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ANIMAL DEMOGRAPHY UNIT CITIZEN SCIENCE WEEK, 24 SEPTEMBER TO 2 OCTOBER 2016: CAPE UNION MART HERITAGE HUNT

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PROJECT REPORT

ANIMAL DEMOGRAPHY UNIT CITIZEN SCIENCE WEEK, 24 SEPTEMBER TO 2 OCTOBER 2016: CAPE UNION MART HERITAGE HUNT

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The purpose of the citizen science weeks of the Animal Demography Unit (ADU) is to increase awareness of, and encourage participation in, the citizen science projects of the ADU. This article summarizes participation in the Cape Union Mart Heritage Hunt, the citizen science week that took place over the period Saturday 24 September (which was the Heritage Day public holiday) through to Sunday 2 October 2016. The "week" actually consisted of nine days; typically each ADU citizen science week is designed to include two weekends.

This was the third citizen science week of 2016, with a similar pattern of three events having been followed in 2015. The earlier citizen science weeks in 2016 were known as the Summer Storm (Saturday 13 February to Sunday 21 February) and the Autumn Attack (Saturday 23 April to Monday 2 May). This is the first citizen science week with a formal report.

The focus of participation was on the ADU Virtual Museum and the Second Southern African Bird Atlas Project (SABAP2). The Postmasburg BioBash (Ainsley et al. 2016) took place over the first weekend of this citizen science week. This event transcended the ADU Virtual Museum and SABAP2, integrally involving both. This citizen science week also served as the first African Bird Atlas Week, for which we aimed to get participation in atlasing in as many African

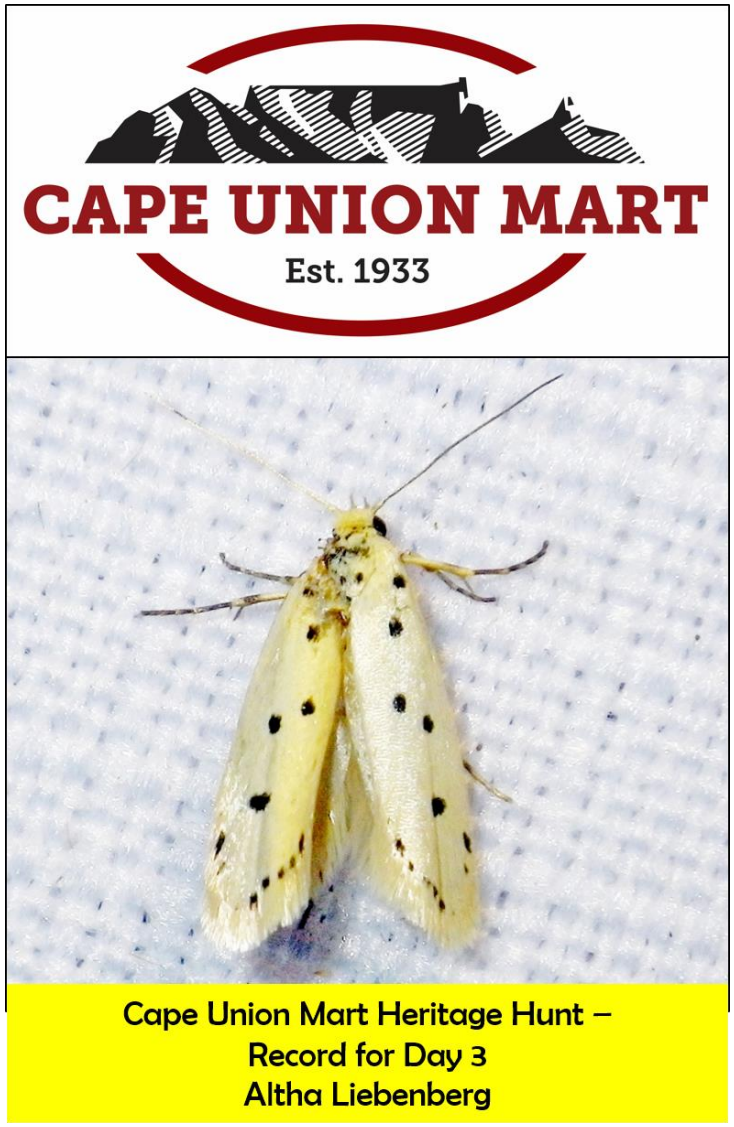

Figure 1. *Record of the Day for the third day of the Cape Union Mart Heritage Hunt (Table 2).*

