

Phakalane sewage lagoons: a summary of nearly five years of ringing effort

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From July 1996 to March 2001 I have, somewhat irregularly, ringed at various locations within Phakalane sewage lagoons. This site lies 15 km north of Gaborone in south-east Botswana and covers 100 ha, including 75 ha of water and reedbed *Typha capensis* and 25 ha of grassland, bunds, *Acacia* bush and woodland (see Tyler & Tyler 1997a, b). The lowest part of the site lies adjacent to the Ngotwane River with its narrow fringe of riparian woodland. In 1997 the results of one year's ringing was reported (Tyler & Tyler 1997a); this article updates that report and is complete to the end of March 2001.

The distribution of ringing effort over the years was very uneven, as shown by the number of visits in three-month periods (Fig. 1). A ringing visit was either in the early morning or late afternoon. When I stayed overnight at the site and therefore had both an evening and an early morning trapping session, this was counted as two visits (Fig. 1). Only one visit was made in each of the first

two three-month periods but increased effort was expended in the November 1996/January 1997 and February/April 1997 periods. Winter visits in May/July 1997, 1998 and 2000 were rather few, and throughout the winter of 1999 to the summer of early 2000 ringing almost ceased because pumps feeding sewage to the site had failed and the lagoons largely dried up. This resulted in the reeds drying out and vandals then setting fire to them. Despite this degradation, with the repair of the pumps in 2000 and water filling the lagoons, the reeds soon recovered.

A total of 3975 birds of 68 species was caught during the study period, many being common birds of the adjacent *Acacia* savanna and woodland (Table 1). Biometric data for some species are provided in Appendix 1, but data for 'reed' warblers *Acrocephalus* spp. and Little Rush Warbler *Bradypterus baboecala* species are reported elsewhere (Tyler *et al.* 1997; Tyler & Tyler 1997b; Tyler 2001; Tyler in prep.).

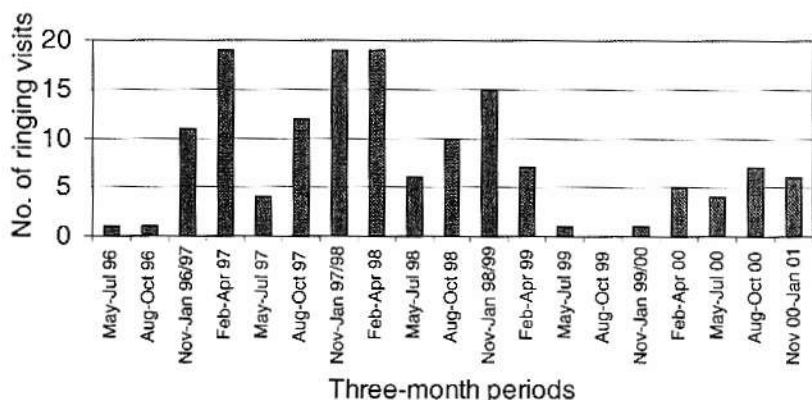


Fig. 1. Ringing effort at Phakalane.

The first year was characterised by large numbers of Palaearctic migrant warblers, notably European Sedge Warblers *Acrocephalus schoenobaenus*, Reed Warblers *A. scirpaceus* (Tyler & Tyler 1997b) and a rare vagrant, a Basra Reed Warbler *A. griseldis* (Tyler *et al.* 1997), during the January to March period of 1997. The high numbers were not repeated in subsequent seasons although European Sedge Warblers were trapped commonly in all four summers.

Penry (1994) described *A. schoenobaenus* as sparse to uncommon, and very localised in northern and eastern Botswana, with no obvious passage movement. In the late 1990s the species was, however, common at many sites in the north and east, and at Phakalane S.P. a marked passage was evident, especially in early April when thousands of birds were feeding around the edges of the lagoons. European Reed Warblers and Great Reed Warblers *A. arundinaceus* were present in all

Table 1. Numbers of each species caught at Phakalane S.P. between July 1996 and February 2001.

