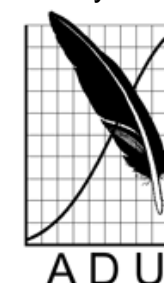


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A COMPARATIVE ANALYSIS OF SABAP2 DATA FOR THE FREE STATE NATIONAL BOTANICAL GARDENS AND THE VALLEY OF SEVEN DAMS CONSERVANCY, BLOEMFONTEIN

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The Free State National Botanical Gardens (hereafter referred to as FSNBG) and the Valley of Seven Dams Conservancy (V7D) (on the northern outskirts of Pentagonpark, Helicon Heights and Hillsboro suburbs of Bloemfontein) fall within the borders of pentad 2900_2610 for the purposes of the second Southern African Bird Atlas Project (SABAP2). As part of the South African National Biodiversity Institute's (SANBI) (which manages the FSNBG) programme to regularly update the lists of fauna in the National Botanical Gardens it manages, I decided to do monthly bird surveys at FSNBG, the V7D and adjoining areas of the pentad to collect data for SABAP2 (Fig 1). In doing so, I also assist SANBI with updating the FSNBG bird list. The aim of this paper is not to do a comparative study between the SABAP1 and SABAP2 data for the 2926AA Quarter Degree Square (QDS; which includes 2900_2610), but rather a comparison of the birds of the FSNBG and V7D areas, including historical records obtained at the FSNBG before SABAP2, and data from the Birds in Reserves Project (BIRP) collected during the ca. 20 years between the SABAP1 and SABAP2 atlas projects.

Kok (1996) carried out surveys of the FSNBG from November 1994 – July 1996 and listed 122 species for the gardens. During a similar

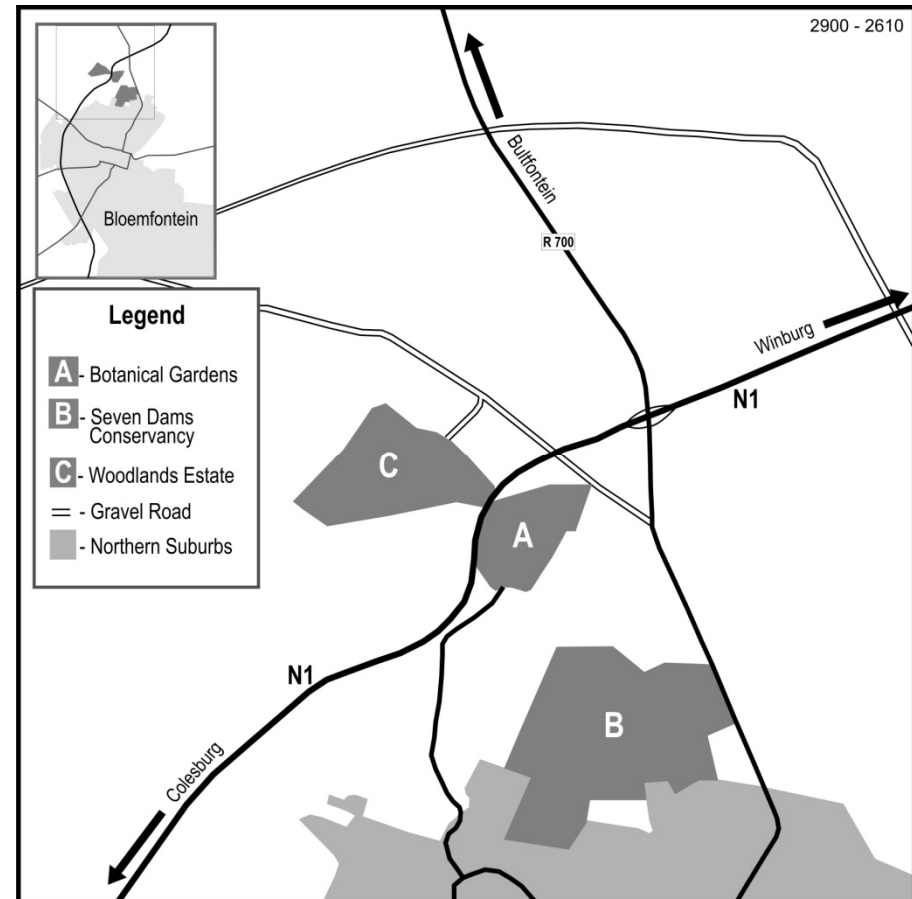


Fig 1 - Map of the 2900_2610 SABAP2 pentad showing the location of the Free State National Botanical Gardens (FSNBG) (A), Valley of Seven Dams Conservancy (V7D) (B), the Woodlands Estate area (C), the surrounding suburban areas and the R700 section of the Bultfontein road.

period the author did a study on Malachite Sunbirds *Nectarinia famosa* in the gardens and other ringing projects were also carried out at the gardens (see De Swardt 1995, De Swardt *et al.* 2004).