countries as possible. This report deals with these four components of the Cape Union Mart Heritage Hunt.

ADU VIRTUAL MUSEUM

97 citizen scientists contributed a total of 3,137 records to the ADU Virtual Museum (http://vmus.adu.org.za) during the citizen science week. Eight contributors submitted more than 100 records: Kate Braun 306, Vaughan Jessnitz 271, Christopher Willis 173, Gary Brown 128 and Ryan Tippett 106, Altha Liebenberg 95 and Bernardine Altenroxel 86. Five citizen scientists contributed to 11 or more of the 17 sections of the Virtual Museum: Vaughan Jessnitz 14, Bernardine Altenroxel 13, Gary Brown 12, Allison Sharp 11, and Ryan Tippett 11. Each of the 17 sections of the ADU Virtual Museum received at least some records, and six sections received more than 100 records: BirdPix 934, LepiMAP 825, MammalMAP 294, ReptileMAP 231, TreeMAP 225 and OdonataMAP 178 (Table 1).

On each of the nine days of the Heritage Hunt, a record was selected from those that had been submitted, and become the Record of the Day (Table 2, Figures 1 and 2). This was posted to the ADU Facebook page (https://www.facebook.com/animal.demography.unit) and shared from there to other Facebook pages, groups and timelines, as appropriate. The motivations for the selection of each of the nine Records of the Day is presented in Table 2. There are also links to these records in the Virtual Museum.

***Figure 2**. Record of the Day for the seventh day of the Cape Union Mart Heritage Hunt (Table 2).*

Table 1. *Numbers of records submitted to each section of the ADU Virtual Museum during the Cape Union Mart Heritage Hunt, from 24 September to 2 October 2016.*

ADU Virtual Museum section	Records
BirdPix	934
BOP	4
DungBeetleMAP	37
EchinoMAP	3
FishMAP	11
FrogMAP	98
LacewingMAP	30
LepiMAP	825
MammalMAP	294
MushroomMAP	24
OdonataMAP	178
OrchidMAP	52
PHOWN	79
ReptileMAP	231
ScorpionMAP	46
SpiderMAP	66
TreeMAP	225
TOTAL	**3,137**

SECOND SOUTHERN AFRICAN BIRD ATLAS PROJECT (SABAP2)

1,021 full-protocol checklists were submitted to the bird atlas project during the citizen science week. That represents an unprecedented average of 113.4 checklists per day, sustained over nine days. The previous best average was 93.3 checklists per day during the 2016 Autumn Attack, the citizen science week immediately prior to this one. These 1,021 checklists contained 48,202 sight records of bird distribution; in addition there were 10,571 records on ad hoc lists, so that the SABAP2 database grew by 58,773 records.

The number of pentads visited for the first time ever was 105. A substantial fraction, 34 of these, were done by the team which undertook the Postmasburg BioBash duriing the first weekend of the citizen science week (see below).

POSTMASBURG BIOBASH

A BioBASH took place in the Postmasburg district of the Northern Cape over the first weekend of the Cape Union Mart Heritage Hunt (Ainsley et al. 2016). The BioBASH was initiated and organised by Kerry Fairley. Participants arrived in the area on the Friday and departed on the Monday. Eight travelled from Johannesburg, Megan Loftie-Eaton from Hoedspruit in Limpopo and Altha Liebenberg from Danielskuil in the Northern Cape. Vincent Parker diverted the course of his Northern Cape atlasing to take part in the Postmasburg BioBash. He had atlased in the area for some days before the BioBash.

