



FitzPatrick Institute of
African Ornithology



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

QUARTERLY REPORT

April 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.



BREEDING SEASON 2025/2026 WRAP UP

16 breeding attempts
9 fledged chicks

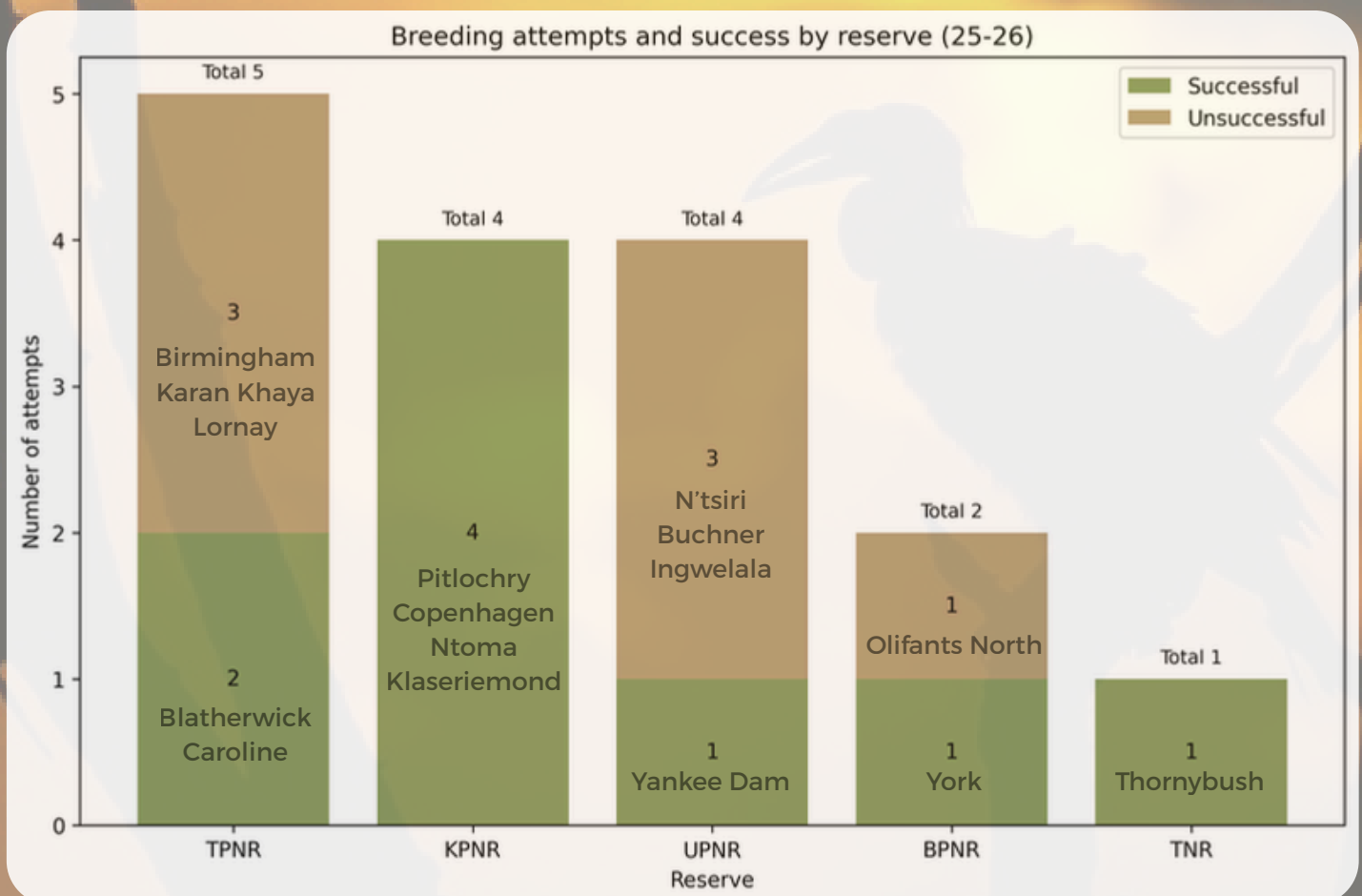


Figure 1. Breeding attempts and successful fledged chicks recorded across the APNR for the 2025/26 season. Each bar represents the total number of breeding attempts in each reserve, unsuccessful (brown), the number of fledged chicks (green), and the names of each group of birds.

