



FitzPatrick Institute of
African Ornithology



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

QUARTERLY REPORT

July 2025



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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.



HISTORIC APNR BREEDING SUMMARY

271 breeding attempts
182 fledged chicks

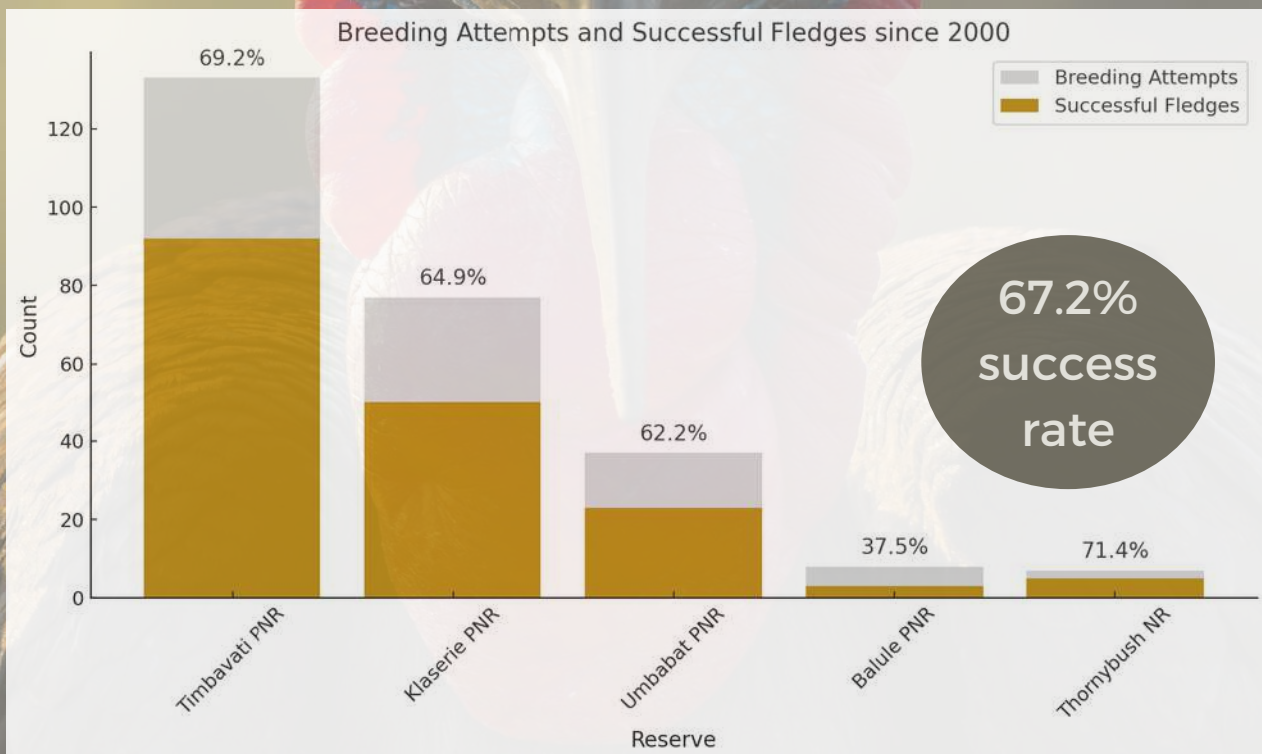


Figure 1. Breeding attempts and successful fledges recorded across the APNR since 2000. Each bar represents the total number of breeding attempts (grey), with the gold indicating the number of successful fledges. Percentages above the bars reflect fledging success rates.

NEW NESTS FOR THE UPCOMING 2025/2026 BREEDING SEASON

As preparations for the upcoming breeding season commence, we are pleased to share our plans to improve the nesting opportunities for the birds.

At Ingwelala (Umbabat), we are planning to install an artificial nest as an alternative to the group's current, suboptimal natural nest. Last season's predation incident (where the chicks wings became stuck, and was subsequently preyed upon by a genet) highlighted the risks of their small and poorly sheltered nesting site, and we hope that this upgrade will offer them a safer and more suitable nest environment.

Similarly, on Timbavati PNR, we are planning to provide another group, which also has a suboptimal natural nest, with an artificial nest. This group has not bred in 12 years (since 2013), presumably due to the deterioration of the natural nest, and the new nest will hopefully encourage them to breed again.

On York PNR (Balule), we recently replaced an artificial nest that had become damaged and was no longer viable. We will also be replacing a nest on Timbavati PNR with the new design.

