

**Animal Demography Unit
Department of Biological Sciences
University of Cape Town**



An early summary of ADU highlights during 2015

This document has been assembled in the first days of 2016. It aims to capture the highlights of events at the Animal Demography Unit (ADU) in 2015 while they are still uppermost in our minds. It is not intended as a deep and reflective annual report. Many of our projects do not get a mention at all!

The ADU has developed a set of six core values. These are used to guide strategic and operational decision making. The highlighted activities have each made a contribution to one or more of the ADU's core values, and these are listed in each section of this summary report.

Core values of the Animal Demography Unit

- 1. Conservation:** Informing, influencing and motivating policy development based on solid/sound quantitative/scientific evidence through our combined commitment to long-term monitoring
- 2. Partnership:** Nurturing partnerships with people, organizations and governments on the African continent for the sake of biodiversity conservation and mutual growth
- 3. Empowering:** Enabling people to play a meaningful and living role in the science conversation by transforming Citizen Scientists into “ambassadors for biodiversity”
- 4. Openness:** Adopting an “Open Access” data sharing paradigm that maximizes the benefit derived from data collectively gathered, thus, advancing interdisciplinary scholarly research and informing conservation needs
- 5. Innovation:** Continuing the pioneering work that has made us leaders in Citizen Science
- 6. Education:** Providing training and research opportunities to the next generation of scientists, leaders and environmentalists

Bird Atlas Projects

The Second Southern African Bird Atlas Project (SABAP2) had a fantastic year in 2015. SABAP2, in South Africa, Lesotho and Swaziland, is a partnership between SANBI, BirdLife South Africa and the ADU. Here are some of the headline

achievements. 25,334 checklists were submitted in the year, nearly 5000 more than 2014. The total number of records submitted in the year passed the 1.3 million mark; the exact total was 1,300,293! The number of records submitted on ad hoc lists and as incidentals was 193,809. A total of 1,274 pentads was visited for the first time in 2015, and coverage of South Africa, Lesotho and Swaziland reached 74.3% (this figure was 87.8% if you leave out the Northern Cape where coverage was on 46.8% and increasing rapidly, and if leave out Lesotho where coverage is static; it grew there from 26.7% to 27.4% during the year). 830 BirdMAPpers submitted checklists which had been made in 2015.

On 1 November 2015, Tim Wood submitted his 3000th checklist to SABAP2. This is the opportunity to congratulate him on this stellar achievement. Tim made his first checklist in September 2007, the third month of the project, and has not missed a single month since then. This is more than one checklist per day over this entire period. He is top of the SABAP2 leaderboard by more than 700 checklists. Tim atlases throughout South Africa, but the superb coverage we have for KwaZulu-Natal is to a large measure attributable to his persistence and diligence (Figure 1).

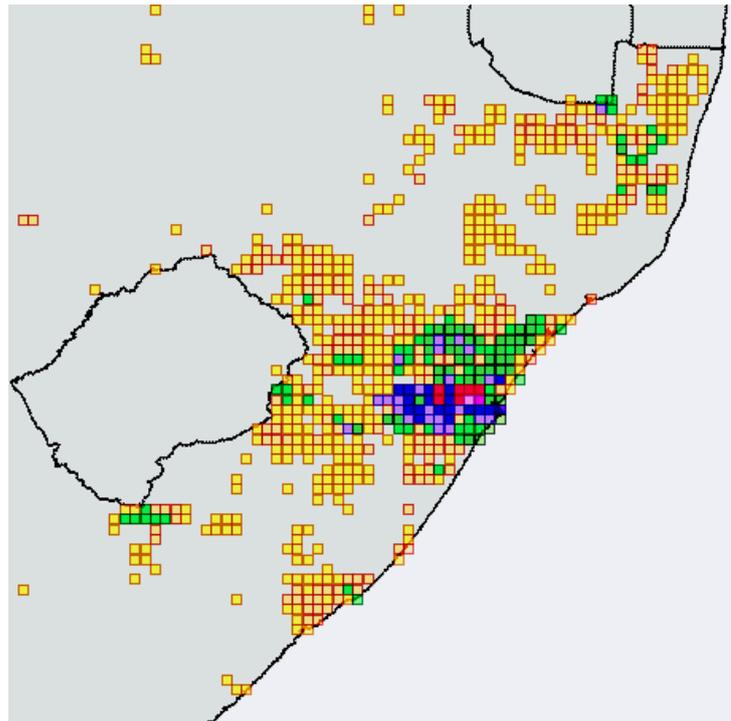


Figure 1. Part of Tim Wood's personal coverage map for SABAP2

For the first five years of SABAP2, Johan van der Westhuizen topped the SABAP2 leaderboard. Sadly, Johan passed away in October this year, and we lost one of the stalwarts of the project. Johan atlased mainly in the Overberg region of the Western Cape, centred on Moorreesburg, and this is one of the rural areas of the SABAP2 region for which we have superb atlas coverage.