Fig 2 - Habitat in the Free State National Botanical Gardens around the main dam, with the bird hide in the back ground, surrounded by the hilly areas dominated by *Olea europea* subsp. *africana* and other tree species. Interesting waterbirds observed at the dam include: Goliath Heron, Purple Heron, African Swamphen, several water bird species and in the reeds, African Reed Warblers and Levalliant's Cisticola. Yellow-crowned Bishops have been observed at the dam after periods of high rainfall and Three-banded Plovers on the shore of the dam when the water level drops. In the surrounding hilly areas interesting birds include Grey-backed Cisticola, Layard's Tit-Babbler, Karoo Shrub-Robin, Lesser Honeyguide and Brown-crowned Tchagra. (Photo: Christopher Wills)

Formal bird surveys at the V7D have neither been conducted nor published, except for BirdLife Free State surveys or my own observations and BIRP data collected at the two sites.



Fig 3 - The main dam in the Valley of Seven Dams Conservancy area. Water birds, such as Red-knobbed Coots, Little Grebe, Squacco Heron, Black-crowned Night Heron, African Swamphen and duck species such as White-faced Duck, South African Shelduck and Yellow-billed Duck. White-backed Duck and Black Heron also have been observed in the other small dams along the drainage lines of the stream. Malachite, Pied and Giant Kingfishers also have been observed sporadically at the dams and along the streams. (Photo: Dawie de Swardt)

Kok (1996) and De Swardt *et al.* (2004) have described the habitats of the FSNBG, consisting mainly of the lower-lying cultivated gardens with two small dams with emergent reed vegetation along a stream which separate the *Olea europea* spp. *africana* and *Searsia lancea* dominated hilly areas from the lower-lying habitats (Fig 2). Various



Fig 4 - Habitat scene in shrubby grassland near drainage lines in the Valley of Seven Dams Conservancy area. Birds such as Rufous-naped Lark, Eastern Clapper Lark, Desert Cisticola, Plain-backed Pipit, Cinnamon-breasted Bunting and small flocks of Cape Penduline Tit are regularly observed in this area. (Photo: Dawie de Swardt)

indigenous plant species cultivated in the gardens attract birds, e.g. several clumps of *Leonotis leonurus*, *Crassula* spp and *Aloe* spp which are a nectar source for sunbird species. The V7D is 89 ha in extent and is characterized by a number of streams where several dams are impounded (hence the name) (Fig 3). The area comprises mainly grassland with succulent and dwarf scrubland communities along streams, on sheet rock and stony outcrop areas (Fig 4) (Dingaans and Du Preez 2002). Woody shrub communities (such as at the FSNBG) including mainly *Olea* and *Searsia* species also occur on the hilly areas of the valley.

Monthly bird surveys were carried out between February 2008 and May 2013 at the FSNBG, V7D and surrounding areas for SABAP2. Records of birds occurring at these two localities were kept separately for comparative purposes. In addition, historical records from before the initiation of SABAP2 are also discussed and compared. BIRP data (for FSNBG and V7D) from 1993-2007 are also incorporated and discussed.

Results and discussion

During surveys for SABAP2 (July 2007-May 2013) a total of 228 bird species have been recorded in the 2900_2610 pentad. This area includes the FSNBG, V7D, the Woodland Hills Wildlife Estate area and surrounding areas such as the suburban areas of the northern outskirts of Bloemfontein and sections along the Bultfontein road (R700) from the N1 highway and the Shell Ultra City. My surveys (69 out of 166 full protocol lists) cover only the FSNBG, V7D (158 species recorded), and sections of the suburban areas and along the Bultfontein road. The current bird list for the FSNBG stands at 168 species, of which 134 species (79.7%) have been recorded during the SABAP2 period. This represents quite a good total for the gardens, considering that the average list for the first hour of full protocol SABAP2 lists varied from 30-56 species. The 20 most frequently recorded bird species for the pentad are listed in Table 1.

Table 2 lists 27 species which have low SABAP2 reporting rates or only a few sightings obtained during SABAP2 at the gardens, but are nevertheless included in the current FSNBG bird list. The following species were not recorded in the FSNBG (DDS surveys), but are represented by a few sightings in V7D and along the Bultfontein road: White-fronted Bee-eater, Fork-tailed Drongo, Pied Starling and White-throated Canary. These species were also recorded as vagrants during the Birds in Reserves (BIRP) period (1993-2007) at



the FSNBG and V7D areas. Although the Anteating Chat was recorded 16 times during SABAP2, elsewhere in the pentad by SABAP2 observers, it was reported only once in the V7D and was never recorded along the Bultfontein road.

