

Project Update: October 2021

August 2021

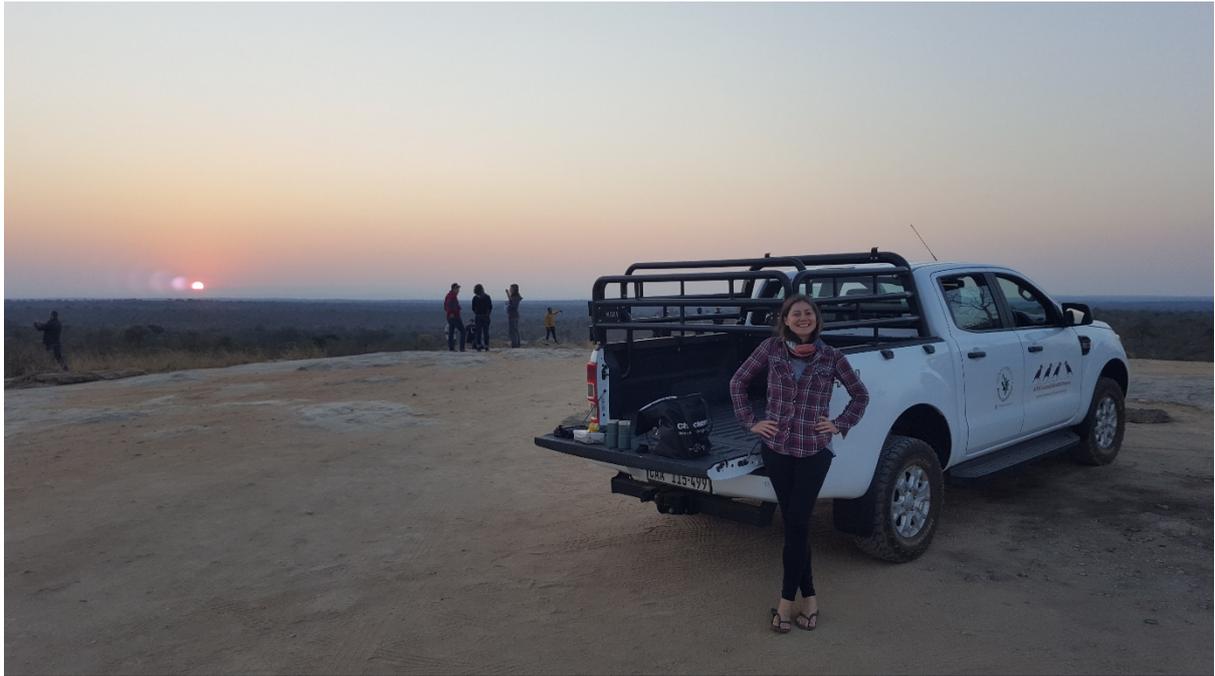
In August 2021, the APNR Ground-Hornbill Project attended the biannual Hot Birds Research Conference, held in Skukuza, Kruger National Park, and coordinated by the Hot Birds principal investigators, Prof Andrew McKechnie and Dr Susie Cunningham. The conference brought together researchers from all around South Africa, including students from University of Pretoria, University of Cape Town, and Rhodes University, who are all investigating how global warming is impacting a variety of species, from birds to bats. The APNR Ground-Hornbill Project's researchers, Carrie, and Kyle, presented some of their research plans and results, specifically on ground-hornbills and how a warming climate could affect these endangered birds. Rita Covas (the project's coordinator) also attended and presented findings on climate and cooperation in the sociable weaver.

The conference also gave the attendees the chance to discuss how they could reduce their own carbon footprint, specifically in aspects of their fieldwork and research.



Figure 1. APNR Ground-Hornbill Project researcher, Kyle, presenting his work at the Hot Birds conference.

It was also a great opportunity to meet and interact face-to-face with fellow researchers, a rare opportunity since the covid pandemic, and of course do some fantastic birding in Kruger National Park!



Figures 2. Enjoying the sites and birding in Kruger National Park while attending the Hot Birds conference.



Figure 3. A hot ground-hornbill seen while attending the Hots Birds conference

September 2021

Thanks to the Rufford funding we were able to purchase some brand new camera traps with solar panels, and temperature loggers for the nests, ready to put into action for the coming season. This will allow us to monitor reproduction, nestling feeding rates and record hourly temperatures inside every nest.



Figure 4. New camera trap with solar panel

The camera traps also allow us to gather additional information on all sorts of interesting behaviour and interactions.



Figure 5. Recent camera trap footage at one of the artificial nests

We published a popular article in the Klaserie Chronicle, a quarterly publication that is distributed for free to lodges and the surrounding community. The magazine promotes fundraising drives and shares news about research and conservation initiatives in the area. We are thrilled to be asked to contribute quarterly articles to this magazine and share our projects news and stories to the public.

KLASERIE CHRONICLE | ISSUE 54 RESEARCH

GROUND-HORN BILLS

IN A WARMING WORLD

How citizen science can help
Words: Kyle Mark Middleton and Carrie Hickman

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KLASERIE CHRONICLE | ISSUE 54 RESEARCH

The AfriNat (Africa Natural Resources) Private Game Reserve (AFNR) Project is a citizen science project that aims to gather data on the behaviour of Ground-Hornbills. Reporting these sightings may sometimes feel meaningless, but each report is a valuable contribution to our research and the national monitoring of the species.