BREEDING INSIGHTS

Over the course of the project (25 years), 278 southern ground-hornbill breeding attempts have been monitored within the APNR. Across all years, the average first egg-laying date was 8 November, and 191 breeding attempts were successful. This represents an overall breeding success rate of 68.7%, with annual success ranging from 40% to 100%. On average, 7 chicks fledged per season, with seasonal totals ranging from 1 to 13 fledglings (Table 1).

Although the 2025-26 season had a below-average success rate of 56.3%, the number of chicks fledged [9] (Fig. 1) was above the long-term seasonal average. Given this season's extreme rainfall and flooding, this can still be regarded as a successful breeding year for the population.

Despite this success, the population remains strongly dependent on artificial nests. Of the 191 successful breeding attempts, 164 (85.9%) occurred in artificial nests, including 13/16 attempts recorded this season. The installation and maintenance of artificial nests therefore remains the most effective and important conservation intervention currently available within the APNR.

Table 1. Summary of breeding (2000-2025)

Total breeding attempts	278
Successful breeding attempts	191
Overall success rate	68.7%
Average first egg-laying date	8 November
Average chicks fledged per year	7
Range of chicks fledged per year	1 - 13
2025-26 success rate	56.3%
Successful attempts in artificial nests	164 (85.9%)

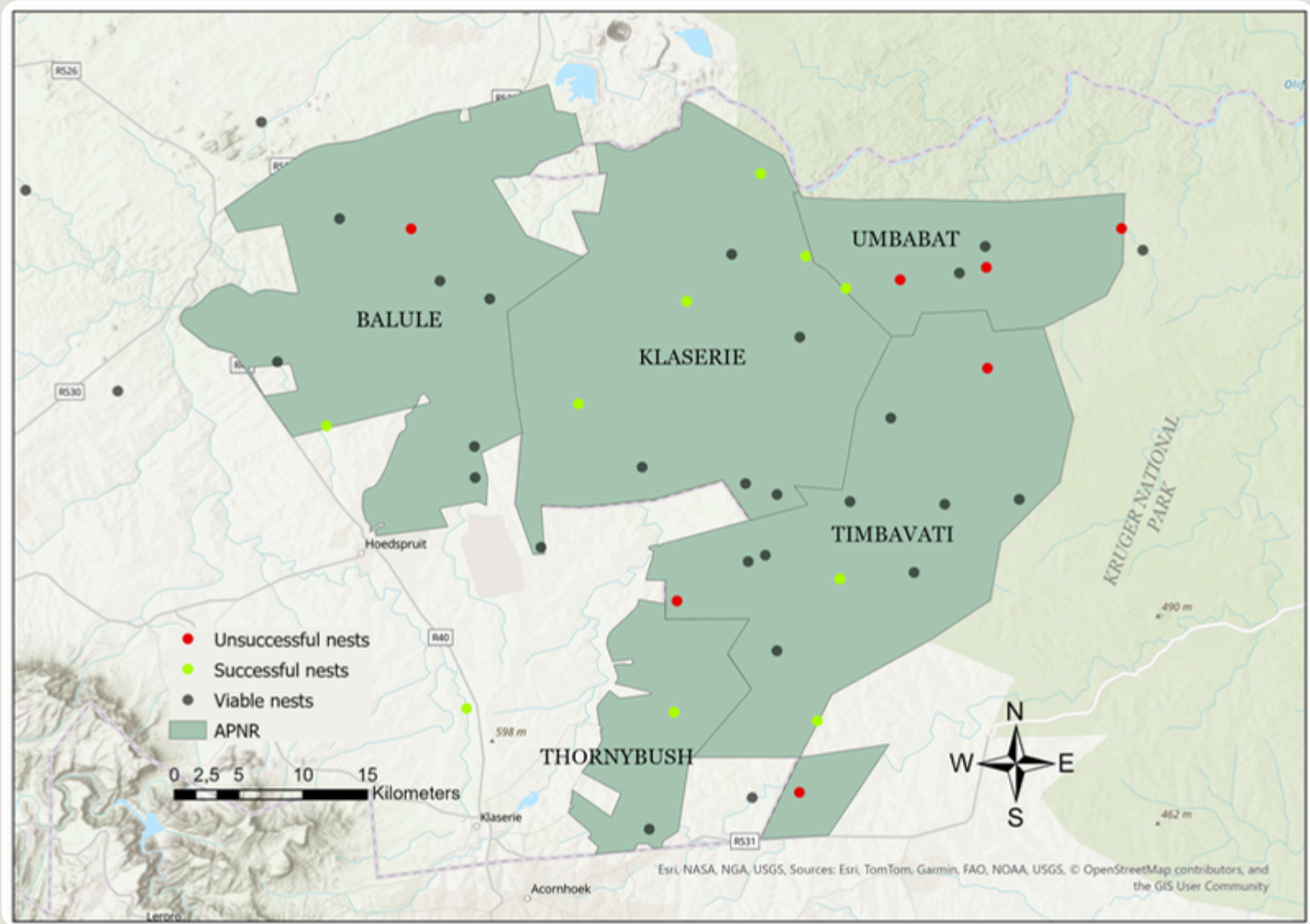


Figure 2. Map of nest locations in the APNR, with each dot representing a nest. Colours indicate breeding outcome: successful (green), unsuccessful (red), and no attempt (grey).

RESEARCH - TRACKING DATA

All nine chicks that fledged this breeding season were fitted with tracking rings, bringing the total number of birds currently being tracked to 16. These devices have already generated approximately 170,000 location records. In addition, historic tracking data from previous research provides a further 35,000 locations, giving us a powerful dataset with which to answer important ecological and conservation questions (Fig. 3).

These data will allow us to understand how southern ground-hornbills move through the landscape in relation to temperature and human infrastructure, how they maintain their territorial boundaries, and whether the current network of artificial nests is positioned optimally within their territories. The tracking data will also help identify key landscape features, such as important roosting sites, and improve our understanding of how birds disperse from groups.

Importantly, several new groups bred this year, providing an opportunity to develop a clearer picture of where territorial boundaries lie across the landscape and how these vary among groups.

