



FitzPatrick Institute of
African Ornithology



UNIVERSITY OF CAPE TOWN
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APNR Southern Ground-Hornbill Research & Conservation Project

QUARTERLY REPORT

July 2026



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ABOUT US



The APNR Southern Ground-Hornbill Project is dedicated to the research and conservation of Southern Ground-Hornbills in the Greater Kruger region of South Africa. Researchers from the FitzPatrick Institute of African Ornithology, UCT, have been at the forefront of critical research that informs conservation efforts by understanding the habitat use, reproductive success, and behaviour of these iconic birds. The project installs and monitors artificial nests which are vital to enhance their breeding success and allows for comprehensive studies of the birds in their natural environment.

WINTER FIELDWORK

With winter now well underway, the focus of the project begins to shift. Regular fieldwork and nest monitoring naturally slows, providing an opportunity to concentrate on data analysis, processing the large volumes of information collected over the breeding season, and working on research publications.

Outside of the breeding season, southern ground-hornbills are no longer tied to their nests and range much more widely across their territories. This makes locating groups considerably more challenging. Despite the reduction in intensive field activities, we still head out once or twice a week in the early mornings to locate juveniles that were fitted with tracking rings during the breeding season. Finding these birds allows us to download the movement data recorded by the tracking devices.

Our mornings begin well before dawn as ground hornbills typically call before sunrise. On crisp winter mornings, the cold, still air allows their distinctive booming calls to carry for several kilometres. We use these vocalisations to guide us to the birds. Timing is critical, however, as the morning chorus is brief, typically lasting only 10–15 minutes before they fall silent and begin moving through their territories. Missing this narrow window can make locating them significantly more difficult, making these early mornings both time-sensitive and rewarding if we do succeed.



Figure 1. Looking for birds at dawn

If you spot any juveniles with tracking rings, we'd really appreciate it if you could let us know. A recent sighting gives us a great starting point and makes it much easier for us to go out and locate them. WhatsApp Kyle: (+27) 71 325 8956.

JUVENILES

Prior to juveniles fledging from nests, blood samples are collected from each individual for molecular sexing. Ground-hornbills develop slowly and can typically only be visually sexed once they are about four or five years old. However, knowing the sex of fledglings is important, as it may have implications for their behaviour, dispersal, and survival.

Ground-hornbill groups usually contain only a single adult female, and young females are often ejected from their natal group after about a year. We suspect that mortality among these young females is high following dispersal. However, for those that do survive, we still know very little about where they go, how they move through the landscape, and how they find other individuals with which to form new groups. We hope that the tracking devices will help shed light on this difficult-to-obtain information.

So far, the recently fledged juveniles from Copenhagen (female), Klaseriemond (female), Pitlochry (male), Yankee Dam (male), Thornybush (female) and York (female) nests are all doing well, based on recent tracking data and sightings (general territories circled in green below; Fig 2). However, we have not yet been able to relocate the recently fledged Caroline (male) and Blatherwick (female) juveniles in Timbavati, or the Ntoma (male) juvenile in Klaserie (general territories circled in orange; Fig 2).

If you happen to spot hornbills in any of these areas, particularly juveniles fitted with tracking rings, we would greatly appreciate hearing from you. Any recent sighting provides us with a valuable starting point, making it much easier for us to locate the birds and download their tracking data.