The bird atlas projects in Namibia, Zimbabwe and Kenya continued to make steady progress. A bird atlas team was appointed in Nigeria, and the project there made a start at assembling the large volume of historical data.

These paragraphs do not begin to do this project justice. A full report on SABAP2 for 2015 needs several pages of text, plus tables and figures.

The bird atlas projects make a decisive contribution to the following core values: Conservation, Partnership, Empowering, Openness and Innovation.

ADU Virtual Museum

A total of 65,775 photographic records was uploaded to the ADU Virtual Museum during 2015. This was a 15.0% increase on the 2014 total.

The total size of the ADU Virtual Museum database at the end of 2015 was 1,305,324 records. This is made up of the “photographic” database of 220,430 records, supplemented by databases of museum records and other collections: frogs (42,335 records), mammals (551,675), reptiles (124,831), butterflies (333,375), lacewings (8,462) and dung beetles (24,216).

The paragraphs below highlight a few key achievements of Virtual Museum projects in 2015. It is far from exhaustive. Five of the 17 sections of the Virtual Museum get a paragraph.

The ADU Virtual Museum makes a decisive contribution to the following core values: Conservation, Partnership, Empowering, Openness and Innovation.

OdonataMAP

OdonataMAP was launched, without fanfare, in September 2010. By the end of 2014, it had grown steadily to reach 11,718 records. Photographs from OdonataMAP were included (with permission of the photographers) in the identification field guide published last year, written by Warwick and Michèle Tarboton, *A Guide to the Dragonflies and Damselflies of South Africa*. Soon after the publication of this book, a Facebook group called Dragonflies and damselflies of southern Africa (<https://www.facebook.com/groups/dragonflies.damselflies.southern.Africa/>) was set up by Jacobus Labuschagne, and the ADU appointed DST/NRF intern Christie Craig as OdonataMAP Project Coordinator. These interconnected factors led to an explosion of growth of OdonataMAP, especially over the final months of 2015. During the year 6,504 records were submitted, an increase of 56% over the total at the end of 2014. 3,165 of the records were submitted in the final three months of 2015. The conservation significance of this project is that the dragonflies and damselflies (technically the Odonata) are superb indicators of the quality of freshwater.

FishMAP

In partnership with the South African Institute for Aquatic Biodiversity (SAIAB) in Grahamstown, we launched FishMAP in August. Dr Jeremy Shelton, a postdoc in the Department of Conservation Ecology, Stellenbosch University, is Project Coordinator. FishMAP is the atlas of freshwater fishes in southern and eastern Africa. With the launch of FishMAP, the ADU now has atlas projects for all the groups of vertebrates; the others are mammals, birds, reptiles and amphibians. Within the first 100 submissions to FishMAP was a record of a Nile Tilapia *Oreochromis niloticus* in a river system in Limpopo where it was previously unknown. Nile Tilapia is an aggressively invasive freshwater fish species which radically alters native species distributions, rearranges aquatic food webs and hybridizes with the six endemic tilapia of South Africa

LacewingMAP

LacewingMAP was launched in September 2014. The reason why it features in the highlights of 2015 was that it has inherited the complete assemblage of lacewing records for South Africa. This collection of 8,462 records is one of the career achievements of taxonomist Dr Mervyn Mansell. The ADU is delighted to have been entrusted with the curation of this database. In its first 16 months, 860 records were submitted to LacewingMAP by citizen scientists, increasing the size of the “official” database by more than 10%.

DungBeetleMAP

DungBeetleMAP was launched in December 2015. This was a unique event in that the size of the database at the start was 24,216 records, the entire assemblage of dung beetle records for South Africa, compiled by Professor Clarke Scholtz and the Scarab Research Group at the University of Pretoria.