More than 65 pentads were atlased and a series of Virtual Museum records was collected. 34 pentads were atlased for the first time, and range extensions and/or increases in abundance were noted for a number of bird and reptile species. For example, the Violet-eared Waxbill *Granatina granatina* is now a frequently recorded species in the Postmasburg district, with large increases in reporting rate since SABAP1 (Figures 3 and 4). In the Postmasburg quarter degree grid cell, the reporting rate increased from 0.2% to 23.1%; to achieve this increase in reporting rate, the population is estimated to have increased 115-fold (Figure 4) (Underhill & Brooks 2016). There are similar results throughout the district. During the BioBASH, Black Spitting Cobra *Naja nigricincta woodi* recorded c. 50 km east of its previous range (http://vmus.adu.org.za/?vm=ReptileMAP-159169) (Figure 5).

Table 2. *The Record of the Day for the nine days of the Cape Union Mart Heritage Hunt, from 24 September to 2 October 2016.*

Day	ADU Virtual Museum section photographer	Motivation	URL of record in ADU Virtual Museum
1	LepiMAP Bernardine Altenroxel	We can use LepiMAP data to record flight periods for various butterfly species	http://vmus.adu.org.za/?vm=LepiMAP-603955
2	ScorpionMAP Jaline Versfeld	Jaline is a first time contributor to the VM and her record is also the first scorpion record for the quarter degree grid cell 2823AC	http://vmus.adu.org.za/?vm=ScorpionMAP-1789
3	LepiMAP Altha Liebenberg	These are the first ever moth records for the quarter degree grid cell 2823AC (Figure 1)	http://vmus.adu.org.za/?vm=LepiMAP-604383
4	BirdPix Kyle Mannheim	The first BirdPix record from Senegal (now BirdPix has records from 25 African countries)	http://vmus.adu.org.za/?vm=BirdPix-30004
5	OrchidMAP Gary Brown	This record from Malawi serves as a reminder that OrchidMAP is mapping all orchids found on the African continent	http://vmus.adu.org.za/?vm=OrchidMAP-4085
6	MushroomMAP Colin Jackson	MushroomMAP provides the opportunity to make a real contribution to our understanding of the distribution of this fascinating component of biodiversity	http://vmus.adu.org.za/?vm=MushroomMAP-2903
7	ReptileMAP Luke Kemp	ReptileMAP aims to improve our understanding of the diversity and distribution of reptiles in Africa (Figure 2)	http://vmus.adu.org.za/?vm=ReptileMAP-159116
8	LacewingMAP Vaughan Jessnitz	This is a somewhat obscure group of insects, and this project is an ideal way to sensitize everyone to their existence. As well as to gain a better understanding of their distributions	http://vmus.adu.org.za/?vm=LacewingMAP-9780
9	MammalMAP Bernardine Altenroxel	This record serves as a great reminder that camera traps are excellent tools for MammalMAPping!	http://vmus.adu.org.za/?vm=MammalMAP-19605