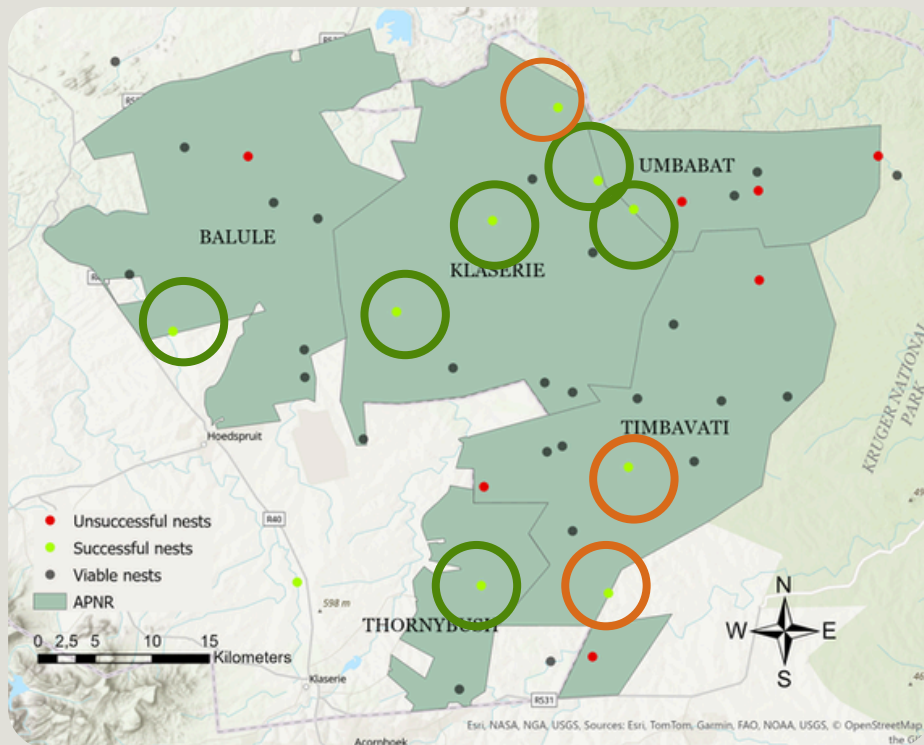


Figure 2. Left: Map of nest locations in the APNR, with each dot representing a nest. Dot colours indicate breeding outcome (2025): successful (green), unsuccessful (red), and no attempt (grey). Circles around nests indicate juveniles that are still with groups (in green) and unknown / not located (in orange). Right: Caroline chick being ringed and measured in March.

RESEARCH UPDATES



We are delighted to announce that Carrie has now officially been awarded her PhD and will graduate in September.

Her thesis is available upon request for anyone interested in learning more about her research.

Email: info@apnrhornbill.com.



Building on previous research conducted by the project, we have been developing research questions for a future PhD project focused on understanding ecological change across the APNR landscape and its impacts on ground-hornbills (and other wildlife).



In June, Kyle and Carrie gave an educational presentation to EcoTraining students at Inkasi Lodge on avian behaviour and ecology.

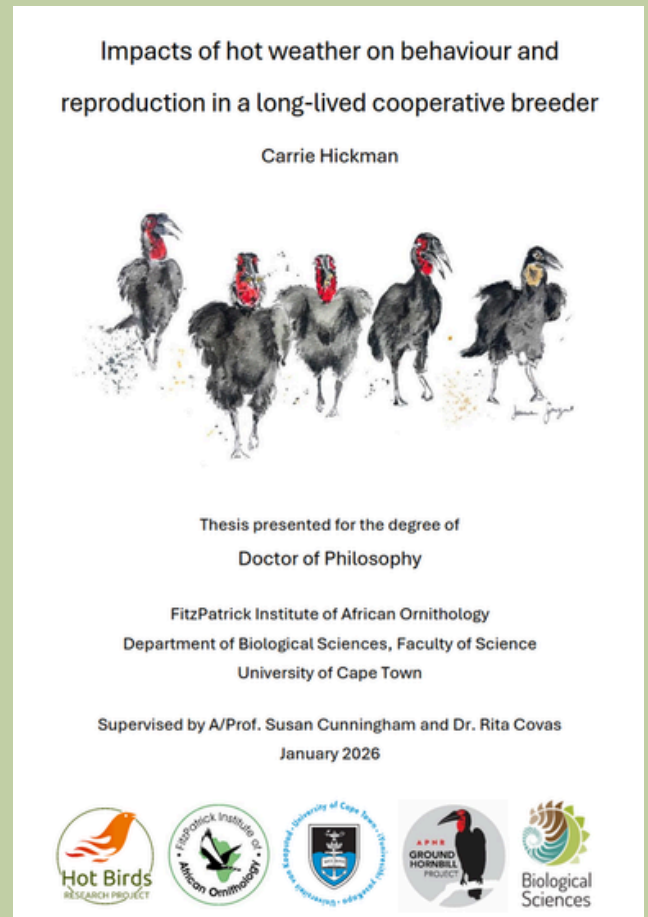


Figure 3. Front page of Carrie's PhD thesis

SCIENTIFIC PUBLICATIONS

Published:

- Middleton, K.-M., Hickman, C., Spottiswoode, C.N., Rybak, F. & Covas, R., 2026. Hot-dry weather is associated with worse reproductive outcomes regardless of group composition in a long-lived cooperative breeder. *The American Naturalist*
- Ben Mocha. Y., Middleton, K.-M., Covas, R., et al., 2025. An integrative, peer-reviewed and updatable Cooperative-Breeding Database (Co-Breed). *Journal of Animal Ecology*.