Finally, we are planning to install two new nests in north-western Klaserie, and in Olifants River NR (Balule) as there are groups there which we suspect are without nests.

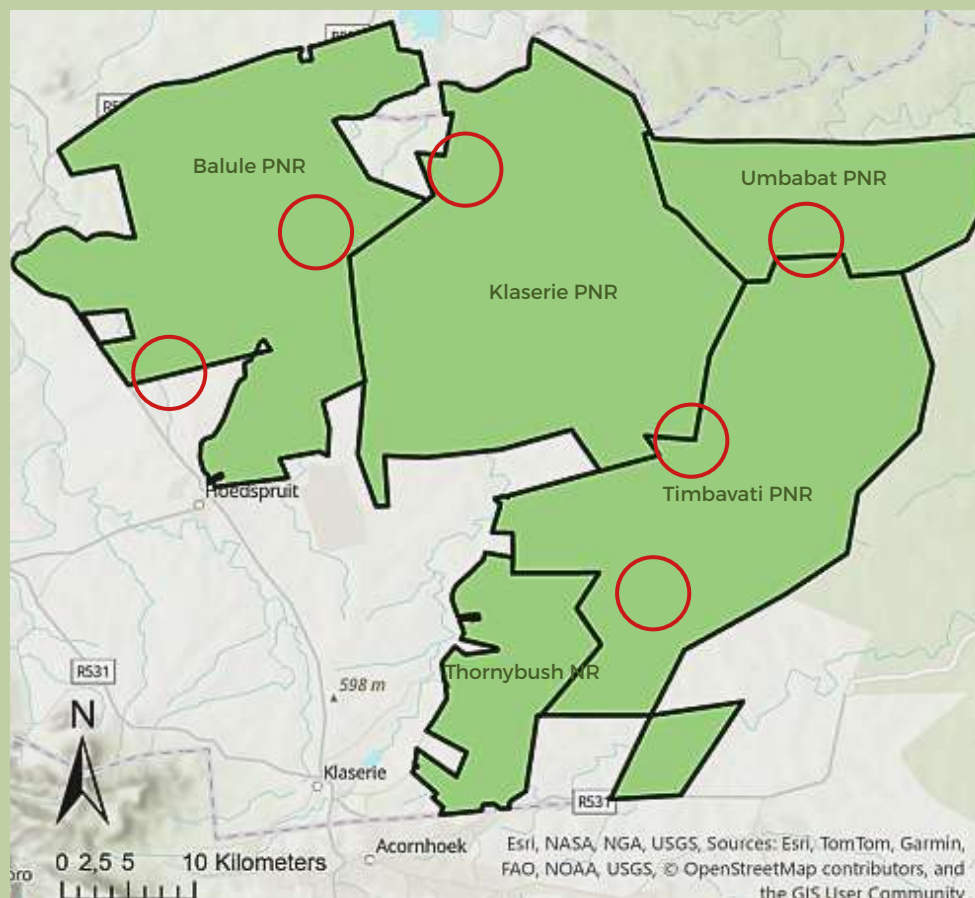


Figure 2. Map showing general locations where nests will either be replaced or installed (red circles)

CHICK UPDATES

We're happy to report that 8 out of the 9 juveniles that fledged in March and April this year are, so far, thriving and still with their natal groups. This is an encouraging sign during what is a critical period for these young birds.

Sadly, the juvenile which fledged from the nest on Thornybush NR was predated on the 29th of April. Thankfully, a local guide discovered the remains, and we were able to retrieve the tracking ring to collect the valuable data from it (see tracking data insights below). Predation on juveniles is not uncommon, as the first few months after fledging are challenging for them and they are still learning how to forage, fly efficiently, and remain vigilant - essential skills for survival.

Ground-hornbills have an unusually long dependency period post-fledging, relying heavily on adult group members for food and protection for up to two years, after which they gradually become more independent. In most groups, there is only one adult female, and as a result, young females are typically pushed out of groups within 1-2 years. These dispersing females often roam alone, searching for breeding opportunities and join up with dispersing males to form new groups. Males, on the other hand, tend to stay in their natal groups much longer. For example, we have recorded one male who has remained with his natal group for 16 years. While he never bred, he played a vital role in helping the alpha pair and raising successive generations of chicks.

This cooperative breeding strategy is one of the most fascinating aspects of ground-hornbill social behaviour, and a key reason why long-term monitoring and support are so important for the species' conservation.