LepiMAP

LepiMAP, the Atlas of African Lepidoptera, is a partnership project with the Lepidopterists' Society of Africa. Megan Loftie-Eaton has been Project Coordinator since October 2013. Under her watch, the LepiMAP database has grown by 51,444 records from 26,448 to 77,892, with 27,030 records submitted in 2015 (and 21,504 in 2014). One of the most important records submitted to the project this year was made by Bernadine Altenroxel on 12 December 2015. Her record of Zimbabwe Yellow-banded Sapphire *Iolais nasisii* is the second record of the species in South Africa, the first was made in the same region 30 years ago and was in the process of being declared doubtful. The species occurs farther north in Africa, from Zimbabwe to Uganda.

Citizen Scientist Days and Citizen Science Weeks

Following on from the four Citizen Scientist Days pioneered in 2014, we held 15 Citizen Scientist Days in 2015: Grahamstown, Port Elizabeth, Vereeniging, Polokwane, Nelspruit, Pietermaritzburg, Durban, UCT, Intaka Island in Cape Town, Kirstenhof in Cape Town, Vredendal, East London, Rustenburg, Rivonia in Johannesburg and the Southern African Wildlife College in Hoedspruit. These have taken a variety of formats, with most having been 09h00 to 13h00 events on a Saturday morning, and some taking place during an evening or an afternoon. Three stand out as being different: the event at UCT with masters students in science communication from the University of Stellenbosch, a collaborative event with the NGO A Rocha at Intaka Island, and a “job science” event with “about to graduate” students from all over the SADEC region at the Southern African Wildlife College at Hoedspruit.

We held three Citizen Science Weeks in 2015. The focus of these weeks is on the collection of records for the bird atlas and the Virtual Museum and to highlight the importance of the various atlas projects, and to foster interest in them by citizen scientists. The Summer Storm took place from Saturday 31 January to Sunday 8

February, the Autumn Attack from 25 April to 3 May, a nine-day period with only three work days, and the Heritage Hunt took place from 19–27 September, and included the Heritage Day public holiday. The dates of the Citizen Science Weeks for 2016 have been decided: Summer Storm, 13–21 February; Autumn Attack, 23 April–2 May; Heritage Hunt, 24 September–2 October.

There is no doubt that the Citizen Scientist Days and Citizen Science Weeks have been an important catalyst in the growth in project participation in the past two years. It is planned to continue them, in various formats, in 2016.

The Citizen Scientist Days and the Citizen Science Weeks make a decisive contribution to all the following core values: Conservation, Partnership, Empowering, Openness, Innovation and Education.

The BioBash concept

During the final Citizen Science Week in September, we pioneered the concept of the BioBash. This is an event that focuses not only on just one facet of biodiversity (such as an “atlas bash”) to the exclusion of other taxa. A BioBash is a multi-taxon event.

The first BioBash was held in southern Namaqualand, centred on Vanrhynsdorp, where Salome Willemse leads an active group of citizen scientists. The BioBash idea was successfully tested here as well as at the Pilot Citizen Science Event at the Hans Hoheisen Wildlife Research Station (adjacent to Orpen Gate, Kruger National Park), from 27–30 November 2015. At this latter event in particular there was ample training and exposure for citizen scientists in multiple projects and interest areas.

This growing strategy by the ADU is to expand the skills and interests of citizen scientists. It provides the ADU and other agencies with a motivated workforce to gather data and monitor biodiversity across multiple taxa. This is critically important in an era in which biodiversity and conservation monitoring budgets are being cut due to competition in other fiscal areas as well as due to prevailing negative national socio-economic circumstances. This constraints informs the concept of BioMAPping and BioBashes as focused training and collection events. The ADU plans to continue to train, develop and empower citizen scientists to collect data for multiple taxa, in both animal and plant groups in order to support the need for rich and relevant data for environmental and biodiversity-decision making.

The BioBashes make a decisive contribution to the following core values: Conservation, Partnership, Empowering, Openness and Innovation.

SAFRING

The main focus at SAFRING during 2015 was on improving the data systems, which increases the quality and value of the database, especially as more recaptures and more measurements can be submitted. Improving the efficiency of data systems also enables more data to be processed, enabling an expansion of bird ringing in the

future. As a new innovation, ringers can add photographic records of the birds they ring to the BirdPix section of the ADU Virtual Museum. They simply include the ring number listed in the field Notes, and this is automatically linked to the ringing record. This enables plumages, moult, other interesting aspects to be seen and studied (see, for example, http://safring.adu.org.za/ring_info.php?ring=BE58110).

