APNR Southern Ground-Hornbill

Research & Conservation Project

UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD

May Quarterly Report 2022

End of breeding season 2021/22

The breeding season has come to an end and a total of seven out of 13 breeding attempts were successful. These seven chicks have now fledged and are with their natal groups. We were lucky to catch most fledging events on our camera traps (Fig. 1).

Successful nests

Timbavati PNR:	Karan Khaya, Lornay
Klaserie PNR:	Copenhagen, Pitlochry, Senalala
Umbabat PNR:	Yankee Dam
Thornybush NR:	Thornybush

Figure 1. *Pitlochry chick fledging (top left), Copenhagen chick fledging (bottom left), Senalala chick fledging (right)*

Unsuccessful nests

Timbavati PNR:	Hermansburg, Johnniesdale
Klaserie PNR:	Janovsky, Oppenheimer
Umbabat PNR:	Ntsiri
Balule PNR:	Jejane

The chick in Jejane's nest presented us with an unusual case; at about 1 week old it became apparent that the chick had a leg deformity. It was suspected to be splay leg at first, a deformity common in young chickens and other captive birds where the legs are splayed laterally, resulting in the inability to bare weight. At this stage, we decided not to act as to not interfere with the breeding group at such an early and sensitive time when the female is brooding. Vets, Dr Ben Muller, Dr Debbie English, and Dr Jess Briner examined the nestling later, at different stages (Fig. 2). Thought to be congenital or possibly an injury that occurred very early on, it became apparent that the joint and bone was damaged beyond repair, and even with intervention, removed to veterinary care and raised in captivity, the outlook for the chick was not positive. This was the first time that the Jejane group had succeeded in raising a chick, and they were still actively caring and feeding the chick, so we decided to let nature take its course for the well-being of the breeding group. Unfortunately, the chick died at about 40 days old. An unusual and previously undocumented case for wild ground-hornbills.

Figure 2. *Jejane chick being examined by vet*

Predation failures:

Failures occurred, from predation, for five groups and most of these occurred early in the season as eggs or small chicks. However, the last remaining late hatched chick in Ntsiri's nest, was predated at about 70 days old, just before it was due to fledge. We caught the

predation event on our camera trap which showed that a genet managed to sneak up on the chick while it was asleep in the nest (Fig. 3). An unfortunate loss and surprising that a genet was successful at overcoming the sizeable chick at this late stage. Once again camera traps proving to be invaluable tool in understanding the factors influencing reproductive success in the species.

Figure 3. *Genet predation at Ntsiri nest.*

Harvest Success

Figure 4. *Copenhagen's second hatched chick now fledged and doing well.*

A total of four chicks were harvested from nests in the APNR: Copenhagen (Klaserie PNR), Hermansburg (Timbavati PNR), Thornybush (Thornybush NR) and Ntsiri (Umbabat PNR). Ntsiri laid very late in the season and the second hatched chick was incredibly small and unfortunately did not manage to survive past a few days. The three chicks that were harvested early in the season, plus one from Sabi Sands, are doing well at the new Baobab Facility at Loskop Nature Reserve, run by the Mabula Ground-Hornbill Project (Fig. 4). Thanks to the hard work and dedication of hand-rearers' Natasha Nel and Delecia Gunn, they have flourished and now fledged. They will remain in their aviaries before going to "bush

school" where they learn all the wild survival skills from an experienced group of birds before being reintroduced back into the wild when mature. This process of harvesting doomed second hatched chicks helps to re-build the population, without interfering with the wild breeding population.

For more information on the reintroduction project, visit Mabula Ground-Hornbill Project - Reintroductions.

Plans for coming breeding season

Before the breeding season starts again in October there are several nests that are due to be replaced or repaired where possible, as they are becoming unviable. Two of these nests were some of the first to be installed in the APNR back in 2002 and have been the most successful to date (Fig. 5); Janovsky (KPNP) nest where 12 chicks have fledged, and Karan Khaya (TPNR) where 15 chicks have fledged. When replacing these nests, we will try to install the new ones in the same locations.

Figure 5. *Janovsky nest (left) and Karan Khaya nest (right) being installed in 2002.*

Research

Kyle is busy writing up his PhD thesis on the individual contributions to group behaviour which will be submitted at the end of July. After which, results from this will be shared and distributed to interested parties.

In February, Carrie successfully upgraded from an MSc to a PhD after presenting her proposal to academics at The University of Cape Towns, FitzPatrick Institute of African Ornithology. Carrie's research aims to understand ground-hornbills' behavioural responses to high temperature and how they influence reproduction and nestling growth and physiology. As climate change progresses, understanding animals' response to high temperatures has become of vital importance in assessing species vulnerability.

Preliminary results have identified meaningful temperatures – temperatures at which ground-hornbills are likely to be engaging in heat dissipating behaviours (such as panting) more than 50% of the time – 33.5°C during summer and 29.5°C during winter (Fig. 6). Engaging in these behaviours at lower temperatures in winter than summer could be attributed to less shade availability in winter, making the operative environmental temperatures hotter and increasing the thermoregulatory demands of the birds. This is something we hope to investigate further.