Figure 3. N'tsiri chick with its uniquely coded colour ring prior to fledging

RESEARCH

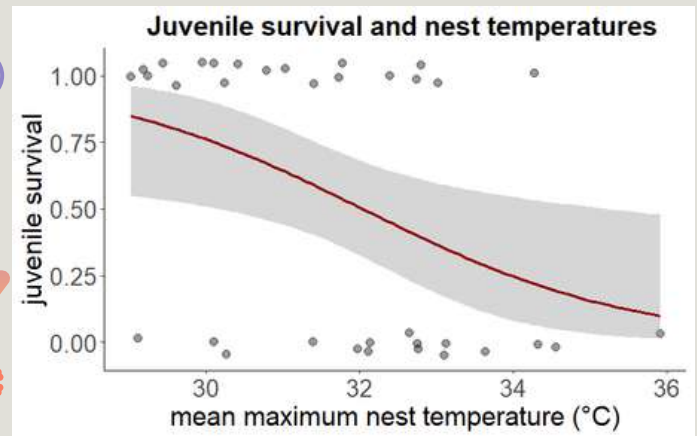
JUVENILE SURVIVAL

From the 2023/2024 breeding season, we observed that none of the 10 juveniles survived through the year, a worrying outcome. While it is possible that predation accounted for losses, it is unlikely to have been the sole factor affecting all individuals.

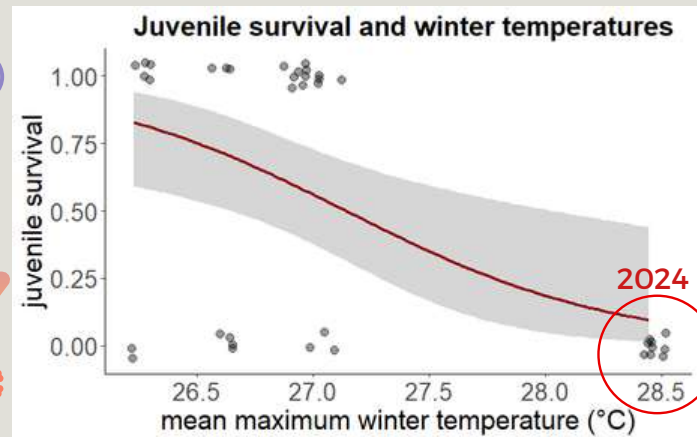
Upon reviewing the data over several years, we identified a correlation between higher temperatures (during the nestling period and during winter once nestlings have fledged) and reduced overwinter survival. While further research is needed to better understand this relationship, the unusually warm winter of 2024 raises important concerns about the impacts of rising temperatures on juvenile survival rates and adds to our understanding of winter ecology.



Photo: Jannie Nikola



Heat



Heat

Figure 4. Preliminary data showing juvenile survival and nest temperatures (top) and winter temperatures (bottom). This patterns suggest that higher temperatures may be associated with reduced juvenile survival to one year but further monitoring is required.

RESEARCH PUBLICATIONS

Currently, the project is working towards publishing some of our research and research contributions from the past few years.

Publications in review:

- Hot-dry weather is associated with worse reproductive outcomes, regardless of group composition, in a long-lived cooperatively breeding bird
- An integrative, peer-reviewed and updatable Cooperative-Breeding Database (Co-BreeD)

In preparation:

- Singing within the group: females produce individually distinct melodies within the chorus of a cooperatively breeding bird
- Group responses to simulated territory intrusions in the cooperatively breeding southern ground-hornbill

To better understand the birds' movements, behaviour and habitat use, eight fledging juveniles from the 2024/2025 breeding season were fitted with newly tracking rings.

