

Photospot:

Infanticide in the Secretary-bird *Sagittarius serpentarius* in Tanzania

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Infanticide chez le Messager sagittaire *Sagittarius serpentarius* en Tanzanie. Un incident d'infanticide et de cannibalisme dans le Messager sagittaire *Sagittarius serpentarius* est documenté avec des photos. À Ndotu, Ngorongoro Conservation Area, Arusha, Tanzanie, un adulte a été observé tuant et mangeant deux poussins sur le nid. Les raisons possibles de ce comportement sont examinées.

Observations of infanticide and cannibalism in birds are rare, although possibly under-reported (Moreno 2012) and especially unusual in diurnal raptors (Korňan & Metod 2011). On 11 July 2013, while on a birding safari at Ndotu, Ngorongoro Conservation Area, Arusha Region, Tanzania, we stopped to observe a Secretary-bird *Sagittarius serpentarius* on a large platform nest sited atop a flat-topped *Acacia* c.10 m high. At 08.40 hrs, we were astonished to see the adult reach into the nest and quickly pull out and devour a small white fluff-ball, which we suspected was a chick. Within two minutes we observed the adult reach down into the nest a second time and pull out another fluff-ball, which it quickly consumed. SS was able to obtain a series of photographs, which confirmed the fluff-balls were chicks (Figs. 1–5). Comparison with published photographs of Secretary-bird chicks (Kemp *et al.* 2014) revealed a good match. Both chicks were covered in white down and had yellow facial skin at the base of their bills (Fig. 6). We believe they were less than one week old, because after seven days a new layer of grey down is acquired and the facial skin turns orange (Hockey *et al.* 2005).

There are several possible explanations for this behaviour. This species is known to be a nest-robber, so perhaps this was an unguarded active nest belonging to another pair. Another possibility is that the chicks were either close to death or already dead. Secretary-birds are reported to be facultatively fratricidal, with the youngest of three chicks in the nest typically dying of starvation (Brown *et al.* 1982). However, we observed at least two chicks being consumed and no remaining live chicks were visible. Thus we believe this was not a case of normal brood reduction such as documented in Golden Eagle *Aquila chrysaetos* or

American Kestrel *Falco sparverius* (Bortolotti *et al.* 1991) where younger chicks may be fed to older siblings (Korňan & Metod 2011) usually during periods of low food supply. In our case rainfall during the 2013 wet season in the Ndotu area was about average (data at <http://www.ndutu.com/seasons/>) with abundant flowering *Gutenbergia*. Years like this typically witness plentiful insects and rodents, so there is no specific reason to expect this behaviour was precipitated by food stress to the adult or starvation of chicks.

Another explanation offered by S. Thomsett (*in litt.* 2013) is that this was infanticide by a replacement adult. Under this scenario, the behaviour would be termed hetero-cannibalism in which the victim is an unrelated conspecific. Thomsett documented the behaviour of a replacement adult Secretary-bird towards a much larger chick at Soysambu Conservancy in Kenya, and photographed a Secretary-bird trying to kill a single large nestling on 28 February 2012. 'Only after observing the nest for a few days and noticing just one adult attended did we see odd behaviour of the interloper. I then checked a nearby water tank to see the dead adult.... The chick survived only because we rescued it. The new adult was persistent in its effort to kill the chick. The single parent was never in a position to defend the chick. I never found out the sex of the adults.'

Infanticide is not uncommon in other animals when a new male replaces a male that has died or been driven off. This has two potential benefits to the new male: it may stimulate the female to resume ovulating and it may ensure that the new male does not invest energy rearing young that are not his own. Cases are particularly well documented in the African Lion *Panthera leo* (Pusey & Packer 1994), but infanticide and cannibalism by a







Figures 1–5. Chick being killed and consumed by adult Secretary-bird *Sagittarius serpentarius* on the nest, Ndotu, Ngorongoro Conservation Area, Arusha, Tanzania, 11 juillet 2013 (Susan Scott). Close examination of the original high-resolution images reveals white spotting on the black thigh feathers and a mixture of worn brownish feathers being replaced by fresh grey plumage on the bird's body and wing-coverts. Although this adult has developed its blue-grey bill and dark brown eyes, these plumage features suggest it may be a young adult which could be a replacement or an intruder trying to acquire a territory or a mate.

Un poussin est tué et mangé par un Messenger sagittaire *Sagittarius serpentarius* adulte sur le nid, Ndotu, Ngorongoro Conservation Area, Arusha, Tanzanie, 11 juillet 2013 (Susan Scott). L'examen minutieux des photos originales à haute résolution révèle des taches blanches sur les plumes noires des tibias et un mélange de plumes brunâtres usées en train d'être remplacées par un nouveau plumage gris sur le corps et les couvertures alaires de l'oiseau. Malgré le fait que cet individu ait acquis un bec bleu-gris et des yeux brun foncé, ces caractéristiques suggèrent qu'il pourrait être un jeune adulte. Il s'agit peut-être d'un remplaçant ou d'un intrus qui tente d'acquies un territoire ou un partenaire.

young male Bald Eagle *Haliaeetus leucocephalus* apparently attempting mate replacement has been demonstrated (Markham & Watts 2007). Replacement females could also benefit by not investing in young that are not their own as they gain a 'pre-made' nest. Like Thomsett, we were unable to determine the sex of the adult Secretary-bird we observed.

We also cannot eliminate the possibility of filial cannibalism. Filial infanticide occurs when a parent kills its own offspring. When this also involves consumption of the young, it is termed filial cannibalism. Such behaviour is particularly well known in certain fish and has

been documented in some bird species such as House Finch *Haemorhous mexicanus* (Gilbert *et al.* 2005). The adaptive function of this behaviour remains speculative. It may divert energy and nutrients from current reproduction to enhance future reproductive success. It perhaps selectively eliminates poorer quality offspring, or in the case of infanticide by males it may remove young of uncertain paternity (Klug & Bonsall 2007).

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Figure 6. Detail of chick cropped from Figure 3. Note chick's yellow facial skin and white down indicating a recent hatchling (Susan Scott)

Détail du poussin (une coupe de la Figure 3). Noter la peau faciale jaune et le duvet blanc du poussin, indiquant qu'il s'agit d'un oiseau récemment éclos (Susan Scott)

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