Warblers ringed in Swaziland between 1994 and 1999

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Although the distribution of birds in Swaziland is now well known thanks to Vincent Parker's Herculean efforts (Parker 1994), little else has been published on the country's avifauna.

Commencing in 1993, I have annually ringed small numbers of birds in Swaziland. Most of my effort during this period was concentrated on ringing birds in reed beds, especially at Matsapha Dam (26°31'S, 31°18'E) in the heart of the country's industrial centre. At first glance the Matsapha Dam site is not a very promising ringing location. The dam, situated in the middleveld, is controlled by the Swaziland Electricity Board for power generation and therefore its water level fluctuates dramatically. Furthermore, owing to its location, the dam receives industrial and domestic waste from Matsapha industrial site. Recent studies by the University of Swaziland's Chemistry Department have concluded that the quality of water in the dam is highly unfit for human consumption. Despite this, Matsapha Dam supports a higher diversity and abundance of waterbirds than any other single site in the country. Verging the dam is a wide fringe of reeds (*Phragmites*), bulrushes (*Typha*) and a variety of sedges (Cyperaceae) providing habitat for numerous avian species, including reed warblers.

Mistnets were set in the south-eastern part of Matsapha Dam. The number of nets used increased with time from a single 9 m net on the first visit to two 12 m, one 9 m and two 6 m nets on the last visit. On most visits, though, one 9 m and two 12 m nets were employed. This area was only visited regularly between October and March in 1994–1995 to 1997–1998. The area was not visited in August or September. A total of 27 visits was made, of which 20 were between October and March, inclusive.

Additional data are presented from a brief one-day visit to Maphiva Dam (26°11'S, 31°57'E) in November 1999. The latter site is situated near Simunye in the lowveld of Swaziland.

This paper covers all species in the family Sylviidae including the genera *Cisticola* and *Prinia*.

SPECIES AND LONGEVITY

I have ringed a total of 14 species of sylviid warblers in reed beds at Matsapha and Maphiva Dams (Table 1). Of these species, all but the Garden Warbler have been captured and ringed at Matsapha Dam. Only three species were ringed in any significant numbers (>20 individuals). These are the African Marsh Warbler, Cape Reed Warbler and the African Sedge Warbler. Compared with other ringing studies in similar habitat (such as Hanmer 1989a, b; Raijmakers & Raijmakers 1994, 1995), my sample sizes are very small. This is predominantly due to the fact that very few nets were available to me.

Despite the small samples, I did recapture (after a minimum of six months from the date of first capture) four African Marsh Warblers, and single individuals of Cape Reed Warbler and Levaillant's Cisticola. African Sedge Warblers were, surprisingly, never recaptured. Of the four African Marsh Warblers, one was recaptured after 2 years 11 months, one after 3 years 11 months and one after 4 years 1 month, the latter spanning almost the entire length of this study. None of the other recaptures exceeded 12 months between first and last capture. To my knowledge, the oldest published records of longevity in the African Marsh and Cape Reed Warblers are from Malawi and are 8.5 and exceeding 10.5 years respectively (Hanmer

Table 1. Numbers of sylviid warblers and cisticolas ringed in reed beds at Matsapha and Maphiva Dams. Also presented are the numbers recaptured a minimum of six months after date of first capture (at Matsapha Dam only).

Species	Matsapha	Maphiva	Recaptured
Garden Warbler *Sylvia borin*	0	1	–
Great Reed Warbler *Acrocephalus arundinaceus*	7	0	0
African Marsh Warbler *Acrocephalus baeticatus*	43	4	4 (9.3%)
European Marsh Warbler *Acrocephalus palustris*	2	0	0
European Sedge Warbler *Acrocephalus schoenobaenus*	9	0	0
Cape Reed Warbler *Acrocephalus gracilirostris*	32	0	1 (3.1%)
Yellow Warbler *Chloropeta natalensis*	2	0	0
African Sedge Warbler *Bradypterus baboecala*	24	2	0
Willow Warbler *Phylloscopus trochilus*	2	0	0
Bleating Bush Warbler *Camaroptera brachyura*	1	0	0
Fantailed Cisticola *Cisticola juncidis*	2	0	0
Redfaced Cisticola *Cisticola erythrops*	2	1	0
Levaillant's Cisticola *Cisticola tinniens*	7	0	1 (14.3%)
Tawnyflanked Prinia *Prinia subflava*	7	1	0

1987). There is also a longevity record of African Marsh Warbler of at least 8.3 years from Namibia (Komen 1991). The oldest African Marsh Warbler recorded from the 'southern Transvaal' (i.e. several sites between Secunda and Vanderbijlpark, now in Mpumalanga and Gauteng) was 35 months (Raijmakers & Raijmakers 1995). The recapture rate of 9.3% for the African Marsh Warbler is slightly higher than the 6.9% reported for the 'southern Transvaal' but falls within the range of 9–11% reported for other species of *Acrocephalus* warblers ringed in large numbers in Malawi (Hanmer 1989b). Interestingly, only 5 out of 227 (2.2%) European Sedge Warblers ringed in Malawi were recaptured suggesting that this species either does not display site fidelity to the same degree as other *Acrocephalus* warblers, or that it becomes 'trap-shy' and avoids areas in which it has been captured.