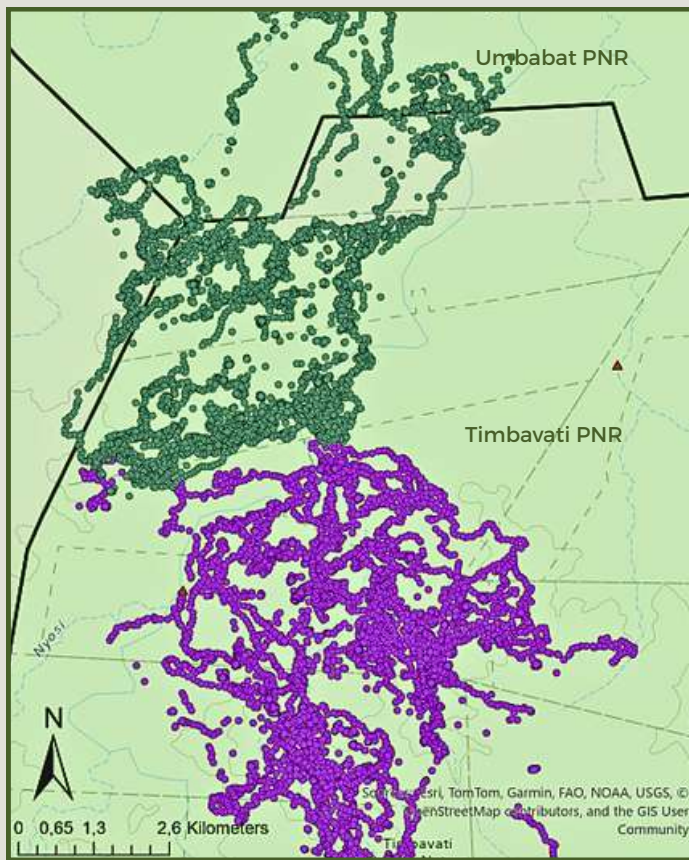


Figure 5. Recorded locations of Java group (purple points) and Argyle group (green points) and how they have limited overlap in their territories.

So far, the devices have collected 35,303 GPS locations from the birds and are beginning to provide key insights. Specifically, it is beginning to highlight the importance of riverine areas, the extent of each group's territories, and where the boundaries are.

Ground-hornbills use vocalisations as their sole means to advertise their territories. As such, we would expect that their territorial boundaries would be less defined; however, our preliminary data indicate that this might not be the case. Figure 5 shows how two groups abide by a boundary, despite not being in the same area at the same time (i.e. there was no visual contact between the groups when either was on the boundary). Further data will shed light on whether this is consistent and help identify if there are any seasonal differences in their territories.

This data will contribute towards Kyle's research which aims at understanding the movement, behaviour, and habitat use of the birds in relation to high temperatures. From this, we will be able to determine habitat features of key importance to the birds. In addition, this will also aid in the placement of artificial nesting sites to ensure that nests are being placed within the core territories of the groups and in ideal microhabitats.

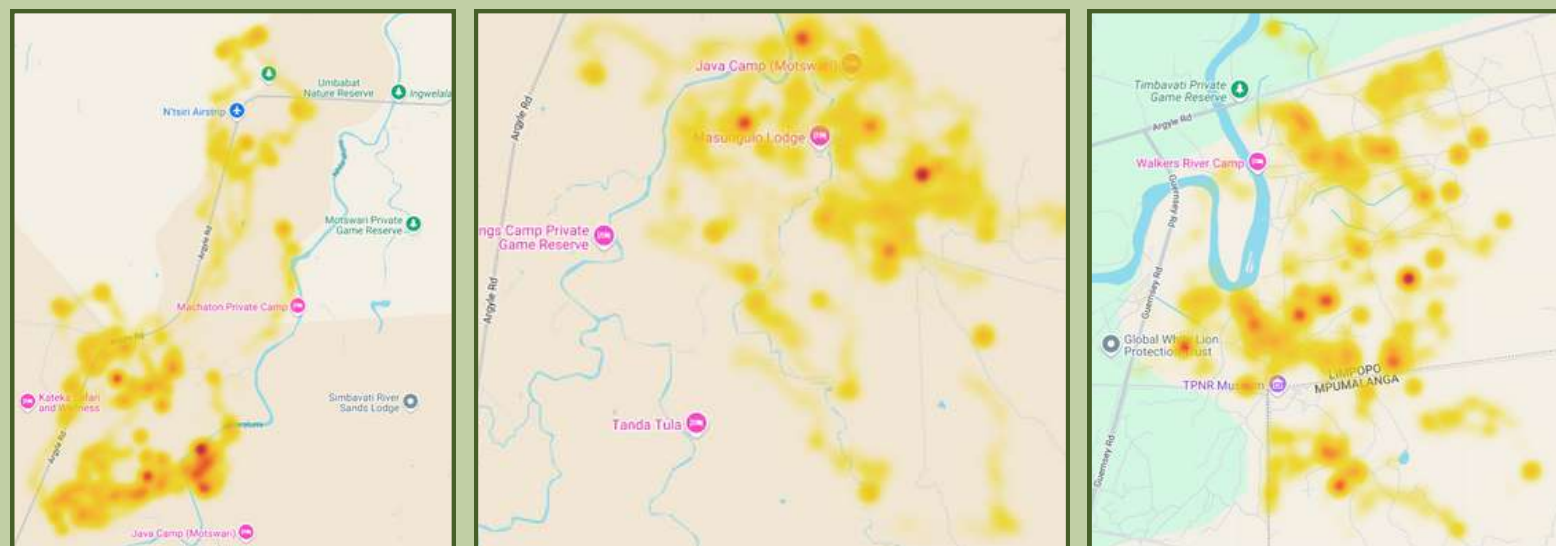


Figure 6. Heat maps of Argyle group (left), Java group (middle), Lornay group (right)

