

KNOWLEDGE FOR *conservation*

The Percy FitzPatrick Institute and ground-hornbills



KEITH BEGG

Unlike other hornbills, the ground-hornbill does not have a sealed nest cavity.

Ground-hornbills are extremely long-lived and they are extremely slow breeders, apparently producing on average only one surviving offspring per decade. Very slow reproduction is a life-history trait that predisposes species to conservation problems. It is easy to be fooled by regular sightings of adult birds when a species or population may already be slipping towards extinction, and it is therefore vital to know what the demographic profile of such a species is, and where its greatest vulnerabilities might lie. This demands sound knowledge of important life-history traits such as breeding system and longevity.

Researchers from the Percy FitzPatrick Institute, under the direction of Morné du Plessis, are undertaking a long-term study at the invitation of the Association of Private Nature Reserves (APNR), which includes the Balule, Klaserie, Timbavati and Umbabat nature reserves. The APNR covers a large

tract of privately owned conservation land along the western boundary of the Kruger National Park.

An initial assessment in 2001 by Yuval Erlich of the ground-hornbills in this area found little evidence of successful breeding, and only four natural nests were known to exist in an area of 150 000 hectares. Over the subsequent two years, Erlich coordinated the sculpting and deployment of a total of 30 artificial nest logs.

Breeding success over the following seasons seemed low, with one, two and three fledglings produced in the 2002, 2003 and 2005 breeding seasons respectively. However, the 2004 breeding season proved to be a bumper year as 11 ground-hornbill groups each produced one nestling, nine of which fledged. Most gratifying was that 90 per cent of the fledglings had hatched from artificial nest logs. This strongly suggests that a shortage of natural nest sites is limiting the local productivity of this species.

Data from the past five breeding seasons clearly demonstrate that the breeding success of ground-hornbills is erratic, highlighting the importance of having stable breeding groups *in situ* to capitalise on the occasional year in which environmental conditions favour successful breeding.

Although 10 young have fledged over five breeding seasons from the APNR, only two are known to have survived their first year. This seems a particularly unforgiving gauntlet that young birds must run. It is a priority to establish why survivorship of first-year birds is so low, and whether there is any way in which this can be improved.

Because ground-hornbill territories are so large (up to 10 000 hectares), finding a group can be akin to looking for needles in a haystack. Even well-known hornbill groups sometimes seemingly disappear during the non-breeding season, only to be found intact some weeks or even months later. This can lead to costly and seemingly futile research effort... not to mention the frustration!

Fitztitute researchers are currently making an effort to capture adult ground-hornbills in order to get an individually ringed

population study started. A primary aim of this is to understand individual survival. A small radio transmitter is attached to one bird in each social group, so as to enable researchers to locate the groups. The next step will be to deploy GPS transmitters which will give an accurate fix of the group at hourly intervals and thus allow us to understand how the birds use their large territories, and hence perhaps to understand why the territories are so big. The advantages of GPS transmitters are obvious but, most notably, they enable accurate information to be gathered on group movements in relation to the time of year, and on their social environment as reflected by the composition and size of neighbouring groups.

Each breeding season, Fitztitute researchers also conduct two or three surveys of the known ground-hornbill nests in the Kruger National Park: first during egg-laying, then during the mid-nestling phase and, finally, to ring the nestlings immediately prior to fledging. Over time, an individually identifiable population will be established that will play a vital role in providing accurate knowledge of, for example, the age at first breeding and the comparative survival of the age and sex classes. The clearer the demographic picture of a species becomes, the more confidently one can develop proactive, *in situ* conservation action plans. In short, sound knowledge is vital for sound conservation.

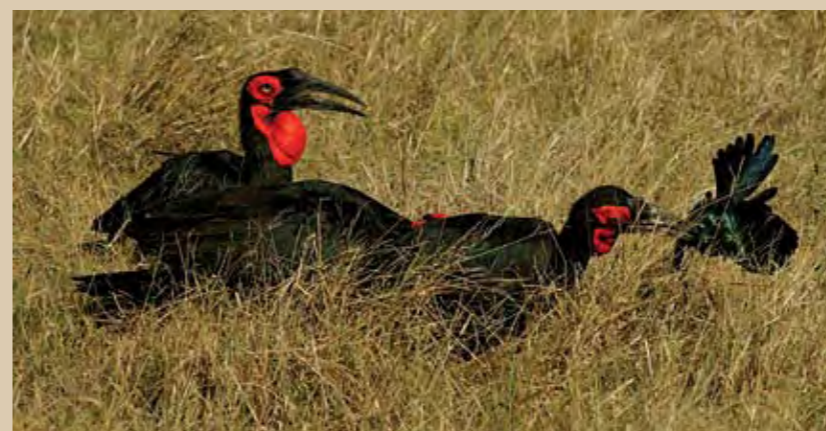
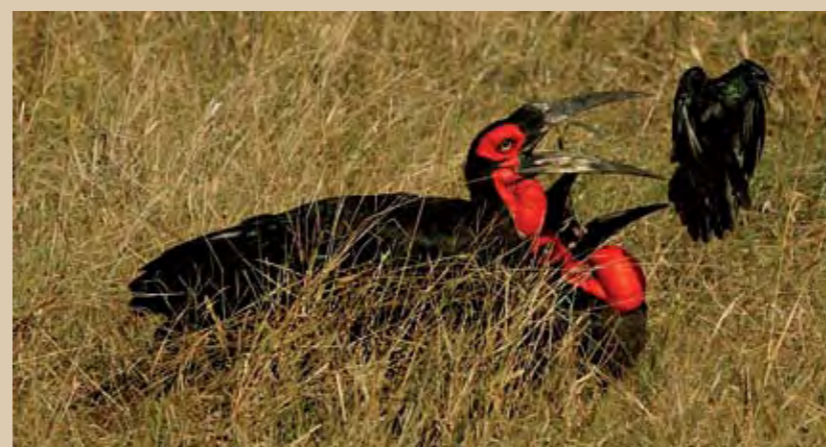
Acknowledgements