Each time a sighting is reported, a location pin is inserted into our database and mapped. This gives us to gain an understanding of the different groups within the area, their group sizes, group compositions, as well as their movements and home ranges. Additionally, these sightings often coincide with information on the breeding status of the groups and how it changes over time at an individual artificial nest. However, in order to do this, we need a lot of data, data that is impossible to gather without the help of citizen scientists.

Climate change has become the widely popular over-recent years, and the recognition we offer beyond it, research and conservation, while simultaneously increasing and concerning the general public to important scientific questions.

The GHP is currently being on a new and important research question by investigating how the birds will cope in a rapidly warming climate. This research will contribute towards the bigger picture of how Ground-Hornbills, as well as other bird species, might respond to climate change, and where our conservation efforts should be aimed. There are two broad angles from which we are looking at this.

Firstly, using the project's long-term data, we can analyse the role which temperature plays in their breeding success, and whether the fact that they are not all successful means that they suffer the harsh conditions and breed successfully. Secondly, we can use thousands of observations, as well as field temperature data, to help us to change their behaviour. For example, on hot days, birds may need to seek more shade in the shade of trees to cool down, and to therefore are disadvantaged by missing out on foraging opportunities. If there are increasingly hot days over a prolonged period, this could have a

negative impact on the birds' overall condition and could differ from their breeding in that season, even if breeding does occur, increasingly hot days could result in the nestlings within the nest receiving less food since parents and helpers will need to spend more time cooling down and feeding themselves, rather than gathering food and feeding their offspring.

Birds are an early indicator and have several ways in which they can then respond. They can adjust their wings to increase lift above the table, they can open their beaks to pant, and of course, they can move to shadier areas and use their wings to get away from the hot ground surface, however, in order to see how the changing climate might affect them, we need to know at what temperatures these behaviours begin to happen.

In order to have been using the photos and videos the project has collected, we are now looking at using citizen science to gather additional footage on the birds and so large anyone who has footage in the area is invited, and especially if they do please send them to us. It is important to include the date, time and the general location on some the photos or videos taken. By doing this you will be helping us create a robust study and provide a platform for us to base future conservation efforts on in this species and others. ■

"The GHP is currently embarking on a new and important research question by investigating how the birds will cope in a rapidly warming climate."

We need your help

The AFNR Ground-Hornbill Project are calling on citizen scientists to report sightings of this bird.

If you see a Ground-Hornbill, take a photo or video and record the date, time and location of sighting. Email this to rghnatutu@gmail.com or WhatsApp it to (+27)72 345 6584.

Figure 6. Our popular article published in the Klaserie Chronicle.

October 2021

With the ground-hornbill breeding season looming, we started our first round of nest checks throughout the study site. This gave us the opportunity to assess the nests and make any repairs to artificial nests where needed.

We collected five new artificial nests made by the Mabula Ground-Hornbill Project and have installed three of these so far. These nests have been painted a lighter colour to try and reflect sunlight, reducing surface temperatures and creating cooler microclimates within the nests. This is part of an ongoing effort to provide these birds with the best possible artificial nest in a warming climate.



Figure 7. New artificial nests before installation, provided by Mabula Ground-Hornbill Project

Two of these were installed in new locations and one replaced an old nest that had succumbed to termite damage. Baobab Ridge Lodge kindly donated an artificial nest where staff and guests from the lodge came to help us install the nest and learn about the birds. This nest will fill a gap where there are currently no suitable nest sites for the birds and hopefully a group will find it over the coming season.



Figure 8. Top left: Carrie doing a routine nest check. Top right: Field guide, David, with Kyle after helping us install an artificial nest. Bottom: staff members and lodge guests help with the installation and learn about ground-hornbills.

Remotely we attended the annual Ground-Hornbill Working Group meeting on 20th and 21st October 2021, held online. This annual meeting/workshop is a multi-stakeholder event held to align and enhance the conservation efforts of ground-

hornbills. This included a science colloquium where Carrie and Kyle presented their findings, results, and their proposed work going forward in the APNR Ground-Hornbill Project. The working group meeting was an opportunity to discuss all conservation efforts and implementation for the coming year as well as any research gaps that need to be filled.



SOME OF OUR AMAZING SPEAKERS

Kyle-Mark Middleton – Individual bases of group behaviour in cooperatively breeding Southern Ground-hornbills.

Carrie Hickman – The effects of high temperatures on nestling growth and physiology in the Southern Ground-hornbill.

Dr Jarryd Alexander – The national monitoring plan for Southern Ground-hornbills in South Africa.

Dr Yvette Ehlers Smith – The implications of land use and climate change to the persistence of Southern Ground-hornbills.

Dr Martina Crole – Morphology of the Southern Ground-Hornbill (*Bucorvus leadbeateri*) gastro- intestinal tract.

Assoc. Prof. Katja Koepfel – 20 years of veterinary challenges when dealing with Southern Ground-hornbills.

Dr Lucy Kemp – 20 years of a growing community for ground-hornbill conservation.

Patience Shito – A feasibility assessment for population restoration for Southern Ground-hornbills in the Lowveld, South Africa.

Figure 9. The lineup of speakers who attended the ground-hornbill science colloquium

Now we wait for the rains to come, it's still very dry and it doesn't seem like the birds are interested in breeding just yet!