

Ground-Hornbill Project Update – December 2025:

Conference attendance:

In September 2025, the APNR Ground Hornbill Project attended the biannual Hot Birds Research Conference, held in Thornybush Nature Reserve, and coordinated by the Hot Birds principal investigators, Prof. Andrew McKechnie and Assoc. Prof. Susie Cunningham. Researchers investigating how birds, bats, and some plants, are being affected by a warming world were all gathered to share their plans and findings, and to discuss how we can collaborate to achieve the best results. Both APNR Ground Hornbill Project's current researchers, Kyle and Carrie, presented their work on what climate warming effects have been found on ground-hornbills so far, and what is yet to come – all in an effort to understand how the birds might be affected, and importantly, what can be done to mitigate it. Assoc. Prof. Susie Cunningham and Dr Rita Covas (the APNR Ground Hornbill Project coordinators) also presented some of their work on other avian species.



Figure 1. Attendees at the 2025 Hot Birds Research Conference.

New technology and equipment

Thanks to the Rufford funding, we were able to design and purchase new equipment that will help investigate how ground-hornbills are using the landscape in relation to temperature, and what this means for the individual body condition of the birds.

Newly developed tracking rings were fitted to eight different ground-hornbill chicks (from the 2024/2025 breeding season) prior to them leaving the nest for the first time. These tracking rings collect GPS locations every five minutes and store the data within the ring. Then, whenever these

individuals are within range of special receiver stations, which we have initially installed in numerous locations within their territories, the data is transferred and uploaded to the cloud where we can analyse it. Unfortunately, two of the chicks fitted with the devices were predated, presumably by leopards, shortly after fledging from their nests. Regardless, the tracking information from the remaining six birds has already proved valuable in helping us understand the different group territories.

Figure 2. Left: ground-hornbill nestling fitted with the tracking ring (close-up image on the bottom left) on its left leg and a colour coded identification ring on its right leg. Right: Map of the study site shown with the white outline, and the recent tracking data for all the different individuals which are being monitored where each colour represents a different tracked individual.

Excitingly, in collaboration with the engineering department at the University of Cape Town, the first ever automatic perch scale was developed to passively record the body mass of ground-hornbills in the wild. So far, four of these perch scales were installed at the nesting sites of different groups. The perch scales automatically store the scale data with a corresponding time and date whenever a bird lands on the perch, which is then matched to camera trap footage at the nesting sites. This allows us to track the mass changes of specific



Figure 3. A ground-hornbill at an artificial nesting site with the prototype perch scale fitted to it.

individuals throughout the year, and assess how this affects their individual fitness. However, while we managed to passively record the first ever weight of a wild ground-hornbill, there are still challenges ahead, particularly with making them more robust to withstand the destructive tendencies of ground-hornbills. These adjustments will be made in the coming months.

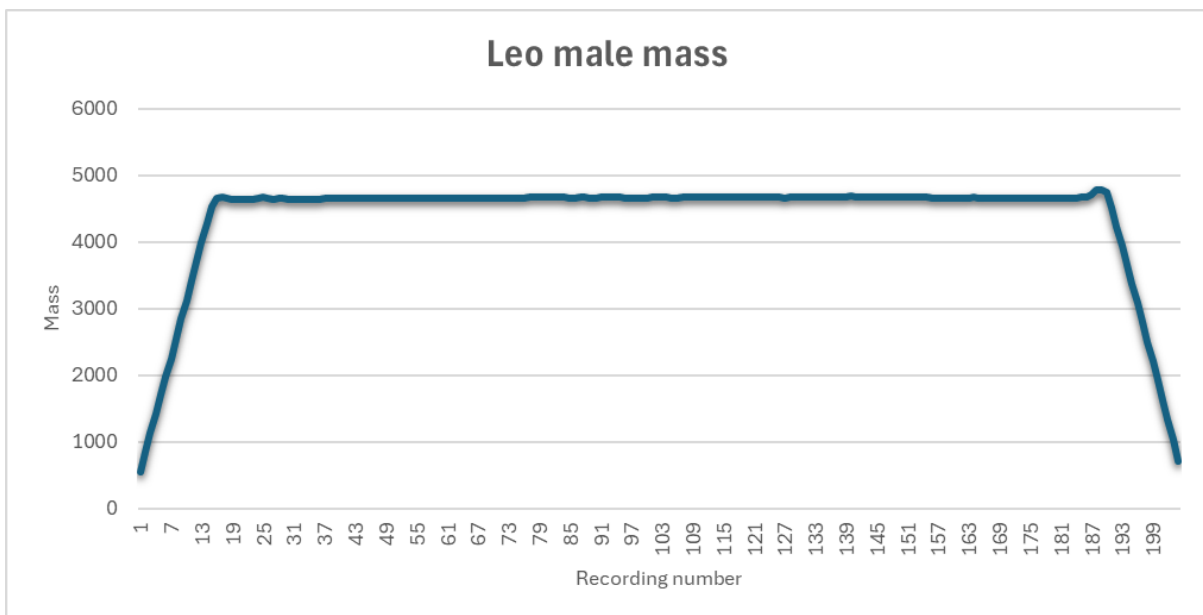


Figure 4. Top: camera trap footage of an adult male ground-hornbill standing on the perch scale at Leo nesting site. Bottom: the data collected at the time the camera trap photograph was taken, indicating that this individual's mass was approximately 4.66kg

New nests



Figure 5. The newly designed artificial nests for installation

Prior to the breeding season beginning, we assessed all the artificial and natural nests located throughout the study site to determine if any need to be replaced. Seven nests, which are newly designed to better buffer the external temperature extremes of the region, were purchased and earmarked for this purpose of replacement. Unfortunately, just prior to the first planned nest installation, Kyle broke his leg and had to undergo emergency surgery which delayed the installation of these large nests until 2026. Thankfully, none of the older designed nests were removed prior to this injury, so there are still nesting sites for each of the breeding groups of birds and many of them are currently being used. Kyle's recovery has also been going well.

2025/2026 breeding season

The current 2025/2026 breeding season for ground-hornbills is underway, and we have been monitoring their activity to determine which groups are breeding. So far, 14 different groups have attempted to breed, although two have already failed – one group had their female predated by a leopard whilst sitting in the nest on eggs, and the other groups eggs were infertile (for unknown reasons). This means that twelve groups are currently still actively breeding, and while there are likely to be more failures (from natural causes), it is an above average breeding season for the study site.

Going forward

As the ground-hornbill breeding season progresses, we will continue to monitor the chicks inside the nests and once they are close to fledging, we will place tracking rings on these individuals. This will increase the area covered by tracking data, as many of the current breeding groups encompass new areas. This increase in coverage will provide a more conclusive overview of the habitat used by ground-hornbills within the study site. In addition to fitting the devices to birds, we will begin training some of the local guides and trackers to collect data for us using the receiver stations and continue collecting observational data.

We will also continue to work with the engineering department to further develop the perch scales with the plan to install additional scales in the early part of 2026. These new scales will be installed at numerous other nests where we can collect additional weights from individual birds around the reserves and track how their body condition changes throughout the year, allowing us to ultimately investigate what these changes might mean for their reproductive output.