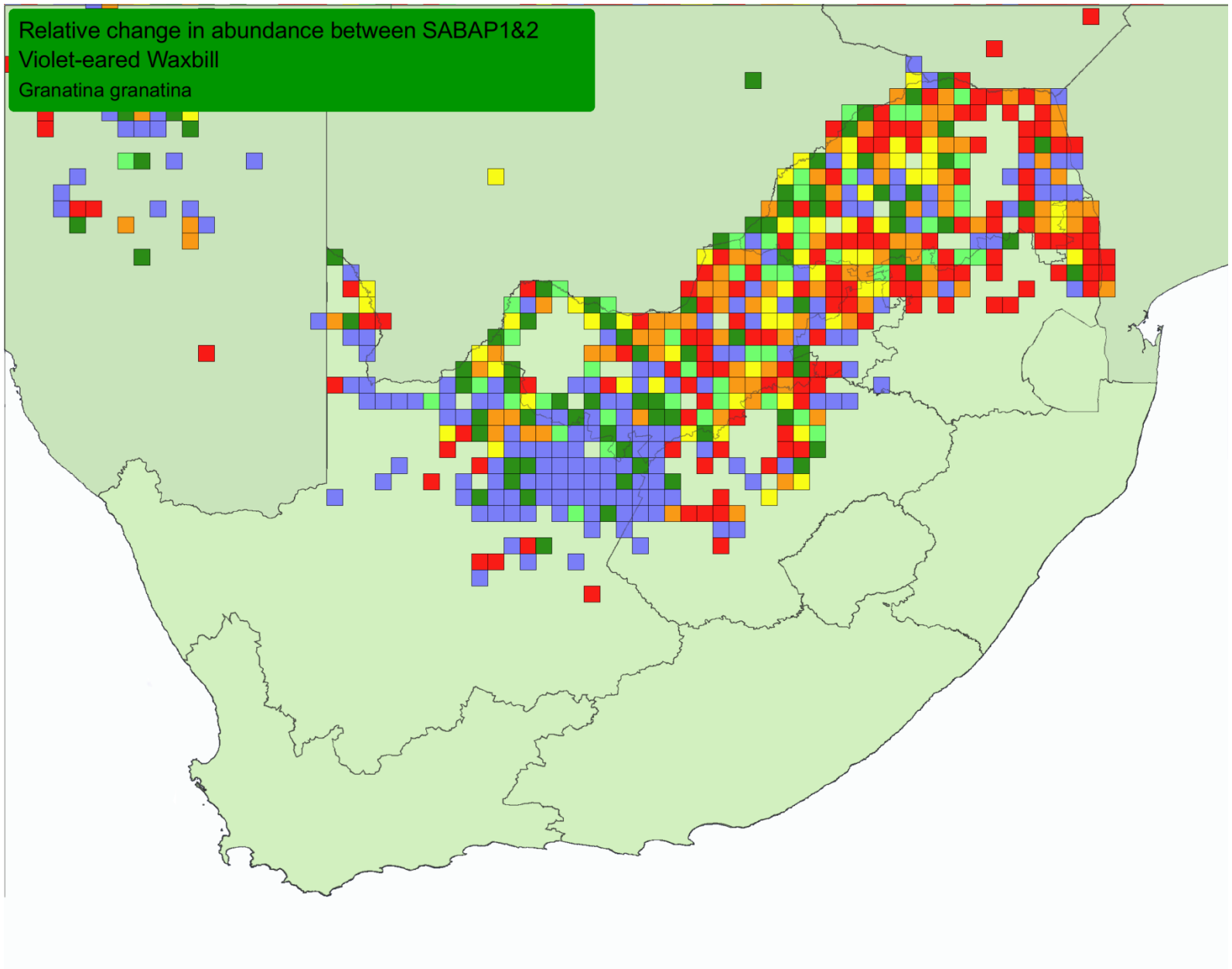

Figure 3. *Range-change map for the Violet-eared Waxbill. See Underhill & Brooks (2016) for interpretation guidelines for this map. In brief, Blue, Dark Green and Light Green represent quarter degree grid cells with large, moderate and small increase, and Red, Orange and Yellow represent cells with large, moderate and small decreases*