The SAFRING website was revamped during the year (<http://safring.adu.org.za>). There are regular news reports; a fixed feature has been a series on longevity records for individual species. These pages are visited by birders, ringers and the general public internationally.



Figure 2. Ring 9A30449 in Zambia; the complex story about the context of this recovery is at http://safring.adu.org.za/story_content.php?id=101

Four of the most interesting ring recoveries of 2015 were an Arctic Tern 11,294 km from Ósland, Iceland to Kommetjie, Western Cape (ring 776621 Iceland), a Brown Snake-eagle 793 km from Limpopo to Choma in Zambia (ring 9A30449), two Little Terns 6280 km from Haifa, Israel, to Inhambane, Mozambique (rings B41678 and B41693 Israel) and a Lesser Spotted Eagle 7563 km from Dolny Kubin, Slovakia, to Savuti, Botswana (ring BL1109 Slovakia).

The oldest bird recovered in 2015 was a Cape Gannet ringed by Norbert Klages as a nestling on Bird Island, Algoa Bay, on 15 February 1985. It had been resighted on the island on 15 November 1990. This bird was found dead on 17 June 2015 near Port Shepstone, KwaZulu-Natal, 517 km away. The elapsed time was 30y 4m 9d. This is the greatest elapsed time of birds reported to SAFRING during 2015 (Full details of this gannet are at http://safring.adu.org.za/ring_info.php?ring=957115).

A new longevity record for the White-breasted Cormorant was reported. The cormorant (ring number 978110) was ringed as a chick by Paul Martin in Port Elizabeth on 23 May 1993. It was found by Albert Schultz within a few kilometres of the place of ringing on 3 March 2015. It had a fishing hook lodged in its oesophagus and died soon after being found. The elapsed time was 21y 9m 19d, a new record by 6 months (see http://safring.adu.org.za/ring_info.php?ring=978110).

At the Pilot Citizen Science Event held at the Hans Hoheisen Wildlife Research Station, there was an especial emphasis on bird ringing, with a view to the site becoming a long-term station for monitoring trends in bird abundance through ringing. This technique has been field-tested in Europe and North America.

SAFRING makes a decisive contribution to the following core values: Conservation, Partnership, Empowering, Openness, Innovation and Education.

Four PhDs and one MSc

By the formal end of the 2015 academic year, in early 2016, four PhD students are planning to have their PhDs submitted, and one MSc was completed during the year. Two of the PhD projects were based almost entirely on data collected by citizen scientists; two of the PhDs and the MSc were based largely on data collected by high-tech logging systems.

The postgraduate research makes a decisive contribution to the following core values: Conservation, Partnership, Innovation and especially Education.

Partnerships

In 2013, the ADU conducted a strategic planning and review process which highlighted that partnerships and collaborations with like-minded organisations were necessary to meet our biodiversity conservation and environmental decision-making needs. The ADU has identified several key areas for collaboration in areas of significant need and priority. The ADU has explicit strengths in project design, organisational strengthening, data curation, biodiversity informatics, statistical ecology and data analysis. These attributes enable it to play a key role in supporting these organisations, and linking science to high impact conservation action. Memoranda of Understanding were finalized with The Cape Leopard Trust, VulPro and the Bird Migration Research Station of the University of Gdańsk, and are in an advanced stage with BirdLasser and the Southern African Wildlife College. A Declaration of Intent was signed with BirdLife South Africa.

Other organisations and partners are in the midst of discussions around formulating new relationships and joint project opportunities with the ADU.

The development of MoUs makes a decisive contribution to the following core values: Conservation, Partnership, Empowering, Openness and Innovation.

Poland SA grant

Just as the year was coming to an end, we heard that our application for funding in terms of the South Africa/Poland Science and Technology Research Collaboration Programme had been successful. Our Polish partner is the Bird Migration Research Station, Department of Biology, University of Gdańsk, which is headed by Dr Magda Remisiewicz, a former postdoc in the ADU. The project is entitled *Building an Early Warning System for Biodiversity in the Face of Development and Climate Change* and involves analyses of citizen science datasets from both countries.

