table 1. The percentage occurrence of subspecies reported by Clancey (1970) from skins from throughout southern Africa, and by Hopcroft (1984) from the Transvaal, are included in Table 1 for comparison. The proportions of *P. t. trochilus* and *P. t. acredula* in the Natal samples are almost an exact reverse of those in the Transvaal catches. *P. t. trochilus* is evidently more common in Natal. *P. t. yakutensis* formed a low proportion (3%) of Natal birds but was entirely absent from Transvaal samples. It is likely that this large, eastern Siberian subspecies reaches its southern limit in Natal. It is restricted to the eastern parts of southern Africa below the tropics (Clancey, 1970).

The mean wing lengths for the two commoner subspecies are somewhat lower than those quoted by Williamson (1976) but this result may have been influenced by sex ratios which in this study were unknown. The lower limit of wing length for *P. t. trochilus* at Darvill was 58 mm which is less than the lower limit of Williamson (1976), although it falls within his theoretical range. A total of 13 birds had wing lengths less than 60 mm.

Moulting data from this study generally agrees with that of Hopcroft (1984). Out of 125 birds examined in February 1983, the primaries of 19% were worn, 41% were new, and 40% were undergoing moult. The tails of 84% were worn and 16% were new. Data from the two retraps also showed that moult was occurring in February:

Retrap 1 : Captured 6 February 1983 with moulting primaries of which two scored 0, one scored 4 and the remainder scored 5 (cf. Ginn & Melville 1983). Recaptured 12 March 1983 after 34 days, with all new primaries.

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* The Lincoln Index (also called the Petersen Estimate) allows an estimate to be made of population size based on the prime assumption that the proportion of marked to unmarked individuals will remain constant in a population not subject to birth or immigration (cf. Begon 1979).

TABLE 1

PROPORTIONS OF THE THREE SUBSPECIES OF WILLOW WARBLERS *PHYLLOSCOPUS TROCHILUS* AT DARVILL COMPARED WITH OTHER DATA, TOGETHER WITH MENSURAL STATISTICS

	SUBSPECIES		
	P. t. trochilus	*P. t. acredula*	*P. t. yakutensis*
% OF SAMPLE			
This study	57,8	39,2	3,0
Clancey (1970)	31,2	54,7	14,1
Hopcroft (1984)	41,0	59,0	0
WING LENGTH (mm)			
Mean	62,2	66,4	71,8
S.D.	3,3	2,4	1,5
Range	58 - 70	63 - 71	69 - 73
MASS (g) pre-noon			
Mean	8,4	8,7	11,3
S.D.	1,2	1,1	2,4
Range	6,0 - 11,0	7,0 - 11,5	8,5 - 15,0

Retrap 2 : Captured 12 February 1983 with very worn primaries and tail but no moult scores recorded. Recaptured 12 March 1983 after 28 days, with all new primaries and tail.

Very little moult was recorded from birds caught in March although many feathers showed wear.

The unusually high numbers of Willow Warblers at Darvill can perhaps be ascribed to a successful breeding year and migration combined with a superabundance of suitable food. It is also possible, although unsupported by evidence, that the birds were using the extensive reed beds or other vegetation for roosting. Communal roosting among Willow Warblers has not, however, been recorded anywhere throughout their extensive range.

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