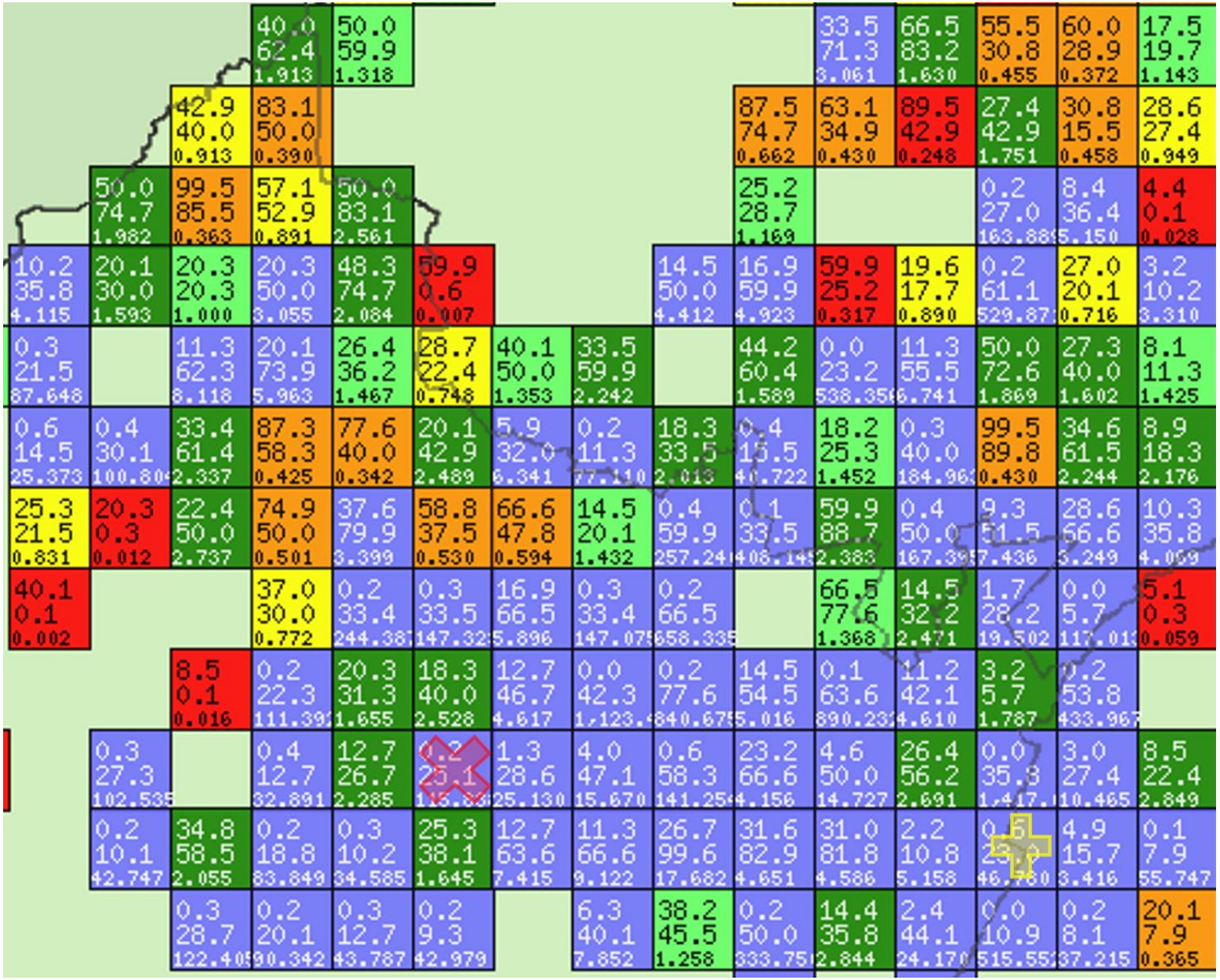

Figure 4. *Range-change map for the Violet-eared Waxbill for a section of north-central South Africa. Postmasburg lies in the quarter degree grid cell with the red multiplication sign and Kimberley in the grid cell with the yellow plus sign. The top number in each grid is the reporting rate for the grid cell during SABAP1, the middle number is the SABAP2 reporting rate, pooling the data for all pentads within the grid cell, and the bottom number is the estimated change in relative abundance between SABAP1 and SABAP2. Numbers larger than one indicate increases*

