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An electronic journal published by the Animal Demography Unit at the University of Cape Town

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Lead Editor: Arnold van der Westhuizen

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Recommended citation format:

López Gómez M, Underhill LG, Brooks M 2017 Bird distribution dynamics 14 – Pied Avocet *Recurvirostra avosetta* and Black-winged Stilt *Himantopus himantopus* in South Africa, Lesotho and Swaziland. Biodiversity Observations 8.23: 1–10.

URL: <http://bo.adu.org.za/content.php?id=318>

Published online: 14 May 2017

– ISSN 2219-0341 –

BIRD DISTRIBUTION DYNAMICS

BIRD DISTRIBUTION DYNAMICS 14 – PIED AVOCET *RECURVIROSTRA AVOSETTA* AND BLACK-WINGED STILT *HIMANTOPUS HIMANTOPUS* IN SOUTH AFRICA, LESOTHO AND SWAZILAND

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Introduction

This is the 14th paper on bird distribution dynamics in *Biodiversity Observations*. The objective of this series of papers is to report on the ranges of bird species as revealed by the Second Southern African Bird Atlas Project (SABAP2, 2007 onwards) and to describe how their ranges have changed since the first bird atlas (SABAP1, mainly 1987–1991), 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.

In this paper, we deal with two of the wader species which occur in South Africa, Lesotho and Swaziland. For each species, four items of

information are presented: the SABAP1 distribution map using quarter-degree grid cells, the SABAP2 distribution map, using pentads (five-minute grid cells, so there are nine pentads per quarter-degree grid cell), the range-change map, showing estimated changes in relative abundance between SABAP1 and SABAP2, and a table which provides counts of the numbers of grid cells shaded each of six colours in the range change map. In contrast to earlier papers in this series, minimal commentary on each species is provided.

The two wader species dealt with in this paper are in the family Recurvirostridae which occur in the SABAP2 region, Pied Avocet *Recurvirostra avosetta* and Black-winged Stilt *Himantopus himantopus*. Both are conspicuous and easily identified, so the detection probabilities are large and the distribution maps ought to be accurate (Tree 1997a, 1997b).

Introduction to the Recurvirostridae

The family Recurvirostridae includes four well-defined species of avocets, and between two and six species of stilts (del Hoyo et al. 1996). The taxonomy of the “black-winged stilt” is complex, with between one and five species recognized. Two species from the family occur in Africa, Pied Avocet and Black-winged Stilt. For both species, there are also populations which breed in Eurasia and migrate to Africa. The Eurasian birds are not known to reach southern Africa. The southern African birds are “resident”, in the sense that they do not perform regular “there-and-back” migrations, but are strongly nomadic, with movements in response to rainfall events (Tree 1997a, 1997b). This nomadism complicates the assessment of changes in abundance through time, and this reality needs to be stated before the “range-change” results of this paper are presented.

Judging by the small number of localities at which they were listed as occurring by Stark and Sclater (1906), neither species could have been common in southern Africa in the late 1800s. Both the stilt and the avocet have benefitted massively by the construction of artificial

wetlands, such as farm dams, sewage works and saltworks (Tree 1997a, 1997b).

Of the species in the Recurvirostridae, only one is in a threat category. The Black Stilt *Himantopus novaezelandiae* which occurs on the braided rivers of New Zealand's South Island, is Critically Endangered; there are less than 100 birds in the wild (BirdLife International 2016).

Pied Avocet *Recurvirostra avosetta*

The six-colour distribution map for the Pied Avocet (Figure 1) from SABAP1 reveals patterns that were concealed by the three-colour version in the published atlas (Tree 1997a) (Figure 2). The highest reporting rates during SABAP1, the two shades of blue in Figure 2, were largely concentrated in the central interior of western South Africa, in the Northern Cape. The characteristic habitat of the Pied Avocet is the ephemeral pan, where it feeds largely on brine shrimps of the genus *Artemia*. This suggests that the atlas for SABAP1 was done after flood events in the Northern Cape, which is usually arid.

