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BIRD DISTRIBUTION DYNAMICS

BIRD DISTRIBUTION DYNAMICS 5 – WHITE-BROWED SPARROW-WEAVER *PLOCEPASSER MAHALI* IN SOUTH AFRICA, LESOTHO AND SWAZILAND

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Introduction

This is the fifth paper of a new series in *Biodiversity Observations*. The objectives are to report on the ranges of bird species as revealed by the Second Southern African Bird Atlas Project (SABAP2, 2007 onwards) (Underhill 2016) and to describe how these ranges have changed since the first bird atlas (SABAP1, mainly 1987–1991). The two atlas projects are about two decades apart.

This series of papers is also made feasible by the development of two new standards for the presentation of maps, firstly pentad-scale distribution maps derived from SABAP2 data, and secondly range-change maps showing how distributions have changed between SABAP1 and SABAP2 (Underhill & Brooks 2016a, b). Because the papers in this series use these two new maps, the rules for interpretation are not provided in detail in each paper in this series.

This paper deals with the White-browed Sparrow-Weaver *Plocepasser mahali*, a weaverbird of the family Ploceidae (Figure 1). This African species has a “Least Concern” threat status.

Figure 1. White-browed Sparrow-Weaver, 17 km N of Muden, KwaZulu-Natal. Photograph © Alan Manson from the BirdPix section of the ADU Virtual Museum (see http://vmus.adu.org.za/?vm=BirdPix- 31665).

White-browed Sparrow-Weaver *Plocepasser mahali*

The White-browed Sparrow-Weaver occurs in dry woodlands and savannas in southern and eastern Africa. This weaver is widespread and common locally in eastern and southern Africa, but its distribution is often patchy. This weaver is unmistakable and usually found in small flocks near its colonies. Its untidy grass nests are conspicuous and last a long time, being built in trees (Hockey et al. 2005).

The current distribution of the White-browed Sparrow-Weaver in southern Africa broadly matches that shown in the first map produced for the species (Mclachlan & Liversidge 1957), although the 1957 map does not show the Eastern Cape population.

SABAP1 showed that, in South Africa, an isolated Eastern Cape population was separated by a gap of at least 50 km from the main population (Colahan 1997). The White-browed Sparrow-Weaver increased in numbers and range in the Eastern Cape, spreading southwards through the Cradock district since 1950 (Skead 1966). No records (published, specimens) have been located for this isolated population prior to 1950. There are historical records of this species from the southern edge of the main population, i.e. records from Colesburg before 1869 (Layard 1869) and Aliwal North in 1946 (Murray 1947).

During SABAP1, other than the isolated Eastern Cape population, the southern limit of the White-browed Sparrow-Weaver was located at about 31°S, although the limit of the core (higher reporting rate) was at about 30°S (Colohan 1997).

Subsequent to SABAP1, the eastern edge of the range of the White-browed Sparrow-Weaver in South Africa seemed to be expanding into KwaZulu-Natal (Figure 1 of Oschadleus 2015) and into the Kruger National Park (Oschadleus 2016), probably in part due to bush encroachment in both cases. Oschadleus (2015, 2016) listed sightings not included in SABAP1.

SABAP2 distribution

On the pentad scale, the SABAP2 distribution map (Figure 2) shows that the core of the range of the White-browed Sparrow-Weaver in South Africa lies on the central plateau. A large part of the core has not had four full protocol checklists yet. The eastern point of this core range is a little south of Standerton, and extends south-west to the western border of Lesotho. The core appears to extend into the Kgalagadi Transfrontier Park, although the core in SABAP1 did not extend into this park. Gauteng and surrounds has excellent SABAP2 coverage but reporting arte for the White-browed Sparrow-Weaver is low. There is core range in central to north-western Limpopo Province, separated from the larger core by the highly urbanised Gauteng Province. This weaver certainly occurred in Gauteng in historic times (e.g. Distant 1892 reported it from Pretoria), although there is no information on how common it was.

There is high coverage in the Kruger national Park and parts of KwaZulu-Natal, and the White-browed Sparrow-Weaver is absent or shows vagrant records. However, the species may increase here in the future due to bush encroachment (Oschadleus 2015, 2016).