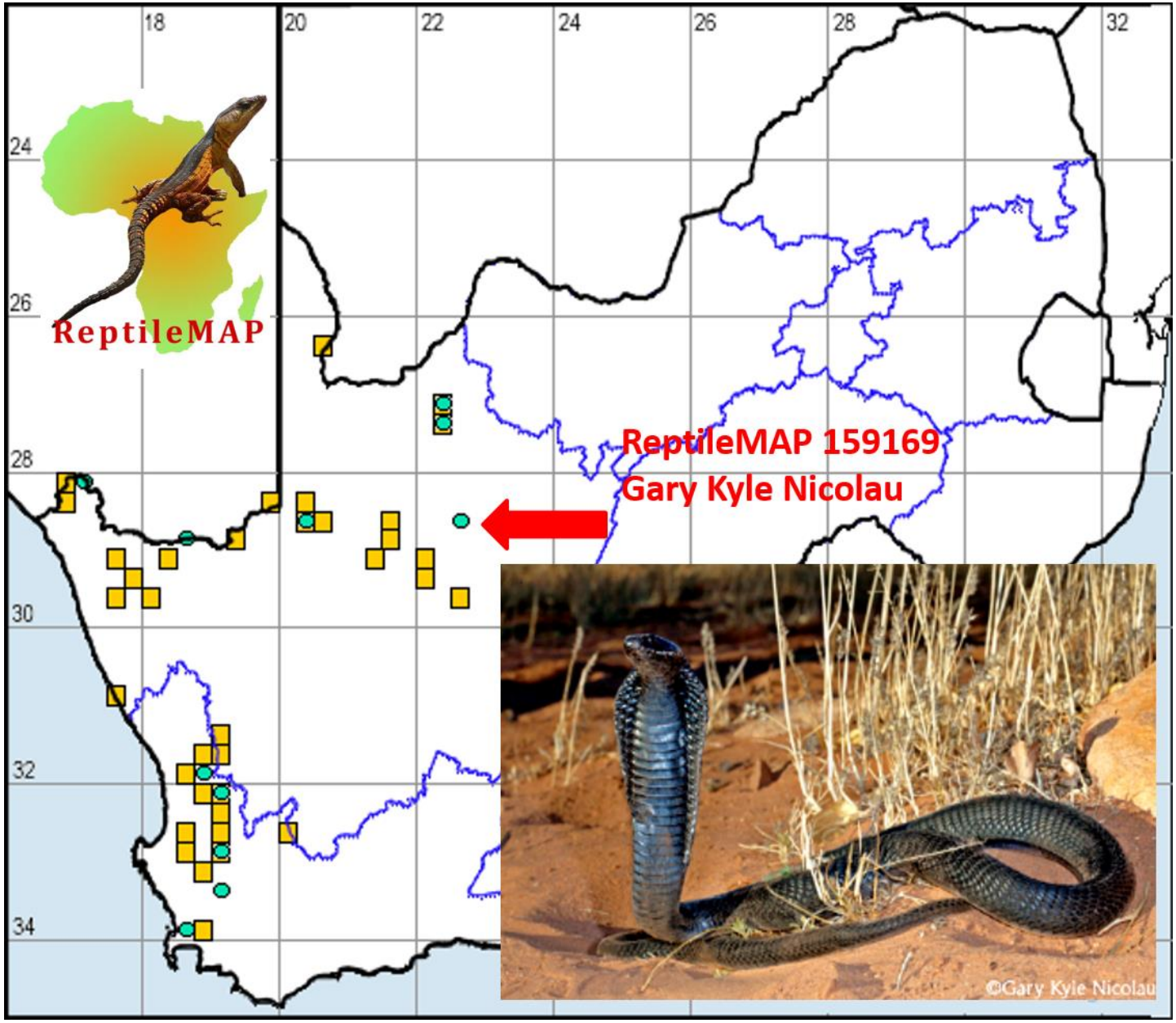

Figure 5. *Distribution map for the Black Spitting Cobra from the ADU Virtual Museum. The ReptileMAP database contains 79 records for this species, from 42 quarter degree grid cells. 65 of the records (from 42 grid cells) represent museum specimens and other distribution records, mostly historical, and are plotted with orange squares. There are 14 photographic records (11 grid cells) in the ADU Virtual Museum. The one marked with a red arrow was made by Gary Kyle Nicolau during the Postmasburg BioBASH and represents a significant range extension.*