There have been no major flood events over the Northern Cape during the decade of SABAP2, since 2007, and there is only a scattering of pentads with avocets in the central Northern Cape during SABAP2 (Figure 3), and this confirmed by apparent decreases throughout this region between the projects (Figure 4). (Figure 2). Overall, there are more grid cells showing decreases than increases, but due to the nomadic movements of the Pied Avocet, this should probably not be construed as being confirmation of a decrease in abundance of the species.



Figure 1. Pied Avocet, at Kuifkopvisvanger Farm, Western Cape. Photographer © J.E. Fincham and Jo Hobbs. Record 14999 in the BirdPix section of the ADU Virtual Museum. Full details available at <http://vmus.adu.org.za/?vm=BirdPix-14999>

Figure 2. SABAP1 distribution map for the Pied Avocet. Note that quarter degree grid cells shaded turquoise had no SABAP1 data (Mozambique, Botswana, Namibia and one in the former Transkei). The colours represent reporting rates, and the cutpoints for the different colours are the same as used for SABAP2, see Figure 3.

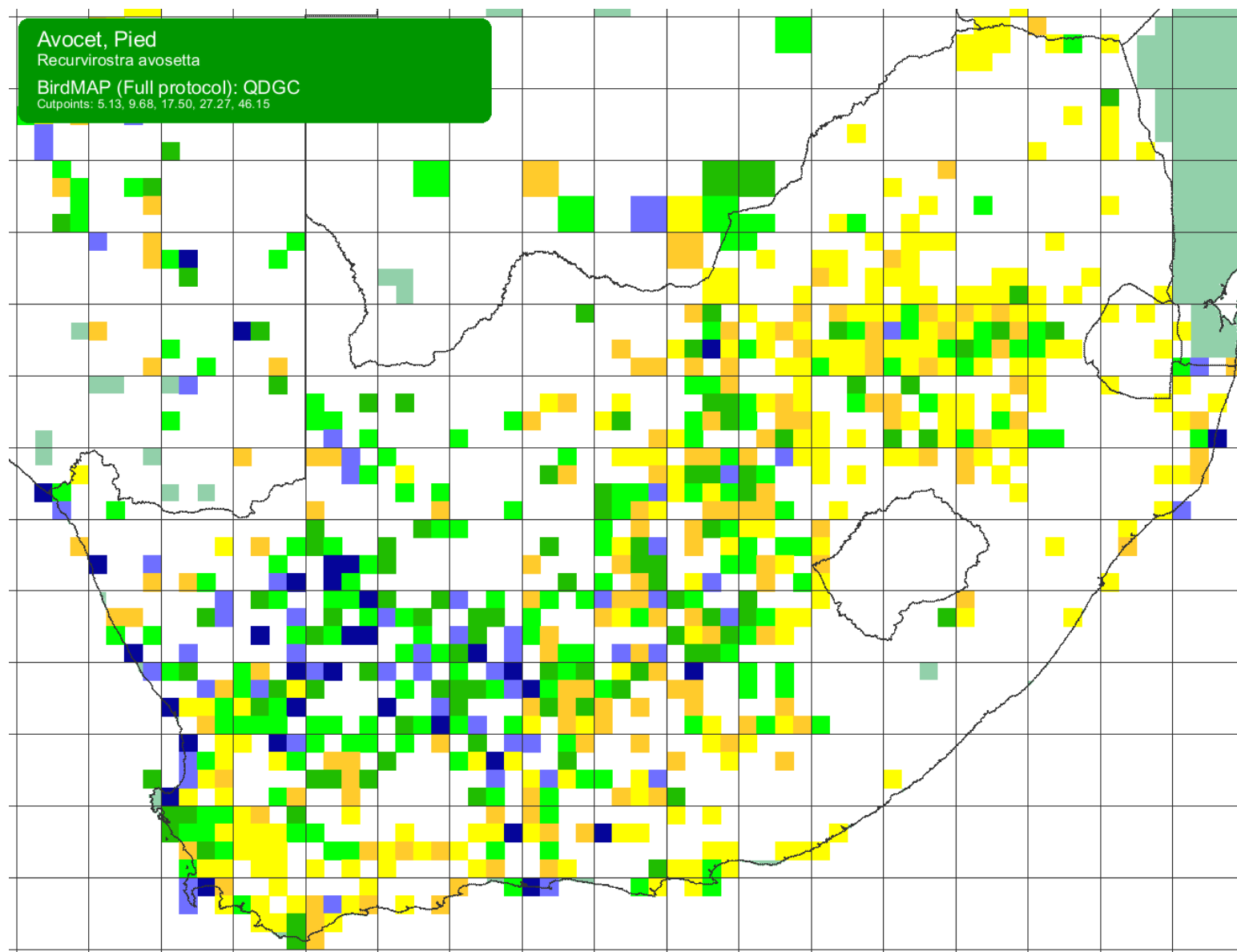


Figure 3. SABAP2 distribution map for the Pied Avocet, downloaded 25 April 2017. The detailed interpretation of this map is provided by Underhill & Brooks (2016a). Pentads with four or more checklists are either shaded white, species not recorded, or in colour, with shades based on reporting rate: yellow 0–5.1%, orange 5.1–9.7%, light green 9.7–17.5%, dark green 17.5–27.3%, light blue 27.3–46.2% and dark blue 46.2–100%..