A total of 18 species, mostly associated with grassland areas, recorded in the V7D area, were not recorded at the FSNBG (Table 3). The following species were resident in the V7D area and were also recorded during the BIRP data collecting period: Rufous-naped and Eastern Clapper Larks, Desert and Cloud Cisticolas and Cape Longclaw. Other interesting species in the same area include Gabar Goshawk, Kurrichane Buttonquail, African Snipe, Black Heron, African Harrier-hawk (mostly observed near high reservoir in Dan Pienaar) and in 2013, Lark-like Bunting. Mountain Wheatear were recorded in 1998-2003 period in the Pentagonpark suburb (seven BIRP cards), but during SABAP2 only 6 records were obtained (most of them possibly from the Woodland Estate area) and I never observed them in the vicinity again. However, three birds were observed during April 2013 in new development areas in Pentagonpark adjacent the V7D and could be a localized resident in newly established development areas. African Pipits were recorded at V7D during BIRP (January, March, June and July records), but there were no observations of this species here during SABAP2 surveys (although commonly recorded in grassland along the Bultfontein road (R700). Long-billed and Plain-backed Pipits were infrequently observed in the V7D area.

Table 4 lists 56 species recorded in adjacent areas of the 2900_2610 pentad, but not recorded at the FSNBG or V7D areas. Most of these species were recorded in the open grassland areas along the Bultfontein road (Temminck's and Double-banded Courser, Spike-heeled, Red-capped and Pink-billed Lark, Capped Wheatear and

Kalahari Scrub Robin. A small colony of White-browed Sparrowweavers occurs at a farm next to the Bultfontein road and possibly more colonies occur in the surrounding areas (this species is included on the FSNBG list, but no recent records exist). There is an old BIRP record from April (year unknown) of a Brown-hooded Kingfisher for FSNBG and there are presently four records for this species during SABAP2 in this pentad. Freckled Nightjars heard calling on several occasions at the Woodlands estate opposite the FSNBG and have been confirmed in January 2013 (RJN, pers comm.). Redchested Cuckoos were observed at FSNBG during the 1990's, but were more regularly observed and heard in the more developed suburban areas of Dan Pienaar and Heuwelsig areas.

A total of 9 species were recorded prior to the SABAP2 project at the FSNBG; these include records during the post-SABAP1 period and historical records (Table 5). Historical records include a sighting of an African Rock Pipit which is described as having an "uncertain status" in the hilly areas of the gardens and was recorded in the Bishops Glen area north-east of Bloemfontein (Grobler 1986). This species is quite common at several sites within a radius of 20 km of Bloemfontein's city centre (SABAP2 data, pers. obs.). Another interesting historical record is that of a road-killed Lilac-breasted Roller collected near the entrance of the FSNBG on 7 February 1991 (Nuttall and De Swardt 1991). Several sightings of this species were obtained in the central and south-western Free State, suggesting some movements in this species after periods of high rainfall and inclement conditions. A Black Stork was also recorded flying over the gardens on 5 December 1993 (Nuttall 1994); no recent records exist from this area however. Species recorded during ringing studies include Dusky Sunbird and Golden-breasted Bunting (Kok 1996, De Swardt *et al.* 2004, unpubl SAFRING data).



The FSNBG and V7D areas are surrounded by built up areas and housing developments (currently in Pentagonpark / Helicon Heights and Lilyvale areas); these thus now represent "green" islands surrounded by development. These areas situated on the outskirts of Bloemfontein are surrounded by natural veld. The conservation of these "green" areas which form a network corridors between different habitats is important, as highlighted by Dingaen and Du Preez (2002), referring specifically to the rare plant communities which occur in the V7D Conservancy area. The dams at both the FSNBG and in the V7D area are also a haven for waterfowl species.

Bird surveys during SABAP1 were carried out on a Quarter Degree Square (QDS) scale, while during SABAP2 data is collected at a finer scale (5" x 5"); the Bloemfontein 2926AA QDS is now represented by nine 5" x 5" pentads. The FSNBG and V7D areas comprise only a part of this pentad, showing how bird communities can differ between two areas. The value of continuous record keeping (by compiling regular bird lists) must also be emphasized – these two areas are also BIRP sites and as such, data collection has also been carried out in the 15 or so years between the SABAP1 and SABAP2 projects. During the BIRP project, a total of 117 species were recorded for FSNBG and 114 species for V7D.