NEW GROUP

We recently received reports of a group of six ground-hornbills on the boundary between Timbavati PNR and Thornybush NR. We were able to locate the group and observed that none of the individuals, including two juveniles, were ringed. This suggests that the group has been successfully breeding in a natural nest cavity currently unknown to us. It's an encouraging discovery that the birds have found a suitable breeding opportunity, and highlights the challenges of monitoring such a low-density species. The group was very skittish during our encounter, which made close observation difficult. If anyone happens to spot this group and can capture clear photographs of them, we would greatly appreciate it. As the breeding season approaches, we will be attempting to find their nest site.



Figure 3. Male and female of the new group identified

GROUND-HORNBILLS ON OTHER RESERVES



Figure 4. Code on the metal rings fitted to juveniles, which helps us understand the dispersal of birds

With the natural dispersal of birds from the APNR to nearby reserves, groups are now forming in the surrounding areas, and we are keeping tabs on where it is happening.

Following the collapse of the nest tree on Moditlo Estate in February, we are planning to install an artificial nest near the collapsed tree. Placing a new nest near an old nest usually speeds up the process of the birds finding and using the nesting site.

Hopefully, with the new artificial nest, this group consisting of at least 2 birds from the APNR can continue to grow their numbers and expand further into other neighbouring areas.

If you spot a bird with a metal, colour, or tracking ring, please reach out to us and let us know. This information is crucial for us to keep track of the different groups and individuals.

HOW TO HELP

SUBMIT SIGHTINGS

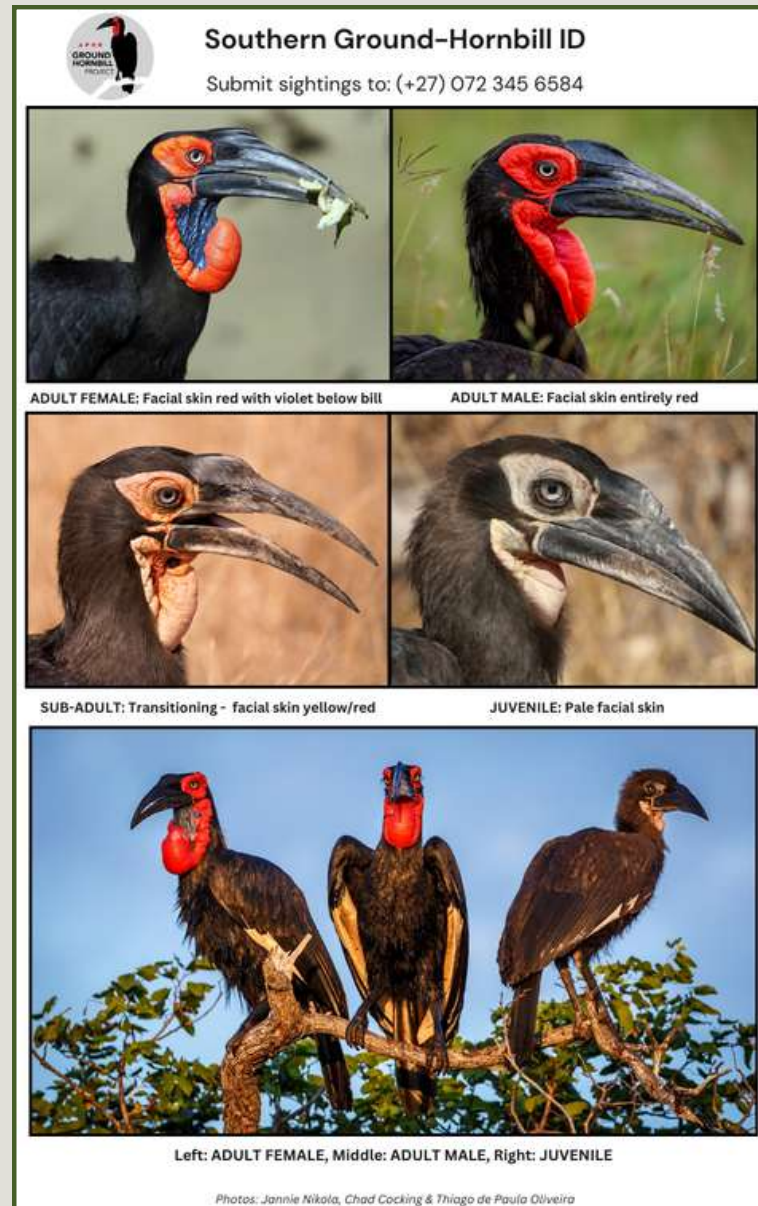
We have set up WhatsApp groups for members of the APNR (guides, wardens, managers etc.) to log sightings of ground-hornbills.

