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Ornithology

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Introduction

Waterbird abundance at temporally pans and waterbodies changes through time, and also with dry and wet rainfall periods. For example, Herrmann et al. (2004) studied long-term trends of the occurrence and abundance of water birds at ephemeral pans in the western Free State and Northern Cape. Their principal findings were that waterbirds arrived at pans shortly after the emergence of frogs and invertebrates after rainfall periods; the had been dormant during drought seasons (Herrmann 2004, Simmons *et al.* 1998). Such pans in flat areas support large numbers of crustaceans, frogs and insects, a primary food source for waterbirds (Simmons *et al.* 1998). Coordinated waterbird Counts (CWAC) conducted at sites in the Northern Cape and Free State also show influxes of water birds at water bodies over time (Taylor *et al.* 1999). Birds such as African Spoonbills, the three grebe species and Redknobbed Coots are known to respond to rainfall events (Smith *et al.* 2017, Underhill *et al.* 2016).

Since the start of the First Southern African Bird Atlas Project in 1987 (SABAP1), I have done monthly bird surveys since August 1988 as part of research projects on swallows and other species for the National Museum, Bloemfontein, on the Jagersfontein road south-west of Bloemfontein (which is part of the 2925BD quarter degree grid cell QDGC) (Brooks *et al*. 2022). I continued with bird surveys when the SABAP2 project started in mid-2007, aiming mainly on the pentad 2915_2555, in the same area of SABAP1 on the Jagersfontein road, south-west of Bloemfontein, central Free State. The pentad habitats have already been described by de Swardt (2012) being mainly grassland areas with a seasonal stream (Klein Kaalspruit), several pans (Figure 1) and a hilly area (Williamstrip and Praalhoek farms) dominated by *Olea* spp and *Buddleja* spp trees. There are also two

Figure 1: The pan in the grassland near the tarred road was mostly filled with water during the rainy season and attracted water bird species.

large quarries in the pentad with water after large rainfall events (as in the 2021/22 rainy season). On the tarred road, several road culverts provide nest sites for swallow and swift species, including a large South African Cliff Swallow colony under the two bridges over the Kaalspruit stream (De Swardt 2012, Earle 1986).

Later a comparative study between SABAP1 and SABAP2 of QDGC 2925 BD (Hagesdam) was done where changes in bird populations over time were observed (2915_2555 in this QDS) (de Swardt 2012). Bird atlas surveys continued regularly, with emphasis on SABAP2 Pentad 2915_2555 and surroundings. This paper analyses this pentad's bird communities and occurrences based on regular surveys between March and January 2023. This paper also reports the presence/absence of water-associated species and other birds in the Pentad area. No actual counts were done on the species present (e. g., water bird abundance) (Brooks *et al.* 2022). I also discuss the importance of grassland birds and raptors.

Results of birds for Pentad 2915_2555

I started to survey the pentads on the Jagersfontein Road southwest of Bloemfontein regularly for the SABAP2 project, especially pentad 2915_2555, which I visited once a month or at least quarterly between April 2008 and January 2023. A total of 197 species were recorded from 169 full protocol cards (162 done by the author) and more than 30 *ad hoc* lists (see https://sabap2.birdmap.africa/coverage/pentad/2915_2555 for pentad species details; Brooks *et al.* 2022). For all months (except May), more than 10 full-protocol survey cards have been compiled over the years. Of the total species recorded (based on reporting rates), 110 species can be regarded as residents, 25 migratory birds and 62 either visitor or vagrant species to the area (reporting rates less than 10%).

