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**Derek Engelbrecht**



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# CANNIBALISM IN THE SOUTHERN YELLOW-BILLED HORNBILL *TOCKUS LEUCOMELAS*

*Derek Engelbrecht**

Department of Biodiversity, University of Limpopo, Private Bag X1106, Sovenga 0787

* Corresponding author: dereck.engelbrecht@ul.ac.za

The observations reported here were made as part of a study on the breeding ecology of Southern Yellow-billed Hornbills (SYBH) *Tockus leucomelas* nesting in artificial nest boxes in the Polokwane Nature Reserve S23° 58', E29° 28', Limpopo Province, South Africa. The nest boxes have a side entrance which allow for easy access to the eggs and nestlings and inspection of the nest contents (Fig. 1). The incarcerated female is unusually tame and simply moves to the side when the eggs or nestlings are handled.

On several occasions since 2009, I have noted unexplained losses of nestlings. Although it was normally relatively young and/or weak nestlings that disappeared, there were a few instances where older and/or apparently healthy nestlings also disappeared. This puzzled me since I never found a dead nestling in the nest or buried below the lining. I always assumed that the missing nestling died and the female disposed of it by breaking the nest seal, dropping the corpse outside and resealing the nest entrance. However, I never saw a dead nestling or the remains thereof below a nest (although I conceded that predators may have disposed of any dead nestlings below the nest), nor did I find any evidence that the nest entrance plug had been tampered with.

**Fig. 1** - A female Southern Yellow-billed Hornbill in an artificial nest box with the side entrance open.

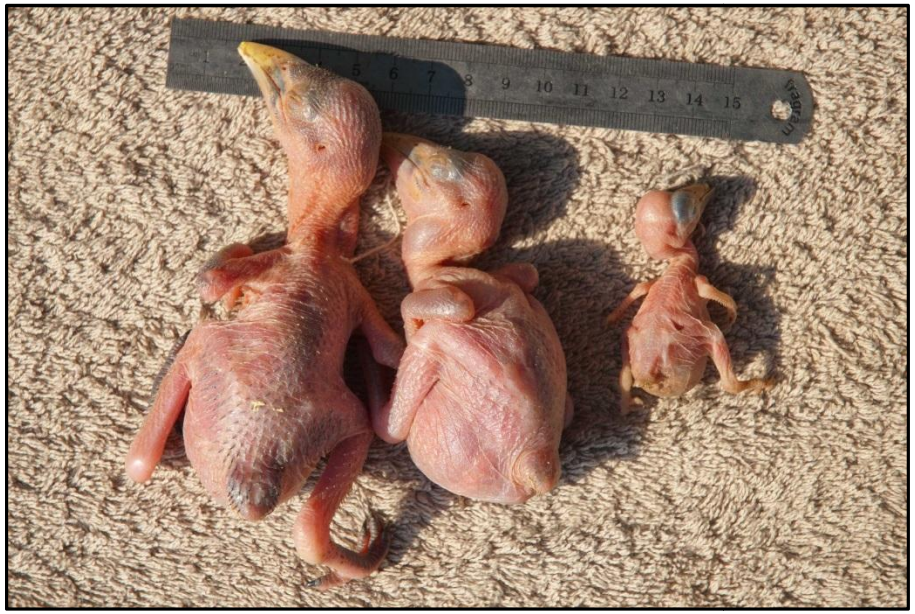

**Fig. 2 -** The asynchronous hatching pattern of Southern Yellow-billed Hornbills often result in starvation of the youngest/weakest nestlings. Note the poor condition of the last-hatched, 3-day old nestling on the right.

In 2011, video cameras were placed near nests on the outside to determine the diet of nestlings and the rate of food provisioning of males during the nesting cycle. At one of the nests I noticed that the youngest of the three nestlings was getting weaker and, despite the asynchronous hatching pattern of SYBHs, was considerably smaller than expected for a nestling of its age (Fig. 2). On 9 December 2011, after measuring and weighing the nestlings in the morning, I placed a video camera in position and started recording activity at the nest. When I returned at 14:25, I quickly checked to see if the weak nestling was still alive. It was nowhere to be found inside or outside in the immediate vicinity of the nest. Analysis of the video footage showed that at no time during the day's recording of activity at the nest, did the female even attempt to dispose of the nestling. Thus, the logical conclusion is that either the female killed the weak nestling and then ate it herself or fed it to the remaining nestlings, i.e. infanticide-cannibalism; or the nestling died from natural causes and the female ate it or fed it to her offspring, i.e. cannibalism. Kuhk (1969) referred to this special form of cannibalism as syngenophagy, literally meaning "relative-eating".

Although cannibalism is by no means a common phenomenon in birds, it has been reported in a number of different non-passerine bird families, including a few records of infanticide-cannibalism in the Oriental Pied Hornbill *Anthracoceros albirostris* (Chan *et al.* 2007; Ng *et al.* 2011). As far as I can establish, these represent the only records of cannibalism in the Bucerotidae to date. The SYBH is certainly a candidate for partial brood reduction by means of cannibalism. Eggs are usually laid at approximately 2-day intervals and the staggered hatching pattern means there may be a hatching span of almost 7-10 days in large clutches. In this particular clutch, there was a five day difference between the first and last hatched nestling. I have never observed siblicidal behaviour in SYBH nestlings and according to the literature, brood reduction simply occurs by means of older/stronger nestlings outcompeting younger/weaker siblings with the latter dying from starvation. Partial brood reduction by means of syngenophagy has the benefit of reducing the brood size to match the available food supply in order to invest resources in the strongest nestlings, and to "redistribute" resources in young/weak or even dead nestlings amongst its siblings (Kemp 2001; Chan *et al.* 2007).

To conclude, circumstantial evidence suggests that SYBH's may occasionally engage in syngenophagy as part of their brood

reduction strategy. Furthermore, the unique breeding strategy of most hornbills whereby the females seals herself into the nest, places unique demands on nest sanitation, particularly with regard to disposal of dead and decomposing nestlings. An effective way to circumvent this is to engage in syngenophagy, whether by infanticide-cannibalism of weak or dying nestlings or cannibalism of already dead nestlings. Nest box cameras will hopefully provide irrefutable evidence of this fascinating aspect of the SYBHs life history.

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