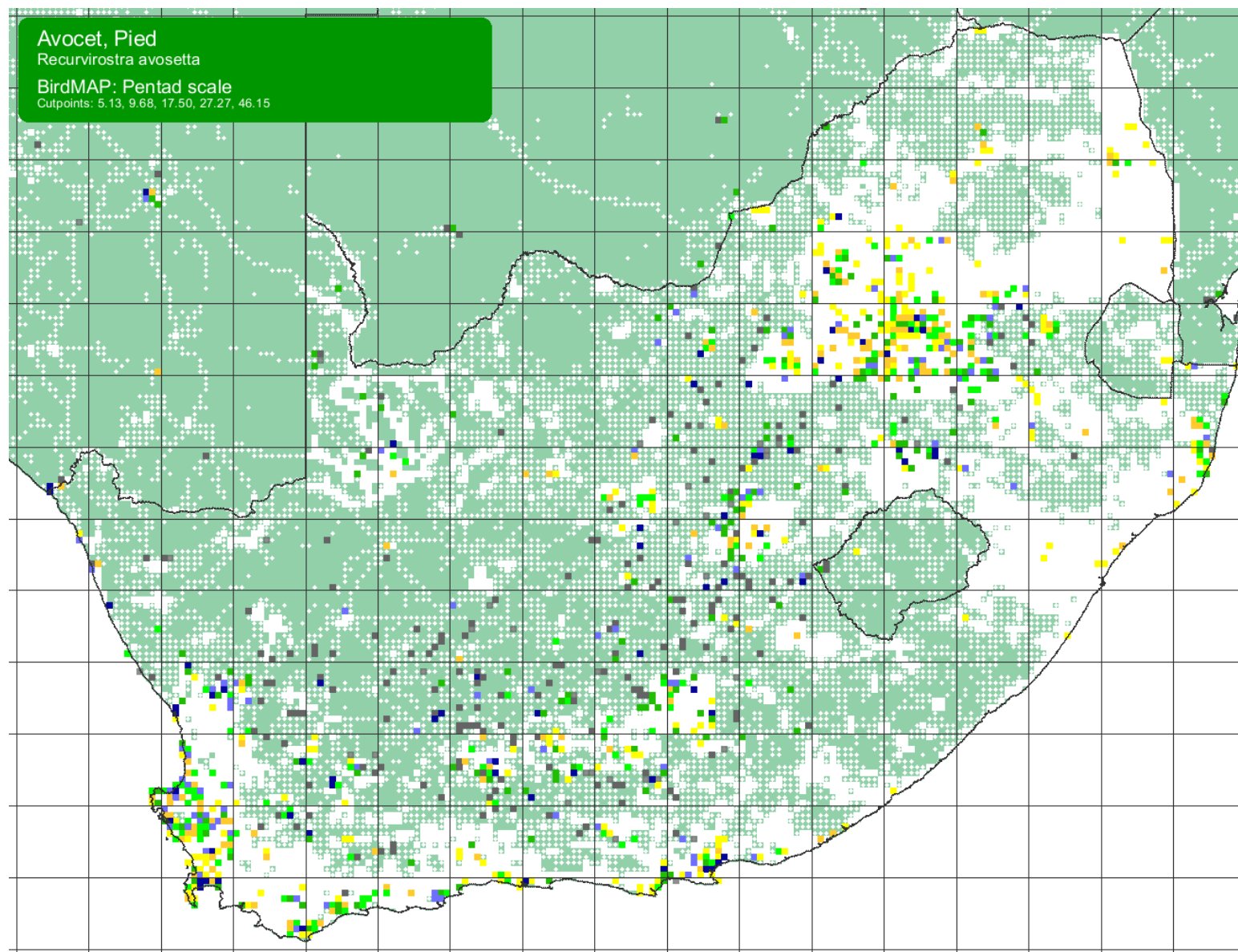


Figure 4. Range-change map between SABAP1 and SABAP2 for the Pied Avocet downloaded 25 April 2017. Red, orange and yellow represent quarter-degree grid cells with very large, large, and small relative decreases and blue, dark green and light green represent grid cells with very large, large and small 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. Fuller information on the interpretation of this range-change map is provided in Underhill & Brooks (2016b).