AFRICAN BIRD ATLAS WEEK

The African Bird Atlas Week followed a week after the publication of the proposed protocol for atlasing the whole of Africa (Underhill & Brooks 2016). This protocol envisaged records for the bird atlas being received both on checklists consisting of sight records, and on photographic records submitted to the ADU Virtual Museum.

The bird atlas project in Kenya, called Kenya Bird Map, passed an important milestone during the citizen science week. The project reached 100,000 full protocol distribution records on 28 September. Coverage in Kenya increased by 36 pentads during the citizen science week, growing to 738 pentads visited. Kenya has a total of 6110 pentads, and coverage increased from 11.9% to 12.6% in just nine days.

During the citizen science week, full protocol checklists were submitted for 10 African countries: Ghana 2, Kenya 61, Malawi 5, Mozambique 6, Namibia 41, Nigeria 17, Reunion 15, Swaziland 2, Zambia 4 and Zimbabwe 26. On both full protocol checklists and the ad hoc checklists submitted, a total of 1001 African bird species were recorded during the citizen science week.

One of the alternative sources of data for atlasing Africa as a whole is the BirdPix section of the ADU Virtual Museum (Underhill & Brooks 2016). This strategy enables people who are not confident of their bird identification skills to participate in the bird atlas project; in reality it enables people who are totally unable to identify birds to be involved. These people can upload their photos of birds, and the identification will be done by a member of the expert panel. The only criterion is that the photographs need to be good enough for the bird to be identifiable by the expert panel, thus even poor photos quality. Potentially, this can be a valuable source of bird distribution data.

A total of 934 records from 20 countries, including South Africa, were submitted to the BirdPix section of the ADU Virtual Museum during the citizen science week (Table 3). The largest numbers of records were from South Africa 413, Swaziland 304 and Malawi 97 (Table 3). There are a total of 54 countries in Africa.

Table 3. *During the Cape Union Mart Heritage Hunt, from 24 September to 2 October 2016, photographic records of bird distribution were submitted to the BirdPix section of the ADU Virtual Museum from 20 of Africa's 54 countries. The table gives the number of records per country.*

Country	BirdPix Records
Angola	2
Botswana	51
Congo (DRC)	1
Ethiopia	1
Egypt	4
Kenya	14
Lesotho	4
Malawi	97
Mozambique	3
Namibia	3
Nigeria	1
Rwanda	2
Senegal	3
Seychelles	14
South Africa	413
Swaziland	304
Tanzania	3
Uganda	3
Zambia	6
Zimbabwe	5
TOTAL	**934**

ACKNOWLEDGEMENTS

The Animal Demography Unit wishes to acknowledge and thank Cape Union Mart for their support in making fine outdoor clothing available to the ADU team, both for fieldwork and for public engagements. We hope to thank Cape Union Mart by taking the brand into Africa and beyond.

We especially celebrate the contributions made by our citizen scientists, and by the individuals and members of committees who play a key role in keeping our projects running smoothly. We make special mention of the members of identification panels for the ADU Virtual Museum and of the adjudicators of “Our of Range Forms” for the bird atlas. Kerry Fairley, EXM, undertook the logistics and leadership for the Postbasburg BioBash. We are grateful to her and her team for the foundation event of the citizen science week. We acknowledge the help of ADU staff, interns and postgraduate students.

BirdLasser played a key role in supporting the African Bird Atlas Week. Henk Nel and his team worked hard to ensure that the BirdLasser app operated in all African countries, and also the offshore islands, in time for the bird atlas week.

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