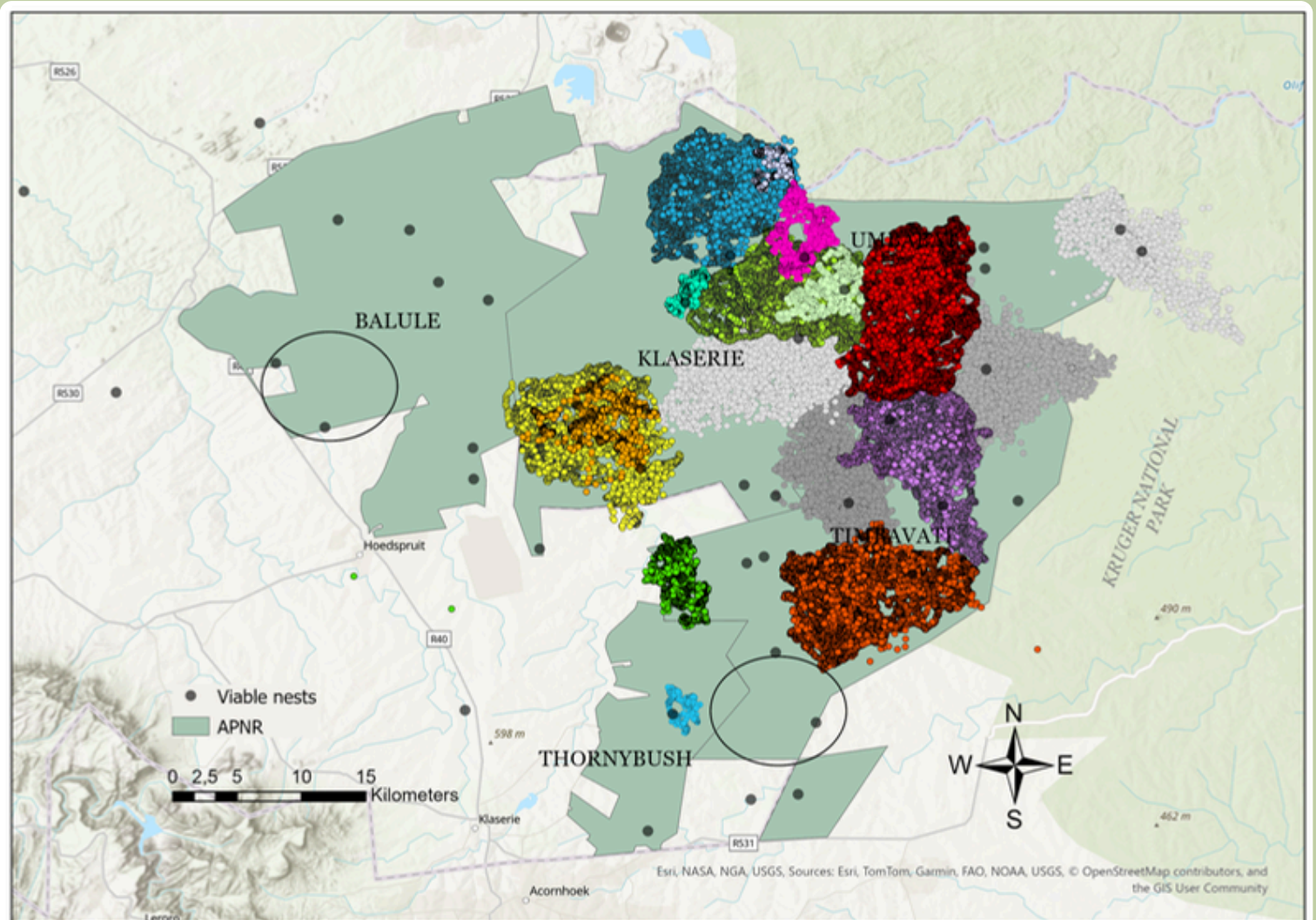


Figure 3. Tracking data collected from ground-hornbills within the APNR. Areas with different shades of grey represent the historic tracking data collected by the project (2010/11). Areas with different colours represent different individuals tracked over the past 2 breeding seasons. Black circles represent areas where data is still expected in the coming months.

A LUCKY ESCAPE

The chick in the Yankee Dam nest on Ndlopfu property (Umbabat PNR) chose the perfect time to fledge. Just hours after fledging, a young leopard climbed up to the nest (Fig. 4).

This highlights the vulnerability of ground-hornbill chicks during their long nestling period of around three months, when they are confined to the nest and have little defence against predators such as leopards.

However, large predators like this are not the most common cause of nest failure in the APNR. More frequently, chicks are lost to genets, which attack chicks at night once they are older and no longer continuously attended by the mother.

Luckily, on this occasion this individual is doing well and is now with the group. Please do let us know if you spot ground-hornbills in the APNR, especially if you spot a juvenile!



Figure 4. Yankee Dam chick fledging (top). Young leopard investigating nest hours later (bottom). Camera trap images.



Figure 5. Male bringing food to female in the nest taking shelter during heavy rain (top). Female looking miserable during a wet night (bottom).

MISERABLE CONDITIONS



During three weeks of continuous rain in January, we observed some interesting behaviour on our camera traps. All females spent far more time in nests than is typical for the age of the chicks. Normally, once chicks are around three weeks old, females reduce daytime attendance, and by the time chicks are around two months, they no longer roost in the nest, likely due to limited space.

However, during the wet period, females remained in nests for much of the day, sheltering chicks from persistent rain and also benefiting from the shelter themselves (Fig. 5; top). In one case, a female initially roosted just outside the nest (and looked rather miserable) but subsequently returned to sleep inside with the chick on the following nights, taking advantage of the drier conditions (Fig. 5; bottom).

This increased nest attendance likely placed additional demand on males, which had to bring more food for both the female and the rapidly growing chick.

NESTS - NEW AND REPLACED

Ingwelala

After receiving reports of birds repeatedly calling and flying towards the same location each day, right next to Ingwelala Camp, we suspected there might be a natural nest in the area. At the time (January 2026), the region was experiencing extreme rainfall and flooding, which made it difficult to access the site.