The seasonality of water-related bird species was also monitored during the survey period of the pentad. The occurrences of 44 water-related bird species (grebes, egrets, ducks, waders and others) attracted to seasonal pans, the stream, and the flooded grasslands in the area during high rainfall seasons were recorded monthly in the pentad. No actual counts of species numbers were made. During some high rainfall seasons (e.g. 2010/11, 2018/19 and 2021/22 seasons), influxes of bird species were observed (they had been absent during dry periods). Higher reporting rates were also obtained for species such as Yellow-billed Ducks (49.7%), Red-billed Teals (37.9%) and White-faced Whistling Ducks (32.0%) during the summer months, which were sometimes still present into the drier winter months (when there are still seasonal pans with water) (Figure 2). Spur-winged Goose (39.6%) and Egyptian Goose (69.2%) also have high reporting occurrences, although South African Shelducks showed a more seasonal occurrence with a lower reporting rate (17.8%). Red-knobbed Coots (33.1%) were mostly absent from the pentad during dry periods but arrived mainly when the pans and quarries were filled with water after high rainfall, even breeding in the quarry during May 2022 (Figure 3). Red-knobbed Coots were observed in the area between December 2011 – January 2013, then absent until observed again observed from March 2020 onwards (after high rainfall months). Little Grebes (23.1%) showed the same behaviour as the coots and were observed when pans/quarries were full of water. Little grebes were

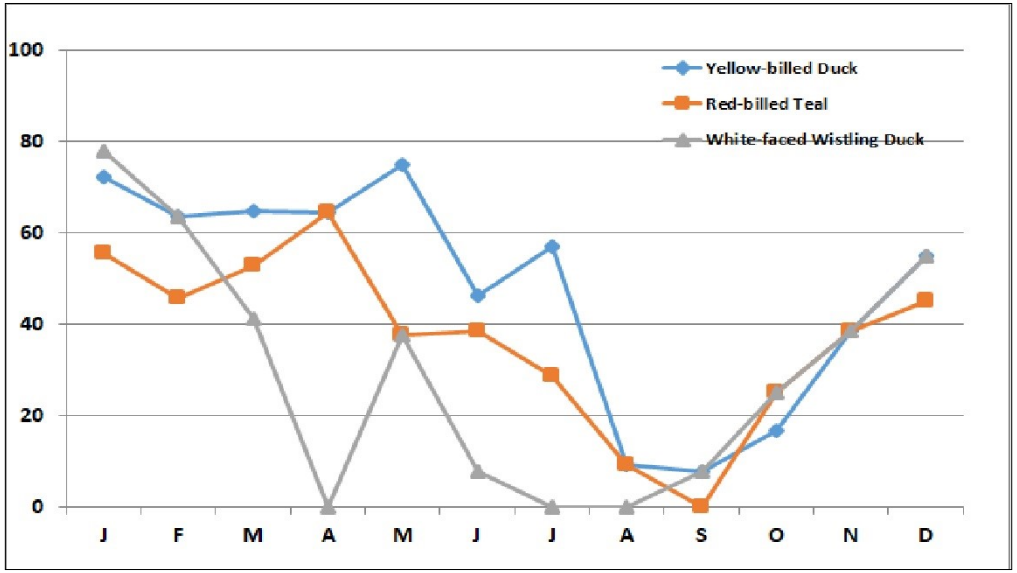

Figure 2: SABAP2 monthly reporting rates (%) of Yellow-billed Duck, Red-billed Teal and White-faced Whistling Duck in pentad 2915_2555 during the SABAP2 project (July 2007 – January 2023).

Figure 3: Red-knobbed Coots breeding during May 2022 at the Meriba quarry in Pentad 2915_2555.