In Review:

- Hickman, C., Middleton, K.-M., Covas, R., Cunningham, S.J. A long-lived cooperative breeder has dual investment strategies in same-clutch eggs with different survival probabilities. *Behavioural Ecology*

In preparation:

- Middleton, K.-M., Covas, R., Hickman, C., Spottiswoode, C., Rybak, F. Territorial defence in southern ground-hornbills support the non-breeding benefits of group size in cooperative breeders
- Middleton, K.-M., Covas, R., Huetz, C., Hickman, C., Spottiswoode, C., Rybak, F. Singing within the group: females produce individually distinct melodies within the chorus of a cooperatively breeding bird.
- Middleton, K.-M., Hickman, C., Rybak, F., Spottiswoode, C., Covas, R. High temperatures and carers' age influence nest attendance in a slow developing cooperative breeder, the southern ground-hornbill
- Middleton, K.-M., Cunningham, S.J., Covas, R., Hickman, C. From prospecting to takeovers: observations of nest-site competition in a territorial cooperative breeder, the southern ground-hornbill
- Meillier, S., Middleton, K.-M., Rybak, F. Provisioning vocalisations of male southern ground-hornbills: advertising their catch
- Hickman, C., Middleton, K.-M., Covas, R., Cunningham, S.J. More Heat, Less Shade: rising winter temperatures, animal behaviour and thermal vulnerability under climate change.

A WELCOME REDISCOVERY

Thanks to the efforts from Graeme Wuth at the Greater Kruger Environmental Protection Foundation (GKEPF), who detected a signal from a bird's tracking ring while flying over Umbabat, we were able to locate a specific bird. This was the same bird that had been found sick on a property in Umbabat back in October 2024, where we suspected that it had ingested window putty. Following several weeks of treatment and rehabilitation, the bird was successfully released back into Umbabat in December 2024 with a leg-mounted tracking device fitted to record its movements.

After its release, the bird was not seen again for 17 months, and we assumed that it had either died or dispersed into the Kruger National Park. Receiving a signal from its tracking ring was therefore wonderful news, as it confirmed that the bird was still alive. It had successfully joined a group, which we suspect may have been the same group from which it originally came.

Interestingly, after its release, this subadult male moved across an area of approximately 280 km² (Fig. 4). This is almost three times the average territory size for groups within APNR, which is approximately 100km². Although speculative, this suggests that the bird did not return to its group immediately after release. Such movement behaviour from rehabilitated and released ground-hornbills is extremely rare and provides valuable information that can help guide future conservation and rehabilitation efforts.

