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TORPIDITY AS A FACTOR IN SPECKLED MOUSEBIRD PREDATION BY BLACK-HEADED HERON

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The Black-headed Heron *Ardea melanocephala* is well known as an opportunistic predator with a very catholic diet (Stuart and Dürk 1984). Less reliant on wetland habitats than other large herons, one is as likely to find the bird in agricultural land or short grassland as in marshland or recently flooded areas. One of the most horrifying experiences of my birding youth was witnessing a Grey Heron *Ardea cinerea* gobble up a lone duckling that had obviously become detached from its siblings. The Grey Heron became Felonious Heronious in our house and, for a long time, I viewed them as villains, in spite of their elegance.

This article emerges from an extraordinary incident that took place in Wilderness on July 1 2012. Barry Greenwood's garden borders the Wilderness section of the National Park and is situated relatively close to a heronry used by Black-headed Herons and Cattle Egret *Bubulcus ibis*.

In the middle of the day, a Black-headed Heron landed on a large bush and proceeded to capture and swallow whole two Speckled Mousebirds *Colius striatus*. Figure 1 shows the heron in the process of swallowing the first bird while Figure 2 shows the pronounced lump in its neck. Figure 3 shows the heron capturing the second bird. The heron also made some unsuccessful attempts in the twenty minute period it remained on the bush.

Two elements of the incident are notable. Firstly, mousebirds seem unusually large prey to be caught and swallowed whole. Secondly,

Fig 1 – The first Mousebird being consumed by the Heron

the mousebirds in the bush appeared to make little attempt to flee their predator. Why would the birds remain in the bush and not simply fly away?

This article investigates the possibility that torpidity was a factor in the mousebirds predation by the heron: simply put, they were too cold to move and remained rooted to the branch.

Regarding the first point – the diet of the Black-headed Heron – Roberts VII lists a wide variety of reptilian, invertebrate and mammalian prey, as well as birds "up to the size of doves and Ruff" (Wanless 2007). Indeed, *Kenya Birding* records Black-headed Herons killing and eating a Laughing Dove *Streptopelia senegalensis*, though the author adds: "without the essential tearing

Fig 2 – The large lump going down the throat of the predator

tools possessed by raptors, the despotic heron managed to swallow the dove only after chopping it into bits with its sharp beak" (Kahindi 1996).[1]

Perhaps the most extraordinary account of a Black-headed Heron hunting and consuming birds comes from 1988 when Miss WJ Ballenden of Parktown North, Johannesburg, recorded the following in the *WBC (Witwatersrand Bird Club) News*:

> *"I was morbidly interested to see a Redbilled Woodhoopoe [now Green Woodhoopoe* Phoeniculus purpureus*] up-ended and being swallowed whole down the long neck of a Black-headed Heron. The heron had landed in the top of a neighbour's tree. An hour later I heard another Redbilled Woodhoopoe's cries… The hoopoe was mobbing the heron. It was no match for that formidable beak and was, subsequently, swallowed whole. A Speckled Mousebird also met the same fate. My inhospitable feelings towards the heron must have been transmitted to the big bird, as the top of the tree suddenly shook, as the heron took to its wings, heavily laden, barely clearing our roof after take-off."*

In this account, Miss Ballanden is as shocked by the gluttony as by the brutality of the heron, but it is also the size of the prey that is remarkable. Two other accounts are worth noting before turning to the recent Wilderness account. Uys and Underhill (1995) observed a Black-headed Heron hunting Common Quail *Coturnix coturnix* in sheaves of recently harvested barley on a farm in the Bredasdorp area, and recorded further, after conversation with a local farmer, that herons had been observed following combine-harvesters and catching flushed quails. This is not so much opportunistic as strategic and adaptive hunting behaviour. Further afield, Tyler and Tyler (2001) observed a Black-headed Heron consuming a Lesser Moorhen *Gallinula angulata* in Chobe National Park, Botswana.