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) 72 345 6584 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



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

Balule PNR - 6 nests
Klaserie PNR - 11 nests
Thornybush NR - 2 nests
Timbavati PNR - 13 nests
Umbabat PNR - 4 nests

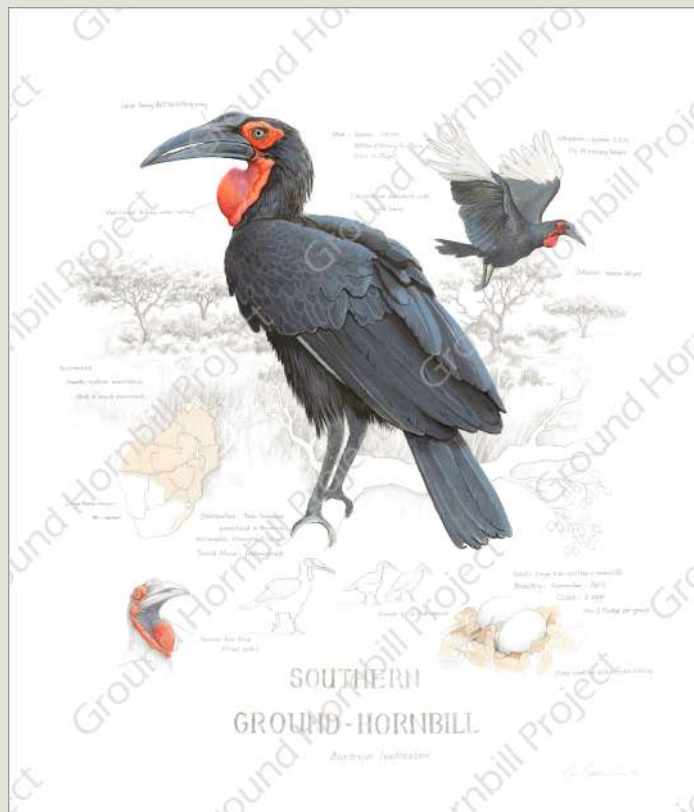
SUPPORT

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 to our research and conservation efforts.

Painting sizes: A1 or A3

Contact us if you would like to place an order

NOTE: Image is watermarked for display only



Please get in touch if you would like to **donate** to the project. 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.



R7 500 can pay for a new artificial nest box + materials for repairing already installed nests.



R10 000 will pay for a new tracking ring for us to monitor fledgling movements and conduct research



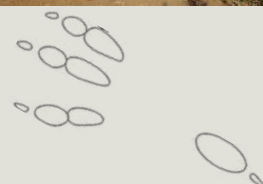
R700 can pay for an aluminium colour ring to ID an individual



R5 000 can pay for a new camera trap, R200 can pay for a pack of batteries to power camera traps.



R1 700 can pay for a tank of fuel for us to carry out nest checks



2025 ACKNOWLEDGEMENTS

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

Thanks to John Solomon & Caroline Buckway, Bruce and Judy Neill, Wild Wonderful World, Mesker Park Zoo and Botanic Garden, The Rufford Foundation, The Timothy Hancock Charitable Trust, Marc Solomon, Iron Man 4x4 Africa, Janovsky family, Casey Cole, Frame the Wild, Ingwelala members, Warren Cary Wildlife Gallery, & Wild in Africa for their generous donations and funding which supports the continuation of this long-term project.

Thanks to N'tsiri, The Royal Portfolio Foundation, Wild Wonderful World, Isambane Camp, René Vromans, Baobab Ridge, Julie McInnes, Dr Alexandra Schumann, Sandringham PNR, and Robert Price for their generous donations towards artificial nests.

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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