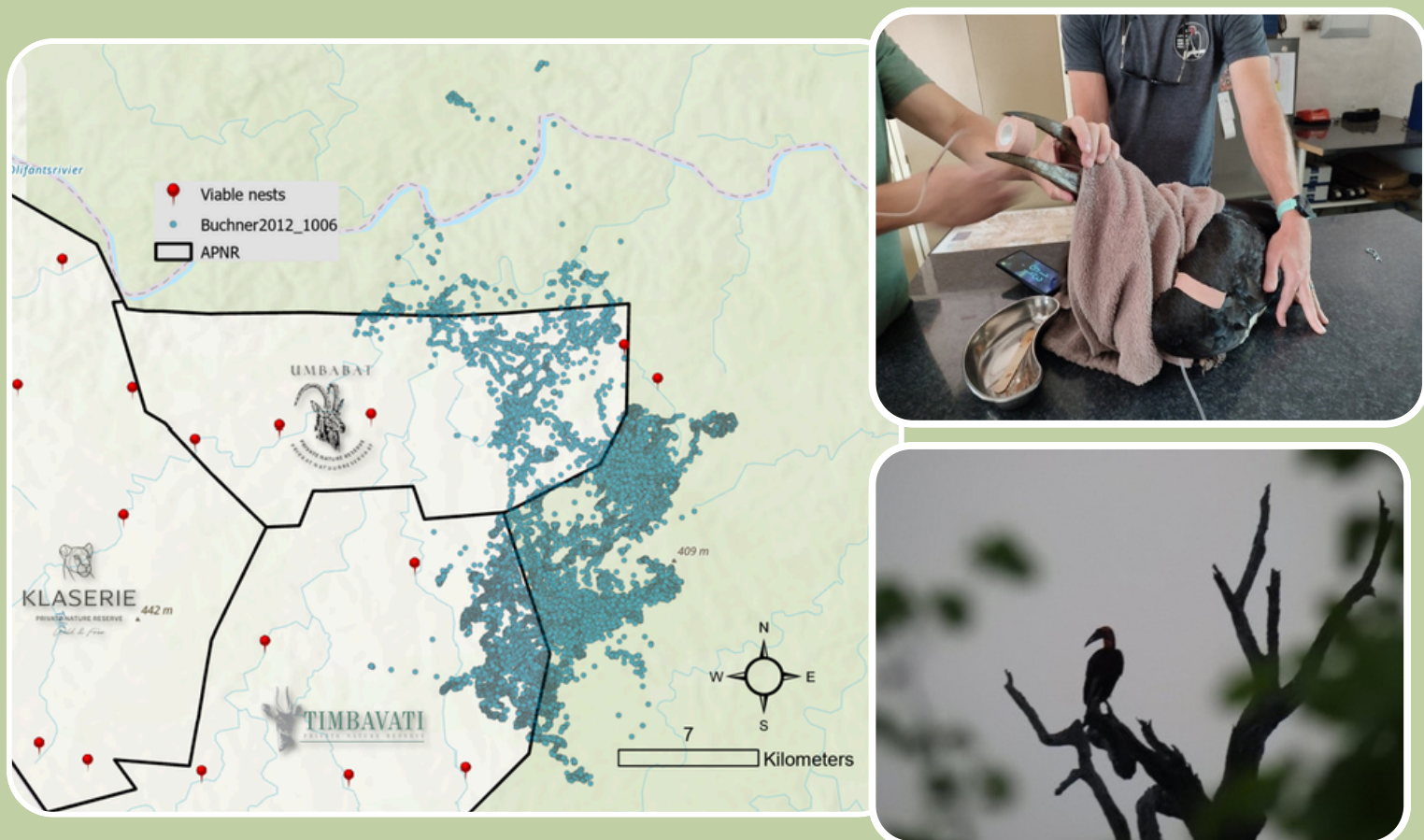


Figure 4. Tracking data collected from reintroduced individual (left) with pictures of veterinary treatment (top right) and release back into the Umbabat (bottom right)

NESTS - NEW AND REPLACED

UKHOZI NATURE RESERVE

In June, we installed a new artificial nest on Ukhozi Nature Reserve in Balule PNR. The installation was challenging, but thanks to a great team effort, the nest was successfully secured.

Although there are currently no resident ground-hornbills in this area, the nest has been strategically placed to provide a future breeding opportunity for dispersing birds as they establish new territories. Expanding the network of available nest sites into suitable habitat is an important part of supporting the long-term growth of the population.

This installation would not have been possible without the support and collaboration of the Ukhozi landowners and management.



Figure 5. Nest installed on Ukhozi.

YANKEE DAM - UMBABAT NATURE RESERVE



We replaced the artificial nest at Yankee Dam (Umbabat PNR), upgrading the original nest to one of our new designs. The replacement was installed in the same tree and location, as maintaining a familiar nesting site gives the resident group the best chance of continuing to breed without disruption.

We were joined by a Robbie and July from Monwana Game Lodge, who took the opportunity to learn more about the project while assisting with the nest installation. Sharing these experiences helps build a greater understanding of conservation, knowledge that can then be shared with colleagues and guests.

Figure 6. Nest replacement on Umbabat

HOW TO SUPPORT OUR WORK

Funding for ecology and conservation research is becoming increasingly hard to obtain, even as the critical need for these activities increases. This means that every donation to our research and conservation project is enormously welcomed and makes a positive impact on the conservation of the species.