Species	No. ringed	Species	No. ringed
Black Crake	5	Willow Warbler	29
Threebanded Plover	2	Longbilled Crombec	6
Blacksmith Plover	2	Greybacked Camaroptera	5
Blackwinged Stilt	1	African Barred Warbler	1
Wood Sandpiper	6	Fantailed Cisticola	18
Ruff	1	Desert Cisticola	1
Cape Turtle Dove	2	Rattling Cisticola	95
Laughing Dove	1	Tawnyflanked Prinia	148
Emeraldspotted Wood Dove	1	Blackchested Prinia	31
Jacobin Cuckoo	1	Marico Flycatcher	12
Diederick Cuckoo	3	Fiscal Flycatcher	3
Burchell's Coucal	4	Cape Wagtail	1
Malachite Kingfisher	2	Redbacked Shrike	9
Brownhooded Kingfisher	1	Brownheaded Tchagra	1
Bluechecked Bee-Eater	2	Marico Sunbird	10
European Swallow	61	Whitebellied Sunbird	1
Lesser Striped Swallow	1	Scalyfeathered Finch	3
European Sand Martin	2	Masked Weaver	113
Whitethroated Swallow	1	Lesser Masked Weaver	7
Forktailed Drongo	2	Redbilled Quelea	280
Southern Black Tit	1	Red Bishop	363
Ashy Tit	1	Golden Bishop	41
Redeyed Bulbul	1	Whitewinged Widow	297
Stonechat	2	Melba Finch	17
Whitebrowed Robin	13	Jameson's Firefinch	1
Kalahari Robin	1	Redbilled Firefinch	34
Titbabbler	3	Orangebreasted Waxbill	239
Great Reed Warbler	96	Blue Waxbill	7
Basra Reed Warbler	1	Common Waxbill	308
European Reed Warbler	106	Blackchecked Waxbill	2
African Reed (Marsh) Warbler	863	Quaillfinch	10
European Marsh Warbler	8	Pintailed Whydah	9
Lesser Swamp (Cape Reed) Warbler	193	Rock Bunting	1
European Sedge Warbler	473		
Little Rush (African Sedge) Warbler	9	Total (68 species)	3975

Table 2. First and last dates of three species of Palaearctic warblers in four summers. In the summer of 1999/2000 no early visits were made because of the burnt reeds and dry lagoons. In 2000/2001 ringing only occurred at Phakalane S.P. up to November 2000 and again in late February and late March 2001. Brackets indicate fewer early ringing sessions.

	<i>A. scirpaceus</i>		<i>A. arundinaceus</i>		<i>A. schoenobaenus</i>	
	First date	Last date	First date	Last date	First date	Last date
1996/97	2 November	10 April	31 December	23 March	1 November	10 April
1997/98	7 November	19 March	21 November	5 March	29 October	19 April
1998/99	18 December	18 March	8 December	11 February	18 December	20 April
1999/2000	(28 January)	7 April	-	31 March	(28 January)	7 April
2000/2001	(23 March)	(24 March)	(22 February)	(24 March)	28 November	(24 March)

summers. However, these species were caught in lower numbers in successive seasons.

Arrival dates varied between years with European Sedge and Reed Warblers being early migrants in 1996/97 and 1997/98 (Table 2). During nine visits between 30 October and 8 December in 1998, no European Sedge or Reed Warblers were caught, although a Great Reed Warbler was caught on 8 December. The first Reed and Sedge Warblers were not caught until 18 December. In 1999/2000 there were few visits until early 2000 because of the degraded nature of the site. In 2000/2001 weekly visits were made in late October and throughout November but the first European Sedge Warbler was not caught until 28 November. No European Reed, Great Reed or Marsh Warblers were caught at Phakalane S.P. in October or November 2000, although Great Reed Warblers were caught in late February 2001 and two European Reed Warblers in late March 2001. At Francistown Sewage Ponds, some 430 km to the north of Phakalane, a European Sedge Warbler and three Great Reed Warblers were, however, caught on 12 November (N. Bousfield pers. comm.). Prior to 2000, Great Reed Warblers had not been caught at Francistown until early December.