Some species captured in this study are not traditionally associated with reed beds including the Garden Warbler, European Marsh Warbler, Willow Warbler, Bleating Bush Warbler and all the cisticolas and the prinia. Judging by the small numbers of the first four species captured, these birds were incidental in the study area. The Redfaced Cisticola, Levaillant's Cisticola and Tawnyflanked Prinia were, however, commonly seen in rank grass at the edge of the reeds and probably made regular excursions into the reed beds.

SEASONALITY

The relative abundance (expressed as the rate of capture) of the species captured more than 5 times at Matsapha Dam are presented in Table 2. The two Palaearctic migrants (European Sedge and Great Reed Warblers) were most abundant in summer, and earliest dates of capture for these two species were 28 November and 1 December, respectively. Of the breeding species, the African Marsh and Cape Reed Warblers, and Tawnyflanked Prinia were captured throughout the year. Relative abundance of the two warblers was, however, higher in spring and summer than in autumn or winter. The African Sedge Warbler was apparently not resident in the Matsapha Dam reed bed as it exhibited a clear summer peak in relative abundance and was never captured in winter. The lack of captures of Levaillant's Cisticola in summer and winter may indicate seasonal utilisation of the reed bed, or (more probably) may be an artefact of small sample size.

The African Marsh Warbler is an intra-African migrant, with a few individuals known

Table 2. Seasonal fluctuations in capture rates (relative abundance) of sylviid warblers in reed beds at Matsapha Dam. The values presented below are the number of individuals captured divided by the number of trapping sessions conducted in that season multiplied by 10 (i.e. the value reflects the number of birds that would have been trapped if 10 trapping sessions had been conducted in that season). This standardises the values and allows comparison between seasons. Spring: September–November; Summer: December–February; Autumn: March–May; Winter: June–August.

	Spring	Summer	Autumn	Winter
Number of trapping sessions	7	7	10	3
Great Reed Warbler	0	7	1	0
African Marsh Warbler	24	21	9	7
European Sedge Warbler	1	7	4	0
Cape Reed Warbler	16	17	6	1
African Sedge Warbler	7	16	8	0
Levaillant's Cisticola	4	0	5	0
Tawnyflanked Prinia	4	1	1	3

to overwinter in the 'southern Transvaal' and other parts of southern Africa. The situation in Swaziland, however, appears to be different as up to one third of the spring–summer population is present in winter (Table 2). Hence, significant numbers of African Marsh Warblers may be overwintering at Matsapha Dam. The 'disappearance' of the African Sedge Warbler from the study area in winter is surprising as it is suspected to be a resident in most parts of its southern African range (Maclean 1993). This could be due to the birds leaving the Matsapha Dam area in winter or due to a seasonal shift in habitat selected.

MOULT

The following species were not moulting any feathers when captured: Garden Warbler, Great Reed Warbler, Bleating Bush Warbler and Fantailed Cisticola.

African Marsh Warbler

Moult of head and body feathers was recorded in 17 different adult birds between October and April without a clear peak. Wing moult was, however, only recorded three times, once in late March, once in early April and once in November. In southern Africa, wing moult in this species has been recorded in April (Komen 1988; Herremans 1992), but is most unlikely in November. The November bird could, therefore, be a case of mistaken identity. This bird, captured at Maphiva Dam, had a wing length of 57 mm, bill length of 13.0 mm and tarsal length of 22.0 mm. All primaries appeared new as did the first seven secondaries, while the remaining secondaries were either missing or old. The wing length of this bird is 3 mm shorter than the longest African Marsh Warbler measured in Swaziland. It is, however, likely that the third outermost (longest) primary was still growing, in which case the measured wing length is shorter than it would eventually be. This bird is most likely to have been either a European Marsh Warbler or European Reed Warbler *Acrocephalus scirpaceus* (the latter species representing a new record for Swaziland). Unfortunately, this bird was handled at a time when a large number of Redbilled Queleas *Quelea quelea* entered the nets creating general pandemonium, and was therefore not given the attention it deserved.

Cape Reed Warbler

Moult of head and body feathers was recorded in 13 adults and three juveniles between October and April, but mostly after November. Moult of wing feathers was

recorded three times in March, once in April and once in October. Hence, moult appears to commence after the breeding season from mid-March and continues into April and probably May. The bird moulting wing feathers in October was not mis-identified, but I do not have an explanation as to why it was moulting when it was.