Range change between SABAP1 and SABAP2

In Figure 3, the approach described in Underhill & Brooks (2016b) was used to classify the quarter degree grid cells into six categories of increase and decrease. The relative increases and decreases are estimated using the Griffioen transformation (Underhill & Brooks 2016b), and involve an assumption that, in pentads where White-browed Sparrow-Weavers occur, they are randomly distributed across the landscape, i.e. they are not clustered or in flocks. For the White-browed Sparrow-Weaver, this is probably at best only partially true, so the results need to be treated with some caution.

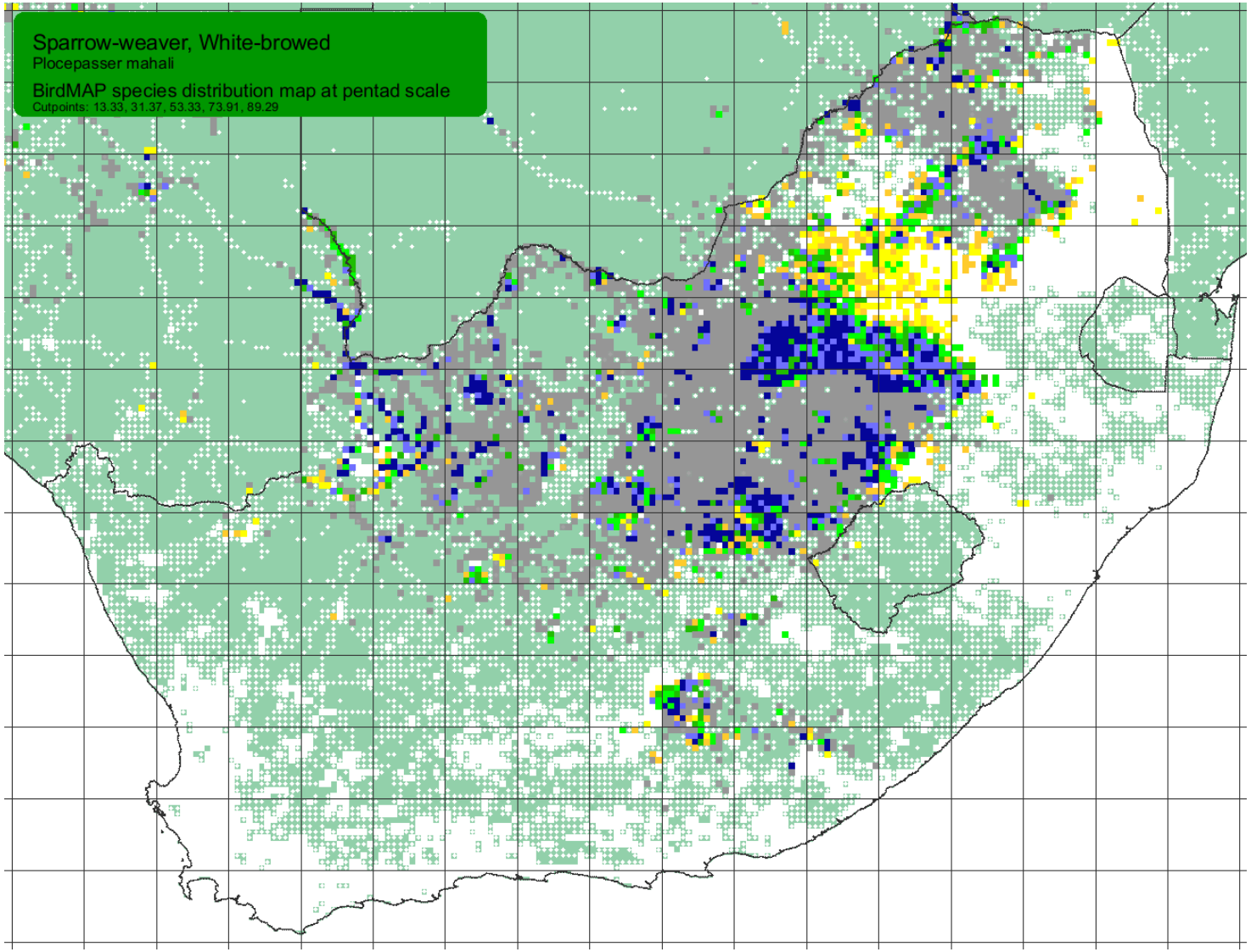

Figure 2: SABAP2 distribution map for the White-browed Sparrow-Weaver, downloaded 12 December 2016. The detailed interpretation of this map is provided by Underhill & Brooks (2016a). Pentads with four or more checklists are either shaded white, species not recorded, or in colour, with shades based on reporting rate: yellow 0–9.1%, orange 9.1–17.5%, light green 17.5–30%, dark green 30–44.4%, light blue 44.4–62.3 and dark blue 62.3–100%. In pentads shaded grey or with white dots, there are one, two or three full protocol checklists, or there are ad hoc lists, or incidental records. In pentads shaded grey, the species was recorded as present; in pentads with white dots the species has not been recorded. If a pentad has four or more checklists, and the species has been recorded on an ad hoc checklist or as an incidental recorded, it is shaded yellow, indicating that the species has a small reporting rate.