Site fidelity by Palaearctic species to the non-breeding site at Phakalane between the first two summers was highest for European

Reed Warblers (11.3% return rate, $n = 53$), compared with Great Reed (see Tyler 2001) and European Sedge Warblers (3.65%, $n = 165$). Hanmer (1989) similarly found a 9.6% return for Great Reed, 18.2% for European Reed and only 2.2% for European Sedge Warblers in Malawi.

The partial migrant African Marsh Warbler *A. baeticatus* showed very high site fidelity. Some 44% of birds ringed in the first year were re-trapped a month or more after first capture and 29% of birds ringed in the first year were re-trapped more than six months later in a subsequent season (Tyler, in prep.). Even within the site, birds were very faithful to particular patches of reedbed, with very few recaptures between different ringing locations within the sewage lagoons. Some birds caught at Phakalane may be passage birds as I controlled a bird in September 1998 that had first been ringed in December 1995 at Bishop's Glen, Bloemfontein, some 494 km away, by A.J. Kotze (Oschadleus 1999). Hanmer (1989) noted a 19.6% return for Cinnamon Reed Warbler *A. cinnamomeus*, a close relative of *A. baeticatus* and considered by some as a subspecies.

Not surprisingly, Red Bishops *Euplectes orix*, Golden Bishops *E. afer* and Whitewinged Widows *E. albonotatus* were caught in relatively large numbers (see Table 1). They were mist-netted mainly at dusk when coming to roost, but all three species

Table 3. Numbers of Orangebreasted Waxbills caught in each month that were undergoing primary moult (score 1–49). One bird in late March also showed interrupted moult.

Moult score	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1–10							6	4	3	0	0	
11–20							9		6	7	3	
21–30							2			2	6	
31–40							0				4	
41–49			1				1					

bred locally. Many more bishops, widows and Redbilled Quelea *Quelea quelea* than noted in Table 1, were extracted from nets but were released without rings, especially if the catch came at dusk.

Common Waxbills *Estrilda astrild* and Orangebreasted Waxbills *Sporaeeginthus subflavus* were both common, the former more so. Moult in Common Waxbills occurred between February and May but Orangebreasted Waxbills moulted between July and December, with just one record of a bird in moult in March (Table 3). Most of the Pintailed Whydahs *Vidua macroura* that were ringed were caught as juveniles with flocks of Common Waxbills. The ten Quailfinch *Ortygospiza atricollis* were caught in the winter of 1998 when a small flock came to drink in a muddy trampled net ride through the reedmace.

Rather few birds were present in the reedmace during the winter months. Some African Reed Warblers did over-winter, along with Lesser Swamp Warblers *A. gracilirostris*, and winter visitors included Stonechat *Saxicola torquata* and Fiscal Flycatcher *Sigelus silens*. One Stonechat was re-trapped in a subsequent winter.

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Appendix 1

Wing and weight measurements of thirteen species caught at Phakalane S.P. between July 1996 and November 2000.

Species	Wing				Weight			
	No.	Mean	Range	SD	No.	Mean	Range	SD
Little Bittern	3	138	136–141	2.7	3	108	106–109	1.5
Black Crane	5	106	94–116	8.1	4	84.9	75.5–92	6.9
Burchell's Coucal	4	165	158–175	7.2	4	163.9	142–181	16.2
Bluethroated Bee Eater	2	146	142–150	5.7	2	49.9	48.8–51	1.6
Tawnyflanked Prinia	92	50.6	46–55	2.1	90	9.1	7.5–12	0.9
Fantailed Cisticola	18	51.1	46–58	3.1	16	9	7.8–10.5	0.8
Common Waxbill	272	50.7	47–55	1.4	227	8.65	6.9–12	0.8
Orangebreasted Waxbill	199	46.9	44–50	1.0	171	7.7	5.8–10.5	0.8
Quailfinch	10	55.9	55–57	0.8	10	11.4	10.5–12.7	0.8
Pintailed Whydah	9	67.2	60–72	4.2	8	13.9	11.5–15.5	1.3
Whitewinged Widow	262	69.6	61–81	4.5	260	19.6	14.5–26.6	2.4
Golden Bishop	27	64.9	60–71	2.5	27	15.3	13.6–20.6	1.5
Red Bishop	51	73.5	64–81	4.2	49	23.5	17.3–31.5	3.2

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