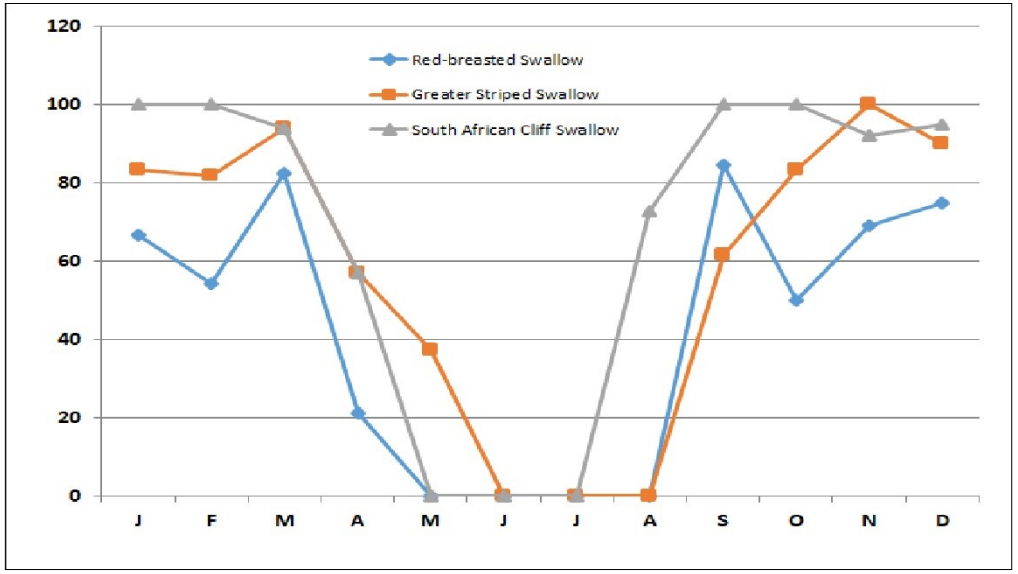

Figure 4: SABAP2 monthly reporting rates (%) of Red-breasted, Greater Striped and South African Cliff Swallows in pentad 2915_2555 during the SABAP2 project (July 2007 – January 2023).

recorded from April 2011 to December 2012, then absent for an extended period, only to be seen again from January to May 2021 and later from December 2021.

Five swallows and two martin species have been recorded in the pentad, of which only the Barn Swallow is a non-breeding visitor. Of these, White-throated, Greater Striped and Red-breasted, mainly breed under artificial culverts. In contrast, the South African Cliff Swallow breeds in large colonies under the bridges at the Klein Kaalspruit stream. The arrival times for the Greater Striped and Red-breasted Swallows are mostly from September onwards, while the Cliff Swallows arrive earlier, from late July to August (Figure 4). They depart mainly during April, while Greater Striped Swallows were observed to stay longer until May. Barn Swallows arrive from October onwards (in the surroundings areas) but mainly in November.

Two bird species were observed as winter visitors to the area: the Swallow-tailed Bee-eater and Sickle-winged Chat (Figure 5). Sickle-winged Chats were primarily observed between April and August, preferring low shrubs in grassland patches and gravel roads. A similar winter-visiting species is the Swallow-tailed Bee-eater, observed in the *Buddleja* spp bush areas on the hill slope at the Praalhoek farm between May and July (Figure 5). In other areas south and west of Bloemfontein (and north at Florisbad – Pentad 2845_2600), they were also regularly observed in the winter months between April and September, with fewer summer records.

Eleven lark and sparrow-lark species were recorded in the pentad, of which Spike-heeled, Red-capped, Pink-billed, Rufous-naped and Eastern Clapper are the most common and regularly observed (higher reporting rates) lark species in the area. Rufous-naped and Melodious Larks shows summer peaks in reporting rates with lower reporting or absences (probably not vocal) in winter months (Figure 6). Melodious Larks also became vocal and displayed after the first rainfalls during the summer months. For most of these lark species, grassland habitats are essential. Similarly for the pipit species recorded in the area prefer mainly grassland or open patches. At the same