How to donate:



Visit our website: <https://www.apnrgroundhornbillproject.com> or click on our [PayPal](#) link

Long-term ecological research projects are rare in southern Africa, making the APNR Ground Hornbill Project particularly valuable. With more than 25 years of continuous data, it provides a record of how a long-lived species responds to environmental change over time, in a continent warming at twice the global average. Research of this kind remains limited in the global South, particularly in tropical and subtropical systems that support most of the world's biodiversity, highlighting why this work matters.

What we need help with:



OPERATIONAL COSTS

R2,200 can pay for a tank of fuel for us to carry out our nest checks. We also require funds for vehicle maintenance.



NEST INSTALLATIONS

R7,500 can pay for a new artificial nest box + materials for repairing already installed nests. R8,500 can pay for an electric chainsaw required for tree trimming and cutting fallen branches for nest installation and support.



TRACKING TECH

R11,500 covers one tracking ring + receiver + data costs (for one year), allowing us to monitor hornbill movements. These are specially designed, GPS-enabled rings.



TEMPERATURE LOGGERS

R4,000 can pay for one Kestrel or Ibutton temperature and humidity logger. Allows us to continuously monitor nest and landscape environmental conditions.



CAMERA TRAPS

R6,000 covers the cost of a new camera trap + SD card. These are used to monitor nests and chick activity without disturbing the birds. R200 can pay for a pack of batteries to power camera traps.

HOW TO SUPPORT OUR WORK

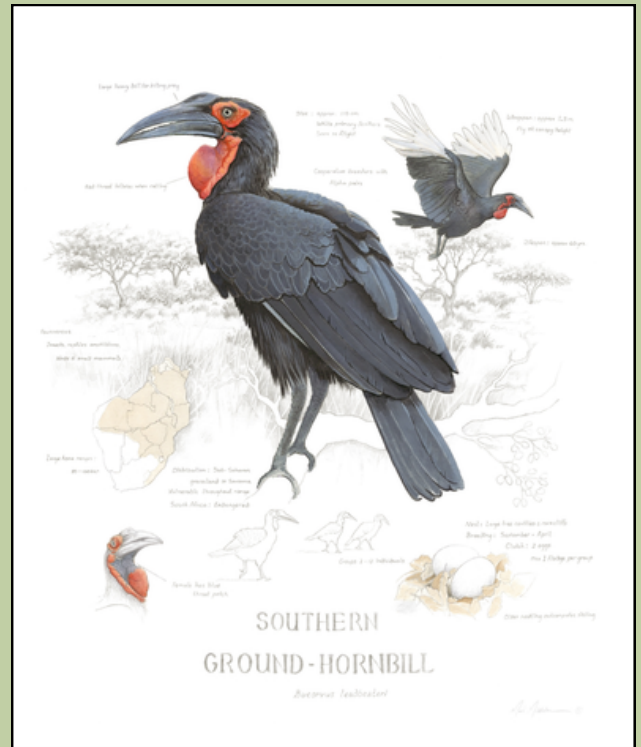
By purchasing one of our exclusive Ground-Hornbill paintings by renowned South African artist **Mark Middleton**, you not only acquire a beautiful piece of artwork, but also contribute directly to our research and conservation efforts. Prints are available in A1 or A3.

In addition, we offer Ground-Hornbill caps made especially for our project by **ellie & may**.

If you would like to purchase any of these items or are interested in stocking them at lodges or curio shops, please contact us for more information: info@apnrhornbill.com



ellie & may ground-hornbill cap



ground hornbill print by artist Mark Middleton

LODGES - book a talk or contact us about guest experiences

Guests and guides can learn about the innovative research we are conducting, including the use of tracking devices and monitoring techniques, alongside the critical conservation actions such as artificial nest installations and habitat management. These talks add depth and insight from conservation experts to the safari experience, while directly supporting ongoing research and the conservation of this vulnerable species in the APNR.

Contact us: info@apnrhornbill.com



Photo: Royal Malewane

HELP OUR RESEARCH

SUBMIT SIGHTINGS

We have set up WhatsApp groups for members of the APNR (guides, wardens, managers etc.) to log sightings of ground-hornbills.

This is an effective way to gather information on group movements and we encourage anyone who is interested in joining an already established WhatsApp group or would like to set one up for their area to get in touch with us.