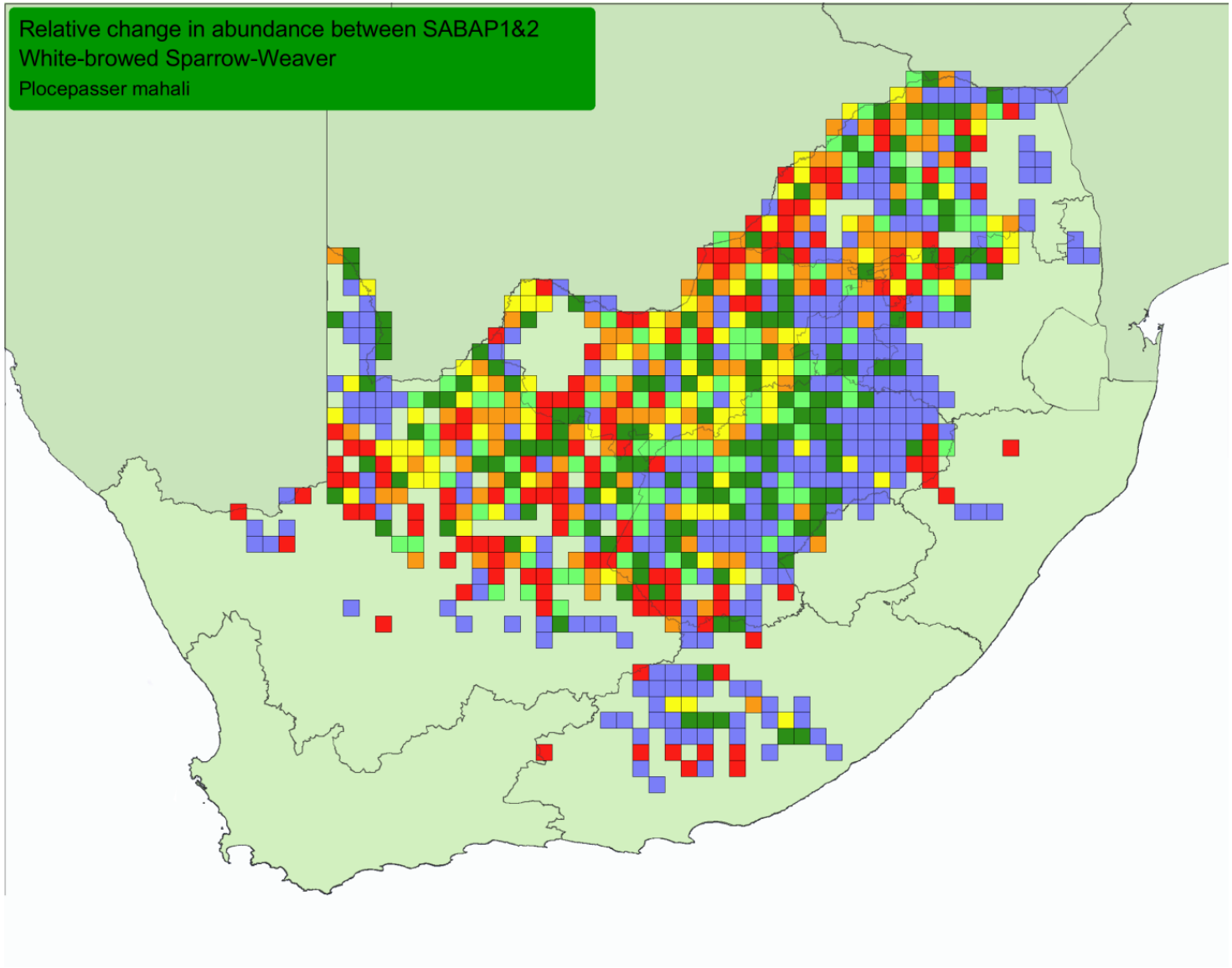

Figure 3: Range-change map between SABAP1 and SABAP2 for the White-browed Sparrow-Weaver, downloaded 12 December 2016. Red, orange and yellow represent quarter-degree grid cells with very large, large, and small relative decreases and blue, dark green and light green represent grid cells with very large, large and small relative increases. A count of the number of grid cells in each category is provided in Table 1. Only grid cells with at least four checklists in both SABAP1 and SABAP2 are shown. All these gird cells had White-browed Sparrow-Weaver recorded in them either in SABAP1 or in SABAP2 or in both. Fuller information on the interpretation of this range-change map is provided in Underhill & Brooks (2016b).

Results are shown in Figure 3 for the 832 quarter degree grid cells for which there are four or more checklists for both SABAP1 and SABAP2 and in which White-browed Sparrow-Weaver occurred in either SABAP1 or SABAP2 (Table 1). In other words, grid cells in which White-browed Sparrow-Weaver did not occur in either project are not included in this analysis.

Of these 832 quarter degree grid cells, the numbers of grid cells shaded blue (very large increase) and dark green (large increase) are 268 (32%) and 143 (17%) respectively, giving a total of 49%. 133 (16%) grid cells are red, and 104 (13%) are orange. This suggests very large (red) or large (orange) decreases in 29% of the quarter degree grid cells. The apparent increases outweigh the apparent increases.

Table 1. Range-change summary for the White-browed Sparrow-Weaver between SABAP1 and SABAP2. The table provides a count of the number of quarter degree grid cells of each colour in Figure 3. Also shown are the same summaries when the analysis is restricted to grid cells with at least 30 checklists for both SABAP1 and SABAP2.

Status	Four checklists for SABAP1 & SABAP2		30 checklists for SABAP1 & SABAP2	
	Count	%	Count	%
Red (very large decrease)	133	16	22	9
Orange (large decrease)	104	13	24	10
Yellow (small decrease)	85	10	30	13
Light green (small increase)	99	12	25	10
Dark green (large increase)	143	17	39	16
Blue (very large increase)	268	32	99	41
Total	832	100	239	100