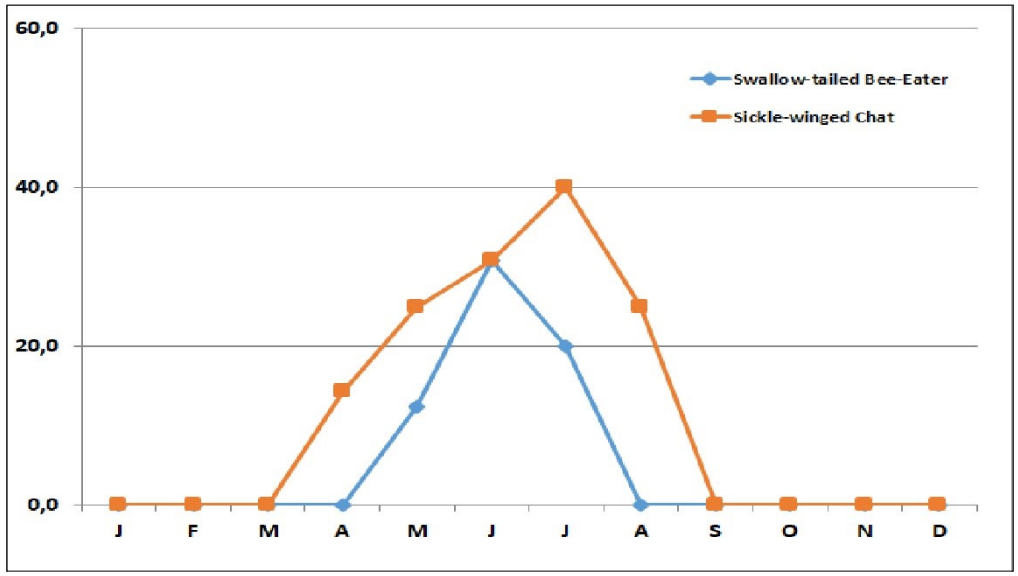

Figure 5: SABAP2 monthly reporting rates (%) of Swallow-tailed Bee-eater and Sickle-winged Chat in pentad 2915_2555 during the SABAP2 project (July 2007 – January 2023), showing their winter seasonal occurrences.

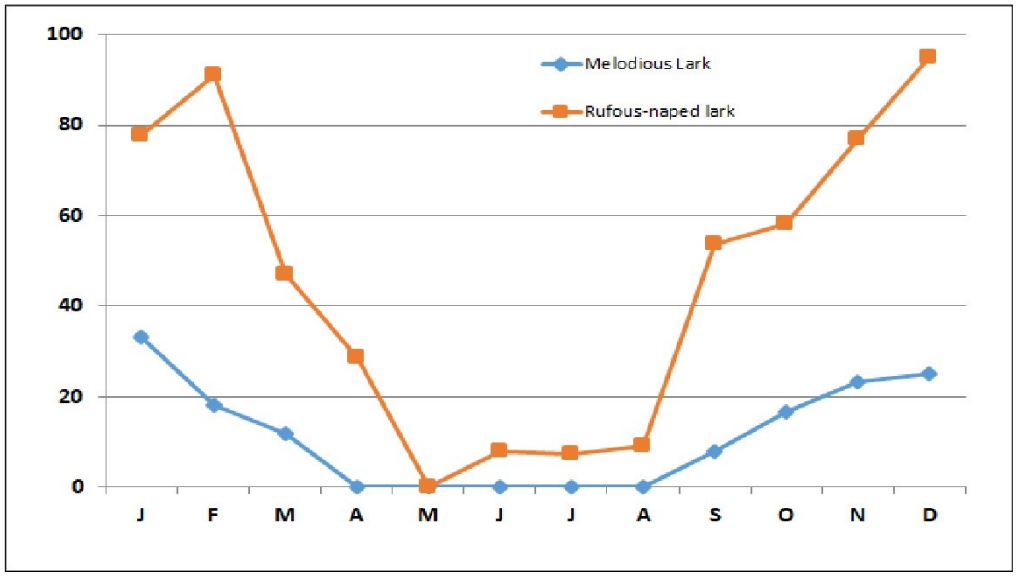

Figure 6: SABAP2 monthly reporting rates (%) of Rufous-naped and Melodious Larks in pentad 2915_2555 during the SABAP2 project (July 2007 – January 2023), showing their summer occurrences and absence during the winter months.

time, African Rock and Nicholson's Pipits are more localized in the hilly regions of the pentad (Praalhoek farm).

About 18 raptor species have been recorded in the pentad, of which the most abundant (with highest reporting rates) were Black-winged Kites and Pale Chanting Goshawks. Of the summer migrants, Lesser Kestrels and Common Buzzards were the most abundant, while Amur Falcons were present only later during the summer season (January–March period). African Harrier-hawks (4.1%) have been observed about five times (10 observations in the pentad area) at or near South African Cliff Swallow nest colonies, the last on 26 September 2022 when an adult was observed at nest sites inspecting the nests to prey on nestlings (Figure 7). This observation confirms that African Harrier-hawks prey on South African Cliff Swallow nestlings or visit their nest colonies. Secretarybirds have a high reporting rate of 40.8% and have been regularly observed foraging in the grasslands of the pentad and surroundings. Up to four breeding attempts have been recorded in the pentad area since 2008, three at the Klein Rusplaas farm (near the Klein Kaalspruit stream) (Table 1; Figure 8).