This award will make a decisive contribution to the following core values: Conservation, Partnership, Empowering, Openness, Innovation and Education.

Involvement with the SEA

The ADU is providing data to the SANBI team responsible for the biodiversity chapter of the Strategic Environmental Assessment (SEA) for the central Karoo. The purpose of the SEA is to make informed decision about fracking, if the reserves of shale gas in the central Karoo prove viable. The ADU has contributed data from selected Virtual Museum projects. The biggest initiative is for bird atlas data. Vincent Parker moved to SEA region in September, and is systematically making SABAP2 checklists. The overall SABAP2 database for the 3185 pentads in the SEA region consists of 9947 checklists for 2008 pentads (63% coverage).

This involvement makes a decisive contribution to the following core values: Conservation, Partnership and Openness.

Ornithological Observations

Arnold van der Westhuizen continued as editor of the ADU's ejournal *Ornithological Observations*. 30 papers were published in the year in Volume 6, bringing the total number of papers to 192. The number of downloads of the pdfs of papers reached 158,750, of which 74,732 were made in 2015. The most downloaded paper was by citizen scientist Joel Roerig; this paper is the first ever review of "shadow-boxing" in birds (ie attacking reflections in mirrors and other shiny surfaces), and had been downloaded 4080 times by year end <http://oo.adu.org.za/content.php?id=83>. *Ornithological Observations* morphs into *Biodiversity Observations* in 2016, a title which better reflects the broad taxonomic interests of the ADU.

Ornithological Observations makes a decisive contribution to the following core values: Conservation, Partnership, Empowering, Openness, Innovation and Education.

Dr Robert Thomson, Deputy Director

We are delighted that Dr Robert Thomson, Senior Lecturer in the Percy FitzPatrick Institute of African Ornithology has been appointed Deputy Director of the ADU. Robert has been a bird ringer since his undergraduate days at the University of Pretoria, and has continued to be an active atlaser for SABAP2 and a contributor to the ADU Virtual Museum. After his BSc(Hons) at the University of Pretoria, Robert studied and worked in Finland.

Acknowledgements

As ADU Director, I am hugely grateful for the support of the staff team. During 2015 this included Sue Kuyper, Michael Brooks, Rene Navarro, Dieter Oschadleus (permanent staff) and Nosipho Mali, Dane Paijmans, Christie Craig, Laurie Johnson, Ayesha Mobarra, Amour McCarthy as interns (mostly funded by DST/NRF) and Sally Hofmeyr (postdoc). Members of the ADU Advisory Board helped with key insights

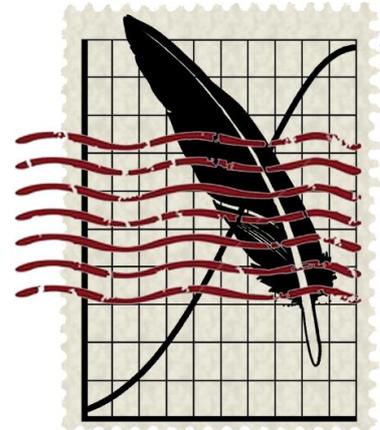
and advice during the year. Ashwell Glasson, chair of the ADU's Advisory Board provided logistical support.

The ADU was supported by a wide range of contracts and donations in 2015. The most important were SANBI (South African National Biodiversity Institute) and a PEER award from the US Government. More detail will be contained in the full annual report.

Ultimately, the greatest support comes from all the citizen scientists who participate in the projects of the Animal Demography Unit. Your contributions during 2015 were overwhelming. Our wish for you, for 2016, is that all of you will empowered to become "ambassadors for biodiversity" (ADU core value 3).

Donate

2016 marks the 25th anniversary of the Animal Demography Unit. If you would like to donate to the biodiversity monitoring projects undertaken by the ADU, this is the information you need to make an EFT. UCT Donations Account, Standard Bank, Rondebosch (Branch 051001). The account number is 071522387 (SWIFT



SBZAZAJJ). Please give the beneficiary reference as Fund 231454, so that the donation gets transferred to the ADU Donations Fund. Please also send Sue Kuyper an email, so we can track the donation from our side (sue.kuyper@uct.ac.za). UCT will send a Section 18A tax donation certificate. Thank you.

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12 January 2016
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