We were only able to get out there in February, when we finally located the nest with the help of Ingwelala management. It had clearly been active, but unfortunately, we found only the remains of the chick. The exact cause of fatality is unknown, but the consistent rain may have played a role. Many natural nests, including this one, are quite exposed to the elements, and prolonged wet conditions can be challenging for young chicks. Last year, we provided the group with a more optimal nest box, which they have since located and will hopefully use in future

Moditlo - Blue Canyon Conservancy

On Moditlo we received reports of birds seen in the same tree each day. We investigated the tree and found an incredibly deep nest cavity in a Jackalberry tree (Approx 3 m from the entrance to the floor) with a 30-40-day old chick inside (Fig. 6). This is one of the deepest nest cavities we have discovered, and it looked very challenging for both the female and chick to exit the nest. Shortly after this discovery, heavy rains caused flooding, and we feared that this chick would not survive due the nest's proximity to the river, the depth of the cavity, and the exposed entrance allowing rain to enter. We were unable to access the nest for several weeks but were extremely happy to receive reports and photographs in March confirming a newly fledged juvenile within the group, indicating that the chick successfully survived the harsh conditions (Fig. 6).



Figure 6. Chick in a deep tree cavity discovered on Moditlo (left). Newly fledged juvenile spotted nearby with adult bird in March (right, photo: Joy Scheepers).

Olifants River & Timbavati

Two nest boxes have been installed recently. A new nest box was placed on Olifants River (Balule PNR), marking the first artificial nest for this reserve.

The second was a replacement nest in Timbavati PNR (Blatherwick property), installed to replace one of the older M1 composite designs. While that previous nest was used successfully, we now know that these older designs tend to retain heat, often reaching high internal temperatures.

Our recent research has shown that elevated nest temperatures can negatively affect chick growth, development, and survival, even when breeding attempts initially appear successful. For this reason, we are working to improve both nest design and placement. This includes replacing older nests with designs that better buffer against temperature extremes and provide more suitable conditions for developing chicks, as well as prioritising installation in naturally cooler sites, such as trees with large, shady canopies - although identifying suitable large trees with appropriate structure and accessibility is not always straightforward.

This year we have have 6 old nests to replace!



Figure 7. New nest box about to be hoisted into a tree on Olifants River in Balule (left). New nest and nest location for birds on Blatherwick property in Timbavati (right).

Internal nest camera in York nest

Our new nest boxes, built by JJ Bones of the Earth in Hoedspruit, were designed with research in mind. Each includes a compartment in the roof to safely house a camera out of sight and reach of the birds.

This season, we trialled an internal camera in the York nest on Balule. While continuous monitoring or live streaming would be ideal, no power and poor signal at most nests currently make that setup too costly. Instead, we tested a camera trap with a partially covered sensor to focus on activity at the nest entrance when adults arrived to feed the chick (so it does not trigger all the time). Although it picked up more movement from the chick than we hoped, it still provided valuable insights (Fig. 8).

At around 60 days old, the chick was well developed, with adults visiting only once or twice a day with food. The rest of the time was largely spent resting, sleeping and being a bit bored, conserving energy for rapid growth and feather development ahead of fledging.

With further refinement, or by exploring alternative cameras, this could provide valuable insights into provisioning rates, prey items, and how females feed chicks early in development.



Figure 8. Screenshots of video footage captured of York chick inside the nest.

UPDATE ON HARVESTED CHICKS

In collaboration with the Mabula Ground-Hornbill Project's reintroduction process, chicks are removed from nests as second-hatched "insurance" chicks (not reared in the wild and are doomed to die) and hand-reared at Mabula's facility at Loskop Dam Nature Reserve. Early socialisation with adult birds is important to reduce human imprinting and help them develop natural behaviours before release.

Three chicks were harvested from the APNR in December 2025 (Copenhagen – 19 Dec; N'tsiri (from Yankee Dam Nest) – 31 Dec; Caroline – 31 Dec) and were all sexed as males, where they were initially socialised with adult and subadult birds in the aviaries.

Copenhagen (2025) and N'tsiri (2025) chicks were successfully fledged with an established pair and are housed together in an aviary. Caroline (2025) was fledged with a single adult female of Tanzanian origin, along with an older female chick from a group at Loskop Dam. The older chick was fledged first, followed by Caroline, who has since integrated well into the group. The single female has proven to be particularly effective for socialising young birds.

All chicks displayed strong wild behaviour and aggression towards handlers, which is a positive indication of limited human habituation which is vital to their success when released back into the wild.