African Sedge Warbler

Moult of head and body feathers was recorded in nine adults and one juvenile between late November and late April. Moult of wing feathers was recorded only twice, once in March and once in April.

Levaillant's Cisticola

Moult of head and body feathers was recorded in five adults between late November and late July. Moult of wing feathers was recorded once in March and once in April.

Tawnyflanked Prinia

Moult of head and body feathers was recorded in six adults between September and December, and in May. This species was not captured between January and April, but the single individual captured in July was not moulting any feathers. Moult of wing feathers was recorded in all the months in which head and body feathers were moulting. There appears, therefore, to be a large extent of overlap between breeding and moult in this species.

Other species

A single European Marsh Warbler was moulting head, body and wing feathers in March. None of the European Sedge Warblers were moulting wing feathers, although two were moulting head and body feathers in December. A single Yellow Warbler was moulting wing, head and body feathers in May. One Willow Warbler was moulting wing, head and body feathers in January, while another individual was moulting only head feathers in December. Finally, two Redfaced Cisticolas were moulting wing, head and body feathers in April and May.

MENSURAL DATA

It has been noted that the size of some warbler species varies with respect to geographical location, and that site specific measurements may therefore be important (Tree 1999). The following measurements are presented in this light (Table 3). Mensural data is only presented for species in which more than five individuals have been measured. Wing length was measured according to the longest chord method. Notes on sexing (for Swaziland) are provided where my data sheds light on this topic. To avoid geographical bias I have only reported on measurements of birds captured at the Matsapha Dam.

Great Reed Warbler

Wing length of this species exhibited a bimodal pattern. Presumably, individuals with shorter wing lengths represent females. Judging from my data, it would appear that this species can easily be sexed on wing length alone, but this is probably an artifact of the small sample size.

African Marsh Warbler

Both mass and wing length were unimodally distributed, suggesting that these two features cannot be used to sex this species.

European Sedge Warbler

Mass was unimodally distributed in this species, but wing length appeared to fall within two discrete size classes. Whether this is biologically significant, or an artifact of my small samples needs to be determined.

Cape Reed Warbler

Male Cape Reed Warblers certainly have a longer wing length than females, and are possibly heavier as well (although there is a large amount of overlap in the latter measurement).

Table 3. Mensural data for birds captured at the Matsapha Dam, Swaziland. Mass and wing-length (longest chord method) data is for species of which more than five individuals have been measured.

Species	Sex	n	Mass (g)	Range (g)
Great Reed Warbler	unsexed	7	28.9	25–32
African Marsh Warbler	unsexed	43	9.7	7–14
European Sedge Warbler	unsexed	9	10.9	10–12
Cape Reed Warbler	unsexed	16	17.3	12–20
	possible males	10	19.7	16–21
	possible females	6	14.8	13–18
African Sedge Warbler	unsexed	24	12.9	10–17
Levaillant's Cisticola	unsexed	7	9.4	9–11
Tawnyflanked Prinia	unsexed	7	8.3	7–9
Species	**Sex**	**n**	**Wing (mm)**	**Range (mm)**
Great Reed Warbler	possible males	2	103.5	103–104
	possible females	5	91.6	89–93
African Marsh Warbler	unsexed	43	56.6	54–60
European Sedge Warbler	possible males?	7	66.1	65–68
	possible females?	2	61.5	61–62
Cape Reed Warbler	unsexed	16	67.4	64–69
	possible males	10	72.5	65–77
	possible females	6	64.8	64–69
African Sedge Warbler	unsexed	24	56.9	54–61
Levaillant's Cisticola	possible males	4	54.5	53–57
	possible females	3	49.0	49–50
Tawnyflanked Prinia	unsexed	7	49.4	46–54

It would appear as if birds with wing lengths of over 70 mm are male, but some of the individuals with wing lengths of less than 70 mm also appeared to be males.

African Sedge Warbler

Mass was unimodally distributed, but there was a suggestion that wing length was bimodal with a peak at 56 mm and another one at 59 mm. There is the possibility that birds with wing lengths greater than 58.0 mm are male while those with wing lengths shorter than 57.0 mm are female, but more data is needed in support of this idea.

Levaillant's Cisticola

Sample sizes are small but suggest that these birds may be sexed on wing length.

Tawnyflanked Prinia

Again, small sample sizes preclude the clear differentiation of the sexes, but there appeared to be two wing length size classes, one between 46 mm and 48 mm (possibly females) and the other between 50 mm and 53 mm (possibly males).

CONCLUSION

The main purpose of this article is to provide information on longevity, moult and measurements of sylviid warblers captured in reed beds in Swaziland. My sample sizes are generally very small which hampers both analysis and interpretation of the data. Much of the data presented here is similar to data from other regional studies. Interesting findings include longevity data for the African Marsh

Warbler, and site specific moult and mensural data (some of which may aid in sexing), and seasonal fluctuations in relative abundance.

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