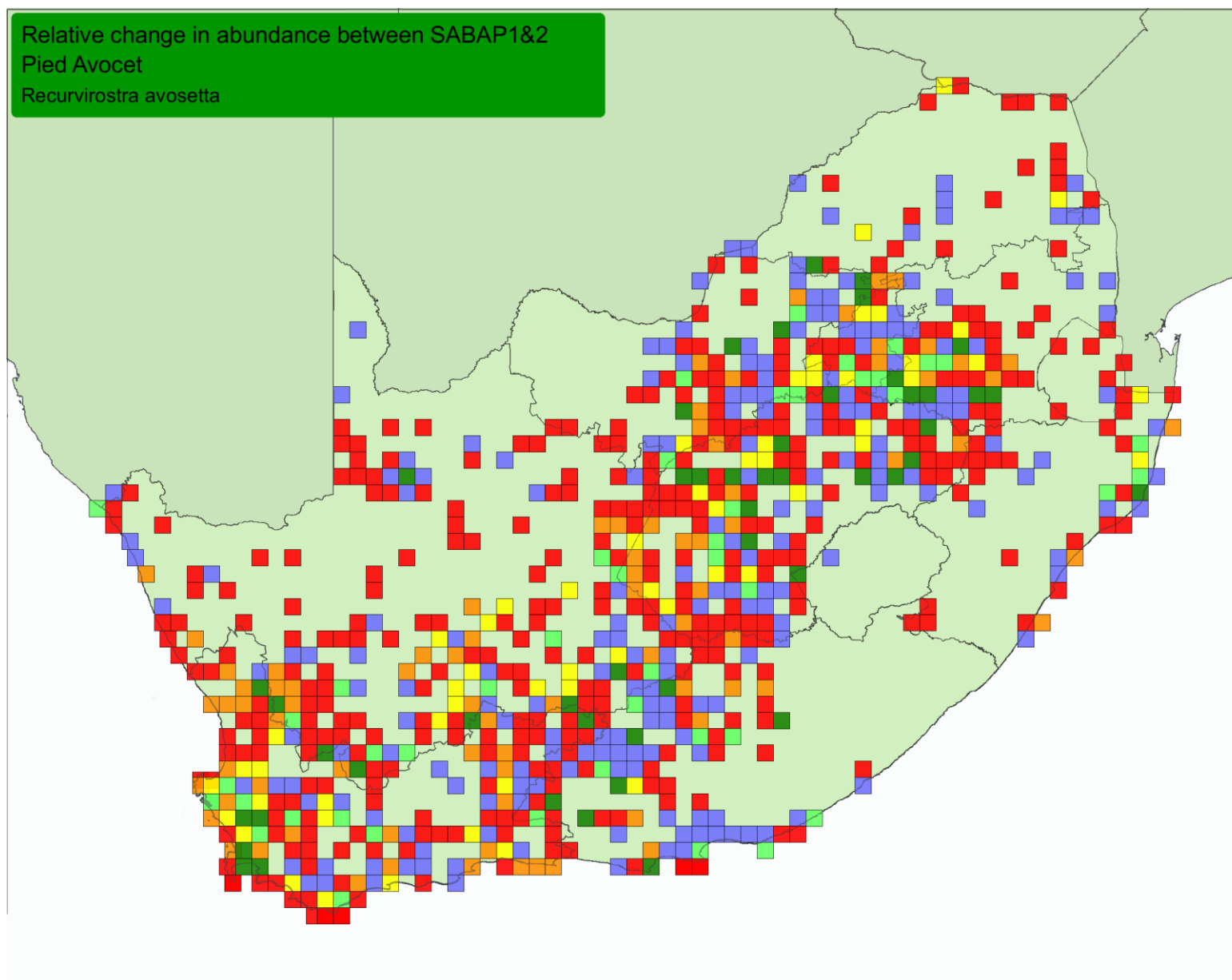


Table 1. Range-change summary for the Pied Avocet between SABAP1 and SABAP2. Numbers (and percentages) in each colour category of Figure 4, for which there are at least four checklists per quarter degree grid cell in both SABAP1 and SABAP2. Also shown are the same summaries when the analysis is restricted to grid cells with at least 30 checklists for both SABAP1 and SABAP2.

Status	4+ checklists for SABAP1 and SABAP2		30+ checklists for SABAP1 and SABAP2	
	Count	%	Count	%
Red (very large decrease)	379	46	155	42
Orange (large decrease)	82	10	39	11
Yellow (small decrease)	57	7	31	8
Light green (small increase)	48	6	28	8
Dark green (large increase)	48	6	22	6
Blue (very large increase)	210	25	96	26
Total	824	100	371	100

Black-winged Stilt *Himantopus himantopus*

The Black-winged Stilt (Figure 5) is widely dispersed, usually occurring in relatively small flocks, and is extremely nomadic (Tree 1997b). During SABAP1, the core of the distribution was over the central area of South Africa, especially the Free State (Figure 6). It was thinly distributed over the savanna biome (eastern Eastern Cape, KwaZulu-Natal, and northern South Africa north of 26°S. This overall pattern has persisted into the SABAP2 period (Figure 7), with a suggestion that the distribution has moved westward. This is evidenced by the predominance of blue grid cells in much of the Eastern Cape, along the western edge of the Free State, in southern KwaZulu-Natal and in parts of the Kruger National Park (Figure 8). Because on the nomadic



Figure 5. Black-winged Stilt, on the Berg River estuary, at Bokkomlaan, Velddrif: Western Cape. Photographer © Eddie and Linda du Plessis. Record 16690 in the BirdPix section of the ADU Virtual Museum. Full details available at <http://vmus.adu.org.za/?vm=BirdPix-16690>

responses to rainfall events, not too much should be read into these apparent changes at this stage. Table 2 suggests that increases and decreases roughly balance. The fact that only about 20% of the grid cells show only small increases or small decreases is probably a pointer to the reality that this is a nomadic species, and that there are naturally going to be large fluctuations in reporting rates (Table 2).

Figure 6. SABAP1 distribution map for the Black-winged Stilt. Note that quarter degree grid cells shaded turquoise had no SABAP1 data (Mozambique, Botswana, Namibia and one in the former Transkei). The colours represent reporting rates, and the cutpoints for the different colours are the same as used for SABAP2, see Figure 7