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

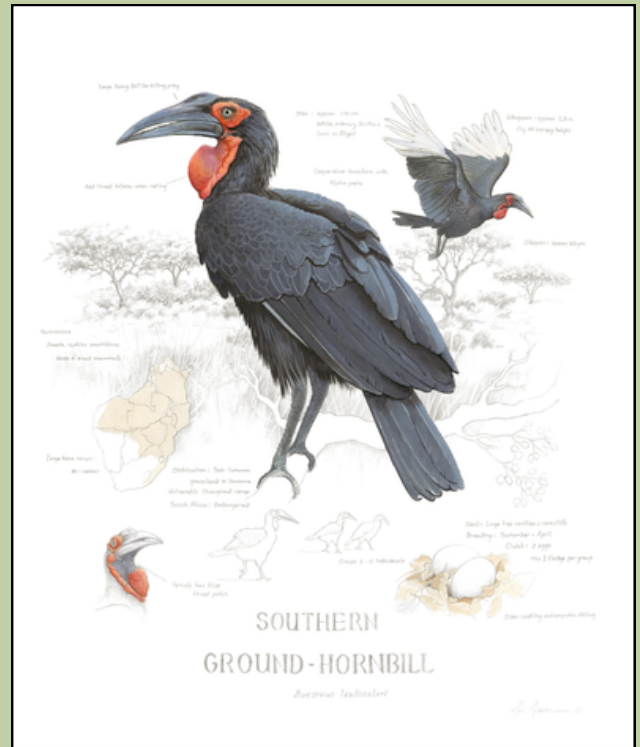
By purchasing one of our exclusive Ground-Hornbill paintings by renowned South African artist **Mark Middleton**, you not only acquire a beautiful piece of artwork, but also contribute directly to our research and conservation efforts. Prints are available in A1 or A3.

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

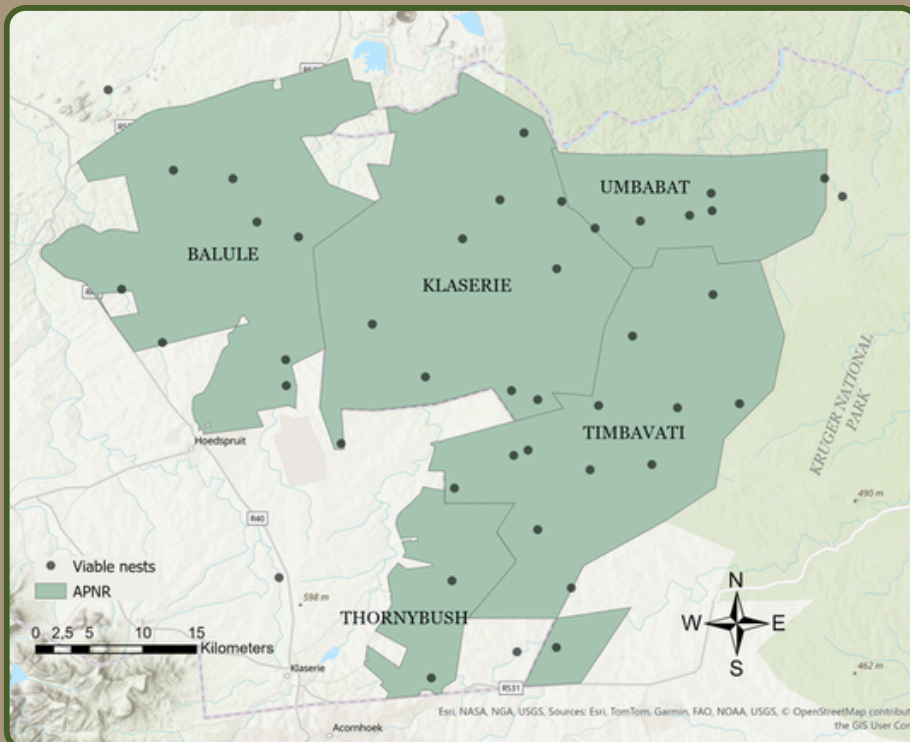


SUB-ADULT: Transitioning - facial skin yellow/red JUVENILE: Pale facial skin



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 - 8 nests
Klaserie PNR - 10 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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