The groups of blue grid cells suggesting very large increases include the Kruger National Park, Gauteng, the Free State (not the western edge), much of the Eastern Cape and the Kgalagadi Transfrontier Park. Large decreases appear to have occurred in western Limpopo and over much of the Northern Cape (other than Kgalagadi).

Repeating the quantitative count of Figure 3 and Table 1 using grid cells with 30 or more checklists in both SABAP1 and SABAP2, the sampling error is considerably smaller than with four checklists for both projects, but there are now only 239 grid cells which meet this criterion (Table 1). In this restricted analysis, 19% of grid cells show lge or very large decreases, and 57% show large or very large increases. This confirms the pattern shown in Figure 3.

Conclusions

In South Africa the White-browed Sparrow-Weaver has more grid cells with increases in reporting rate than cells showing decreases, between SABAP1 (1987–1991) and SABAP2 (2007–). Underhill & Brooks (2014) listed this weaver as the weaver species with the largest increase in the region.

The highly urbanised Gauteng region has low reporting rates for the White-browed Sparrow-Weaver. This results in a hole in the core of the distribution, stretching from Limpopo to the Free State.

The White-browed Sparrow-Weaver has increased in numbers and range in the Eastern Cape, spreading southwards through the Cradock district since 1950. This species appears to be expanding westwards in KwaZulu-Natal and the Kruger national Park, although reporting rates are currently low. The eastern Free State and the Kgalagadi Transfrontier Park show large increases between SABAP1 and SABAP2.

The exact shape and placement of the core of the range will change as more of the pentads currently shaded grey (and having less than four full checklists) get their fourth or subsequent checklist. Some of the pentads currently shaded dark blue and light blue might, in the final analysis, be "demoted" to shades that indicate that they are not in the core of the range. Atlasers are strongly encouraged to build coverage up to the "foundational coverage" of a minimum of four checklists per pentad (Underhill 2016)..

Acknowledgements

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