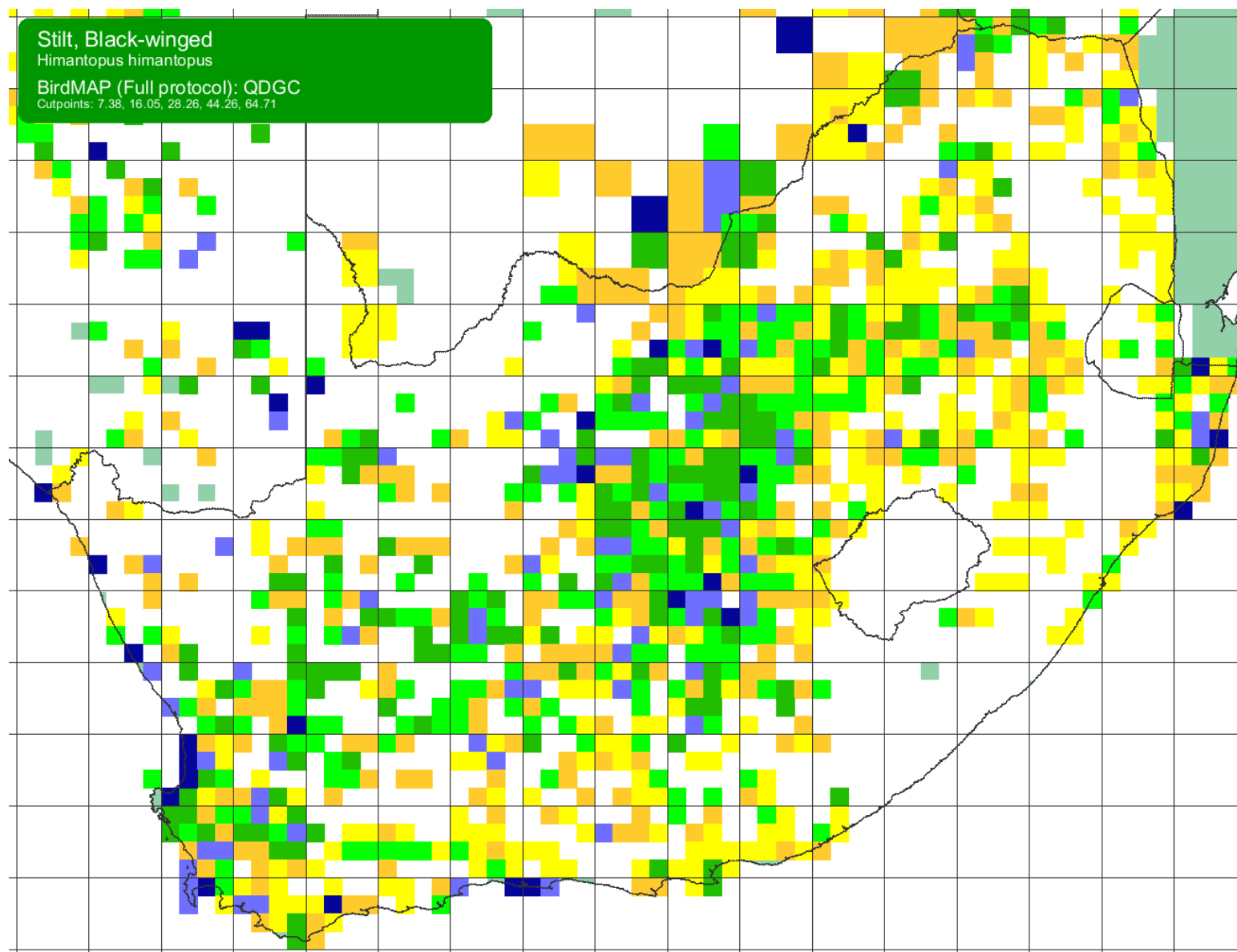


Figure 7. SABAP2 distribution map for the Black-winged Stilt, downloaded 25 April 2017. The detailed interpretation of this map is provided by Underhill & Brooks (2016a). Pentads with four or more checklists are either shaded white, species not recorded, or in colour, with shades based on reporting rate: yellow 0–7.4%, orange 7.4–16%, light green 16–28.3%, dark green 28.3–44.3%, light blue 44.3–64.7% and dark blue 64.7–100%.