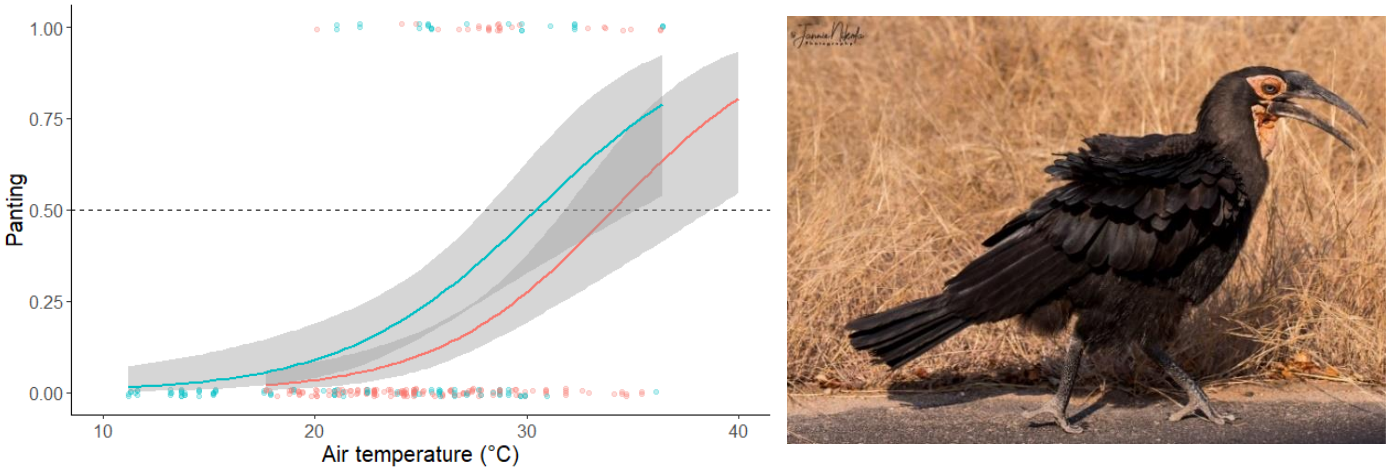

Figure 6. *Graph showing panting behaviour, with presence/absence as a function of air temperature. Presence of the behaviour = 1, and absence of the behaviour = 0. The red line represents prediction for summer and the blue line for winter with the dashed line showing the 50% point of inflection, 33.3°C in summer and 29.5°C in winter (left). Bird displaying heat dissipation behaviour (right).*

There has been a significant rise in hot days in the APNR, and the number of days per year above these temperature thresholds for ground-hornbills has been increasing since 2000 (Fig. 7). Spending more time engaging in these behaviours can be costly, and result in missed foraging opportunities, reducing adult and chick body condition, which can have fitness consequences.

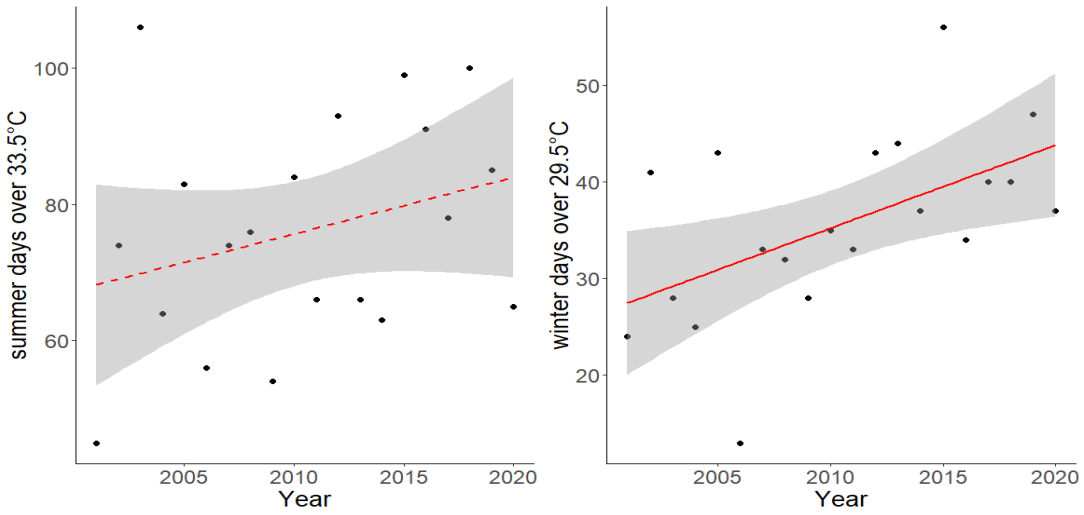

Figure 7. *Long term weather trends from Hoedspruit Airforce Base (data from SAWS) showing increase in the number of days per year exceeding 33.5 °C in summer, and 29.5 °C in winter (temperature thresholds identified for ground-hornbills)*

Chick measurements: All surviving chicks were weighed and measured at 6 stages throughout the 90-day nestling period for us to determine whether high temperatures affect growth rates (Fig. 8). We also installed temperature loggers (iButtons) in each nest and camera traps to monitor feeding rates and nest attendance from the group.

Figure 8. *Chicks being weighed from 1 day old to 75 days old.*

Citizen Science

As always, we ask for people to send through their sightings and photographs of the birds to us. These sightings contribute significantly to our research and help us gather information on several different topics. These include group movements, survival rates, population and group numbers, temperature effects on behaviour etc.

Please contact us if you are willing to contribute. This information makes a large difference to the research and conservation of the birds within the APNR to ensure their continued persistence and growth to help populate not only the surrounding areas, but also the rest of the country.

Acknowledgements

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We thank one and all!

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