Yuval Erlich's drive and dedication were primarily responsible for the establishment of the study in the APNR. There, the Fitztitute has received tremendous support from the Exco, the wardens, landowners and numerous volunteers. DOW Chemicals provides the project with a vehicle and financial assistance, as do several tourist lodges in Timbavati. In the Kruger National Park, much depends on the backing and encouragement of SANParks researchers and field managers. We are grateful to them all.

MORNÉ DU PLESSIS
PERCY FITZPATRICK INSTITUTE
UNIVERSITY OF CAPE TOWN



On the hunt...



In mid-April 2006, while leading a safari to the Linyanti/Savuti area in northern Botswana, guide **Lee Whittam** captured the following interaction between Southern Ground-Hornbills and a flock of starlings. It illustrates the group-hunting technique employed by this carnivorous hornbill, which takes most of its prey items while walking slowly in a phalanx.

'We came across this group of ground-hornbills after we had been alerted to their presence by the mobbing calls of several Burchell's Starlings. We could distinguish the ground-hornbills in the long grass easily enough, but it was more difficult to see what they were after. After a few seconds it became evident as a starling made a bid to escape from the hornbills, only to be chased down and plucked out of the air. The hornbills were relentless in pursuit of the starling, continuing until they had despatched it. In the midst of the commotion, an African Fish-Eagle arrived, obviously attracted by the noise of the mobbing starlings – and by the possibility of a free meal. It waited patiently for its chance and eventually opportunistically pirated the starling from the three ground-hornbills.'

The Endangered Wildlife Trust (EWT) launched the Ground Hornbill Working Group in August 2004. The EWT, with its experience in establishing and running multi-stakeholder Working Groups which address critical conservation issues practically and effectively, established this group to coordinate the wide spectrum of ground-hornbill conservation activities, conduct field work, undertake applied research and investigate methods of mitigating and reducing the threats facing this species.

In its bid to secure a future for the ground-hornbill, the Working Group aims to ensure the survival of the species' natural habitats and associated biodiversity by promoting an improved understanding of its biology and ecology, securing viable habitat, and encouraging the participation and cooperation of communities and institutions. For more details, contact L.D. van Essen, Manager Ground Hornbill Working Group, Endangered Wildlife Trust. Tel. (+27-11) 486 1102; e-mail ldv@ewt.org.za





RICHARD DU TOIT

A male Southern Yellow-billed Hornbill rests with bill agape, his large bill and casque ridge separating him from his smaller mate, who is probably sealed into a nearby nest cavity.

SKULDUGGERY

Officers of the US Fish and Wildlife Service have drawn attention to a new threat to hornbills: the trade in skulls of both African and Asian species. Since 1999, Pepper Trail, Senior Forensic Scientist/Ornithologist at the US Fish and Wildlife Forensics Laboratory, has handled 17 cases that included hornbill material, representing 14 hornbill species and at least 97 individuals. The two largest *Ceratogymna* species accounted for 24 of these individuals. The full list of African species included three *Tockus* species (*erythrorhynchus*, *fasciatus* and *nasutus*), three *Bycanistes* species (*bucinator*, *cylindricus* and *fistulator*), both *Ceratogymna* species (*elata* and *atrata*) and both *Bucorvus* species (*leadbeateri* and *abyssinicus*).

In addition, an initial examination of import declarations revealed that since July 1999 (when their computer database began) there have been 62 listed importations of *Tockus* species (mostly listed as 'trophies') and 14 importations of *Bycanistes* and *Ceratogymna* species (mostly 'skulls' or 'bodies'). Note that these are numbers of importation declarations, not numbers of individuals (for example, one of the *Ceratogymna* declarations turned out to include the skulls of 11 individuals). Importations of live birds or of birds labelled as 'specimens' for museums were excluded from the search.

Trail believes that international trade may constitute a significant additional threat to some hornbill species, especially the large African rainforest *Ceratogymna* species that are already threatened by habitat loss and the bushmeat trade. None of these species is currently listed under CITES to limit or control their trade. Hornbill skulls for sale also appear regularly on the eBay Internet trading site. Anyone who might help Trail with information or advice should contact him at Pepper_Trail@fws.gov

Hornbill and Black Dwarf-Hornbill use monkeys as beaters to flush insects, and both Von der Decken's and Eastern Yellow-billed hornbills hunt for locusts co-operatively with groups of dwarf mongooses. The mongooses flush locusts from within long grass that are snapped up by the hornbills above. For their part, the hornbills warn mongooses of predators, thus saving them from having to place guards while they forage. Both participants even have special calls and displays to stimulate their partners into starting a co-operative hunt.

The ranges of hornbill species in Africa vary from extensive to local. While the best patches of savanna habitat might support up to five species, the best forest patches, with their greater diversity of ecological niches, may support as many as eight species of hornbill. In some places, such as Cameroon, as many as a dozen hornbill species may be found within 100 kilometres of one another. Even though Asia may support the greater diversity of species, it is only in Africa that one can discover the full range of size, form and function that characterise the world's hornbills. □