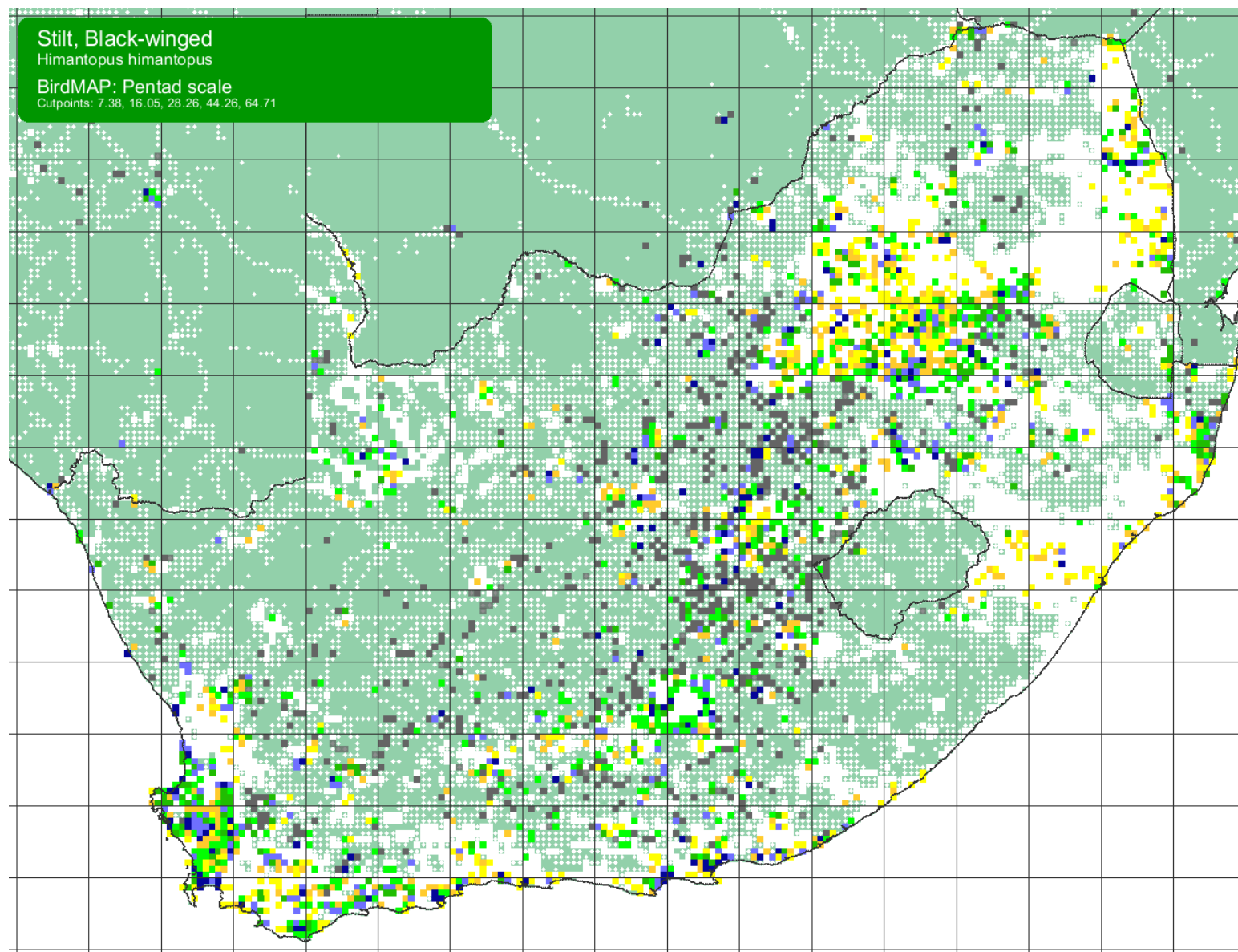


Figure 8. Range-change map between SABAP1 and SABAP2 for the Black-winged Stilt downloaded 25 April 2017. Red, orange and yellow represent quarter-degree grid cells with very large, large, and small relative decreases and blue, dark green and light green represent grid cells with very large, large and small relative increases. A count of the number of grid cells in each category is provided in Table 2. Only grid cells with at least four checklists in both SABAP1 and SABAP2 are shown. Fuller information on the interpretation of this range-change map is provided in Underhill & Brooks (2016b).