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Table 1 - The 20 most frequently recorded bird species in the 2900_2610 SABAP2 pentad (from 166 full protocol cards)

	Species	Sightings
317	Laughing Dove	166
316	Cape Turtle-Dove	166
1104	Karoo Thrush	164
786	Cape Sparrow	164
544	African Red-eyed Bulbul	163
803	Southern Masked-Weaver	162
581	Cape Robin-Chat	162
311	Speckled Pigeon	160
1171	Orange River White-eye	159
84	Hadeda Ibis	158
707	Common Fiscal	152
439	Crested Barbet	151
722	Bokmakierie	148
245	Blacksmith Lapwing	148
391	White-backed Mousebird	145
686	Cape Wagtail	132
242	Crowned Lapwing	119
432	Acacia Pied barbet	117
392	Red-faced Mousebird	114
735	Wattled Starling	111

Table 2 - Bird species included on the FSNBG list, but with low SABAP2 reporting rates (n=27)

63	Green-backed Heron
67	Little Bittern
83	Glossy Ibis
85	African Spoonbill
94	Cape Shoveler
98	Cape Teal
104	White-backed Duck
139	Booted Eagle
156	Rufous-chested Sparrowhawk
169	Black Harrier
253	Little Stint
264	Wood Sandpiper
288	Grey-headed Gull
305	Whiskered Tern
409	White-fronted Bee-eater
419	Green Wood-Hoopoe
501	Red-breasted Swallow
504	South African Cliff-Swallow
517	Fork-tailed Drongo
575	Anteater Chat
596	Icterine Warbler



Table 3 - Bird species recorded only in the V7D area (not in FSNBG) (n=18)

64	Black Heron
162	Gabar Goshawk
171	African Harrier-hawk
196	Kurrichane Buttonquail
250	African Snipe
372	Rufous-cheeked Nightjar
380	African Black Swift
458	Rufous-naped Lark
564	Mountain Wheatear
619	Rufous-eared Warbler
630	Desert Cisticola
631	Cloud Cisticola
693	Long-billed Pipit
703	Cape Longclaw
745	Red-winged Starling
857	Cape Canary
871	Lark-like Bunting
1183	Eastern Clapper Lark

Table 4 - Bird species not recorded at the FSNBG or V7D, but in surrounding areas of 2600_2610 pentad during SABAP2 (n=56)

1	Common Ostrich
105	Secretarybird
113	Peregrine Falcon
120	Red-footed Falcon
122	Greater Kestrel
129	Yellow-billed Kite
142	Martial Eagle
146	Black-chested Snake-eagle
152	Jackal Buzzard
168	Pallid Harrier
183	Natal Spurfowl
189	Common Quail
197	African Rail
223	Blue Korhaan
256	Ruff
258	Common Sandpiper
263	Common Greenshank
277	Temminck's Courser
278	Double-banded Courser
282	Black-winged Pratincole
307	Namaqua Sandgrouse
343	Red-chested Cuckoo
359	Barn Owl
368	Spotted Eagle-Owl
371	European Nightjar
374	Freckled Nightjar
384	Horus Swift
386	Alpine Swift
402	Brown-hooded Kingfisher
4131	Burchell's Coucal
456	Melodious Lark
474	Spike-heeled Lark
484	Chestnut-backed Sparrowlark
485	Grey-backed Sparrowlark
488	Red-capped Lark
490	Pink-billed Lark
498	Pearl-breasted Swallow
519	Eurasian Golden Oriole
522	Pied Crow
568	Capped Wheatear



572	Sickle-winged Chat
576	African Stonechat
586	Kalahari Scrub Robin
642	Rattling Cisticola
692	African Pipit
695	Buffy Pipit
706	Lesser Grey Shrike
733	Common Starling on SANBI list
799	Cape Weaver
780	White-browed Sparrow-Weaver on SANBI list
805	Red-billed Quelea
818	Long-tailed Widowbird
851	Village Indigobird
940	Rock Dove
1021	Common Peacock
1035	Northern Black Korhaan

Table 5 - Historical records of birds recorded at the FSNBG or species recorded before SABAP2 project (July 2007) (n=9)

79	Black Stork	Nuttall 1994, SANBI bird list
123	Rock Kestrel	BIRP data
262	Marsh Sandpiper	BIRP data
447	Lilac-breasted Roller	Nuttall & de Swardt 1991
595	Garden Warbler	BIRP data
609	Little Rush Warbler	BIRP data
697	African Rock Pipit	Grobler 1986
788	Dusky Sunbird	ringed in May 2006, SAFRING data
874	Golden-breasted Bunting	de Swardt <i>et al.</i> 2004, Kok 1996