Discussion

De Swardt (2012) analyzed the 2925BD – Hagesdam QDS of both SABAP projects, where 176 species were recorded in SABAP1 (1987 – 1992) and 187 species during SABAP2 project (2007 – 2011). Currently, 197 species have been recorded in Pentad 2915_2555, with more species recorded than those reported earlier by de Swardt (2012). As of January 2023, more than 220 bird species have been recorded in the nine pentads of QDS 2925BD during SABAP2, with more than 30 additional species recorded (Brooks *et al.* 2022; de Swardt 2012).

Waterbird species recorded in the pentad area show interesting seasonal trends, which support the studies on the abundance of water-

Table 1: Details of Secretarybird *Sagittarius serpentarius* nest records in pentad 2915_2555 between November 2009 and October 2019.

Date *	Locality	Nest Site	Nest Height	Eggs	Hatch	Fledge	Tag / Transmitter
November 2009	Klein Rusplaas, Bloemfontein	*Ziziphus* spp	3.8	2	2	2	Patagial tag
July 2011	Klein Rusplaas, Bloemfontein	*Ziziphus* spp	1.5	2	2	2	Patagial tag, one resighted 5 years later (Evander) (De Swardt 2016)
September 2018	Schoongezight, Bloemfontein	Berry bush	2.0	2	1	0	Nestlings died; nest empty
October 2019	Klein Rusplaas, Bloemfontein	*Ziziphus* spp	3.3	2	1	1	Satellite transmitter (BLSA), died later of starvation

* Date indicates when egg laying occurred

Figure 7: Adult African Harrier-hawk at South African Cliff Swallow breeding colony at Schoongezight, on the Jagersfontein road, Bloemfontein, on 26 September 2022. This is the second observation of the harrier-hawk at the nesting colony preying on SACS nestlings.

Figure 8: Secretarybird *Sagittarius serpentaruis* breeding pair at a nest on Ziziphus mucronate bush at Klein Rusplaas farm, near the Jagersfontein road, Bloemfontein on 26 September 2022.

birds at ephemeral pans by Hermann *et al.* (2004) and Smith *et al.* (2017). Similar water bird surveys have been done over the years, especially bird counts for Coordinated waterbird counts (CWAC) at large dams in the Free State, two of which are situated north and south of the study-area such as Krugersdrift and Kalkfontein dams, respectively. Large numbers of waterfowl such as cormorant species, Egyptian Goose (winter peak), SA Shelduck (summer peak), Redknobbed Coots (winter peaks) and other species were recorded (Taylor *et al.* 1999). Red-knobbed Coots dispersed to smaller and temporary water bodies in high rainfall periods, and similar tendencies were observed at the pans on the Jagersfontein road during high

rainfall periods (Taylor & Navarro 1999a). Similar movements also have been observed in Little Grebes, appearing at pans during high rainfall months (Taylor & Navarro 1999b; Smith *et al*. 2017).

Other interesting seasonal observations in some species were also observed. Still, only in a few species was it linked to seasonal rainfall periods (as observed with the waterbird species) (see Figure 2). Swallow-tailed Bee-eaters and other species were not recorded during the SABAP1 period and were only recently observed as winter visitors. De Swardt (2018) reviewed the seasonal occurrences of Sickle-winged Chats in areas of the central Free State and other regions now regularly observed in suitable habitats. The seasonality of the Melodious Larks can also be linked with rainfall, as birds became vocal after the first rains of the season (Figure 6) (pers. obs.).

In conclusion, the grassland habitats of the area are an essential habitat for various bird species – including larks, pipits, raptors and waterbirds visiting the flooded grassland area in large numbers during good rainfall seasons. Secretarybirds have been breeding for years in the area where several breeding attempts have been monitored (de Swardt 2007, de Swardt & van der Westhuizen 2012). One fledged nestling dispersed more than 440 km from the natal nest site and was sighted again after five years in the Evander area, Mpumalanga (de Swardt 2016). Monitoring bird populations through the SABAP2 project (and with other platforms such as the Virtual Museum digitization projects) is crucial to record changes in bird populations over time.

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