Alternatively you can email sightings to: info@apnrhornbill.com or WhatsApp (+27) 71 325 8956 or submit on our website: apnrgroundhornbillproject.com

Info we require:

1. Location details, coordinates/ WhatsApp pin drop
2. Date and time of the sighting.
3. Group details; numbers, ages, sexes.
4. Photos/videos

**Southern Ground-Hornbill ID**
Submit sightings to: (+27) 072 345 6584



ADULT FEMALE: Facial skin red with violet below bill ADULT MALE: Facial skin entirely red

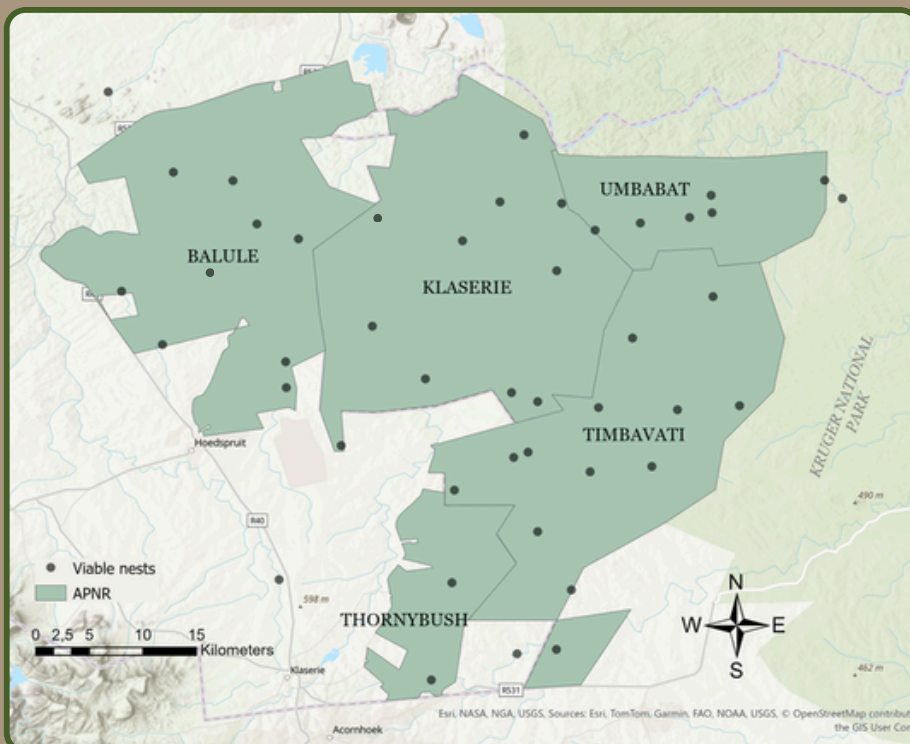


SUB-ADULT: Transitioning - facial skin yellow/red JUVENILE: Pale facial skin



Left: ADULT FEMALE, Middle: ADULT MALE, Right: JUVENILE

Photos: Jannie Nikola, Chad Cocking & Thiago de Paula Oliveira



Map of the APNR with all of the current viable known nesting site locations.

Balule PNR - 9 nests
Klaserie PNR - 11 nests
Thornybush NR - 2 nests
Timbavati PNR - 13 nests
Umbabat PNR - 6 nests

2026 ACKNOWLEDGEMENTS

We thank the APNR for their continued support, funding, and permission to research the ground-hornbill groups on their properties.

Thanks to Wild Wonderful World, John Solomon & Caroline Buckway, Bruce & Judy Neill, Marc Solomon, The Rufford Foundation, The Phleta Foundation, The Royal Portfolio Foundation, Hoedspruit Rotary Club, Blue Skye Society Trust, The Timothy Hancock Charitable Trust, Janovsky family, Frame the Wild, Ingwelala members, Scott Adrian, Warren Cary Wildlife Gallery, & Wild in Africa for their generous donations and funding which supports the continuation of this long-term project.

Thanks to Timbavati, Klaserie, N'tsiri, Tanda Tula Safari Camp, Ndlopfu, and Peter Smelting for their ongoing support in fuel donations.

Thanks to JJ's Bones Of The Earth for designing and constructing artificial research nests, and ellie & may for providing branded caps. Thanks to GKEPF for assisting with data collection from the tracking devices.

Thanks to all APNR members and staff who have been of great help, both logistically and by reporting ground-hornbill sightings.



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