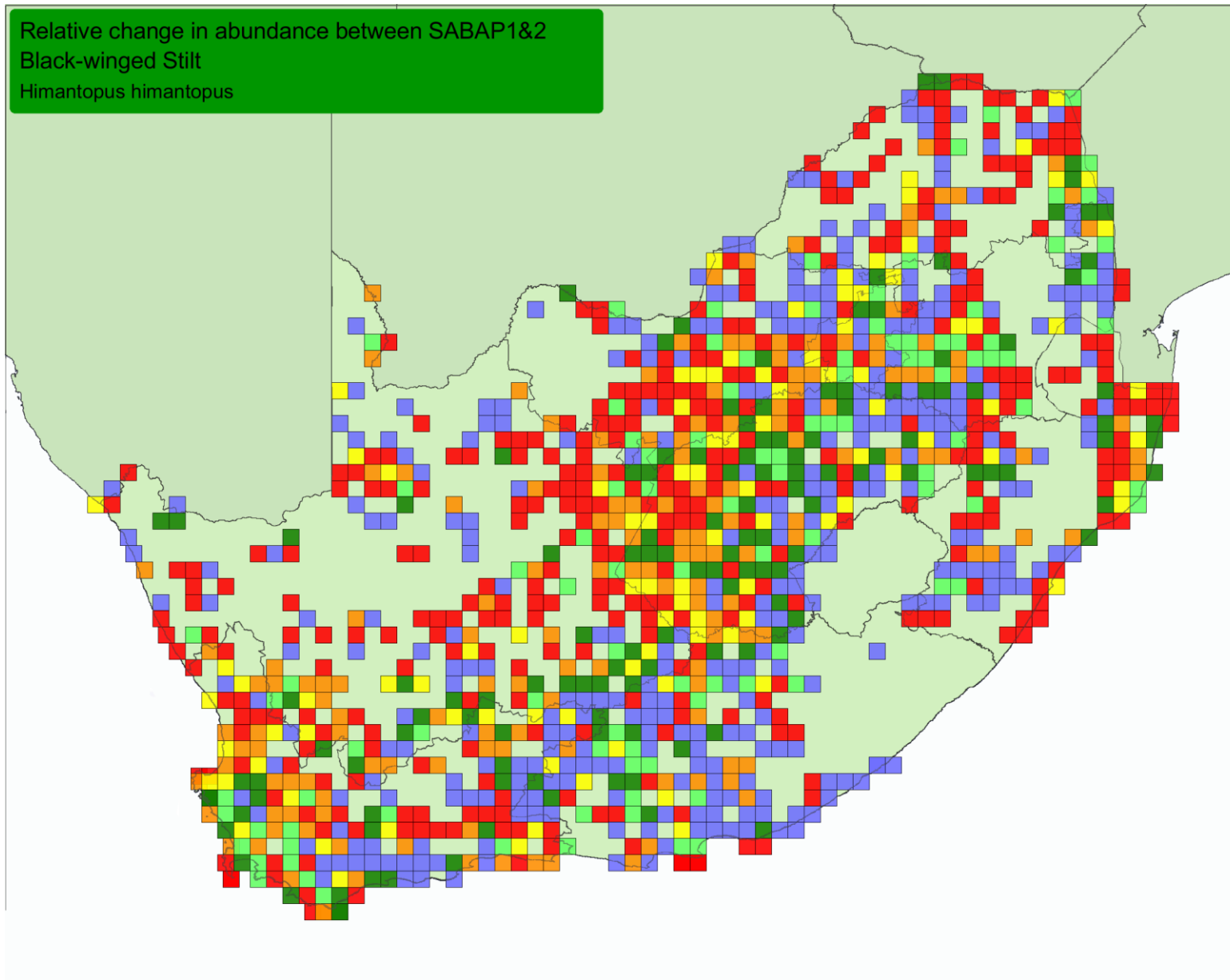


Table 2: Range-change summary for the Black-winged Stilt between SABAP1 and SABAP2. Numbers (and percentages) in each colour category of Figure 8, for which there are at least four checklists per quarter degree grid cell in both SABAP1 and SABAP2. Also shown are the same summaries when the analysis is restricted to grid cells with at least 30 checklists for both SABAP1 and SABAP2.

Status	4+ checklists for SABAP1 and SABAP2		30+ checklists for SABAP1 and SABAP2	
	Count	%	Count	%
Red (very large decrease)	354	30	125	24
Orange (large decrease)	162	14	79	15
Yellow (small decrease)	101	8	46	9
Light green (small increase)	104	9	61	12
Dark green (large increase)	139	12	65	12
Blue (very large increase)	331	28	146	28
Total	1191	100	522	100

Acknowledgements

This paper is part of a series which celebrates the contributions of thousands of citizen scientists to the databases of the first and second bird atlas projects in Southern Africa (SABAP1 and SABAP2). From 2007 to March 2017, SABAP2 (Underhill 2016) was a partnership project of SANBI (South African National Biodiversity Institute), BirdLife South Africa and the Animal Demography Unit in the Department of Biological Science at the University of Cape Town.

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