In an older study, Taylor (1948) collected and analysed regurgitated pellets deposited under a breeding-colony of herons in Fort Beaufort in an attempt to confirm whether herons were having a "deleterious effect upon smaller bird-life" or whether (from an agricultural point of view) they "accomplished much good work in destroying small rodents, as well as injurious insects such as locusts and grasshoppers." Taylor found bird remains (unidentified nestling) in only 19 of 200 pellets (9.5%) which led him to conclude that while birds do constitute a part of the Black-headed Heron's diet, they were "but a comparatively small item on the diet sheet, and certainly nothing sufficient to justify some of the sweeping allegations that have been made." The preponderance of insect remains, however,

[1] The Black-headed Heron has been observed to drown and then wash a Laughing Dove in a water trough to rid it of all feathers before swallowing it whole. This "washing" of prey lasted up to 20 minutes. It was observed more than once at the same trough, presumably by the same predator (pers. obs. AC vd Westhuizen).

led him to proclaim that the Black-headed heron can "safely be included among the birds useful to agriculture."

If one surprising element of this incident is the voracious appetite and capacity for swallowing large prey of the Black-headed Heron, then another is the stunned inaction by the group of Speckled Mousebirds who seemingly did little to prevent the heron's predation. Two possibilities spring to mind. The less satisfying notion is that the mousebirds were protecting a nest. Mousebirds are "facultative cooperative breeders" according to Fry et al (2007): nesting birds are assisted by both helpers and satellite helpers, so there is likely to be a small family group at a given nest site. Birds might be reluctant to leave in the face of such a sustained attack, allowing the heron time to attack several times and make two kills.

However, though Speckled Mousebirds lay all year round, they do not do so across their range. In the Western Cape, according to Maclean in Roberts (Dean 2007) laying can occur from July to February; however, while July 1 technically falls into this range, it is on the outer limits. Also, one might expect some form of alarm or attempt to fight off the attacker, especially with several birds present at the nest.

A second explanation for the birds' inaction might be torpidity. De Juana (2001) explains that "the plumage of mousebirds display some peculiar features," particularly that they have no down. This might be linked to some of the most well-known behavioural characteristics of mousebirds: their tendency to cluster together when roosting, diurnally as well as nocturnally, and their seemingly undignified sunbathing posture (legs apart, belly exposed as they hang between two branches). The clustering, the sunbathing and the hanging posture all form part of a sustained strategy of energy saving to compensate for the lack of down as well as their low calorific frugivorous diet (De Juana 2001).

Fig 3 – The second Mousebird is captured.

"The rather indolent behaviour of mousebirds, coupled with their frequent sun-bathing and their habit of clustering together when resting or sleeping, suggested to earlier ornithologists that these birds' thermoregulatory strategies might be unusual, or even that the Coliidae might be 'imperfectly endothermic'. Without going that far, it is certainly the case that in this respect, too, the mousebirds are quite original." As a result, "torpid birds are practically incapable of normal reactions, and so they may fall easy prey to nocturnal predators." (De Juana 2001). Remarkably, De Juana notes that because of nature of their plumage, mousebirds are even prone to "irreversible hypothermia" when caught in sudden rainstorms and "instances in which mousebirds are found dead on their perches, 'drowned' by downpours, are relatively frequent" (De Juana 2001).

McKechnie et. al. (2006) examined the relationship between communal roosting, food deprivation and thermoregulation. The finding most relevant to this incident is that rewarming was not necessarily linked to basking activities, and that the birds, in their study, "typically rewarmed before sunrise."

In another study, McKechnie and Lovegrove (2001) discussed various types of torpor, from hibernation (seasonal), through daily heterothermy (daily torpor) to rest-phase hypothermia, though they noted that "the distinction between rest-phase hypothermia and daily heterothermy in birds has not been rigorously examined."

In the light of the various studies undertaken that deal with thermoregulation in Mousebirds, it would be interesting to see scientific study on the relationship between such heterothermic behaviour and predation.

There are some elements that don't quite fit this attempted explanation. The incident took place in the middle of the day (between 12:40 and 13:00) and the weather conditions were clear and sunny. However, it had been very cold, so it is possible that the birds might have been in a torpid state despite the clear weather. Also, if one returns to Ballenden's observation, does torpidity help to explain the heron's predation on Wood-Hoopoes?

This remarkable incident adds an interesting dimension to the records of both the diet and hunting behaviour of the Black-headed Heron, and the fascinating physiological aspects of the Speckled Mousebird.

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