

Ornithological Observations



An electronic journal published by the Animal Demography Unit at the University of Cape Town and BirdLife South Africa



Ornithological Observations accepts papers containing faunistic information about birds. This includes descriptions of distribution, behaviour, breeding, foraging, food, movement, measurements, habitat and plumage. It will also consider for publication a variety of other interesting or relevant ornithological material: reports of projects and conferences, annotated checklists for a site or region, specialist bibliographies, and any other interesting or relevant material.

Editor: Arnold van der Westhuizen

SNAKES IN THE DIET OF SECRETARYBIRDS *SAGITTARIUS SERPENTARIUS*: AN EXAMPLE FROM BALFOUR, MPUMALANGA

Gregory B P Davies, Ernst F Retief and Hanneline Smit-Robinson

Recommended citation format:

Davies GBP, Retief EF, Smit-Robinson H 2014. Snakes in the diet of Secretarybirds *Sagittarius serpentarius*: an example from Balfour, Mpumalanga. Ornithological Observations, Vol 5: 361-364

URL: <http://oo.adu.org.za/content.php?id=151>

Published online: 21 August 2014

- ISSN 2219-0341 -



SNAKES IN THE DIET OF SECRETARYBIRDS *SAGITTARIUS SERPENTARIUS*: AN EXAMPLE FROM BALFOUR, MPUMALANGA

Gregory B P Davies^{1*}, Ernst F Retief² and Hanneline Smit-Robinson³

¹Curator of Birds, Ditsong National Museum of Natural History,
PO Box 413, Pretoria, 0001, South Africa

²Regional Conservation Manager, BirdLife South Africa,
PO Box 515, Randburg, 2125, South Africa

³Terrestrial Bird Manager, BirdLife South Africa,
PO Box 515, Randburg, 2125, South Africa

* Corresponding author: greg@ditsong.org.za

Introduction

Reflecting on studies made at two nests near Brandvlei, Northern Cape and other previous observations, Peter Steyn and Nico Myburgh (1992) concluded that "contrary to popular belief, snakes are but a small part of the diet of Secretarybirds". Steyn and Myburgh's position has support from other primary studies, e.g. Brown (1955) recorded mostly small mammals and grasshoppers fed to nestlings in Kenya (but a few snakes brought to the incubating female). Broadley (1974) found only three snakes in eight Secretarybird stomachs from Zimbabwe and Botswana. Kemp and Kemp (1978: table 1) recorded just five snakes eaten in a large sample of prey records largely drawn from the central Kruger National Park. Lastly, Kemp (1995: table 3) recorded no snakes delivered to nests watched near Pretoria (although remains of 4 snakes were found in 120 pellets examined). With this background, it was interesting recently to dissect a Secretarybird which had its gizzard and crop bulging with snakes.



Fig 1 - The Secretarybird just after it was collected from the farmer.

During December 2013 EFR was informed by a farmer that he had picked up a dead Secretarybird near the town of Balfour, Mpumalanga, South Africa. The bird had apparently killed itself by flying into a power line (date of death unknown, but probably late winter of 2013). The farmer placed the bird in a freezer and it was later transferred to the Ditsong National Museum of Natural History in Pretoria, where it was accessioned as TM 80845 and prepared for dissection.

Results

The bird was in good condition with few external injuries and proved to be a female (with paired ovaries, the left ovary approximately 2 x 1 cm with many small, cream follicles, each approximately 1 x 1 mm). The small size of the follicles suggested it was not close to egg-laying. The bird was in active body moult with many feathers breaking out of the waxy sheaths.

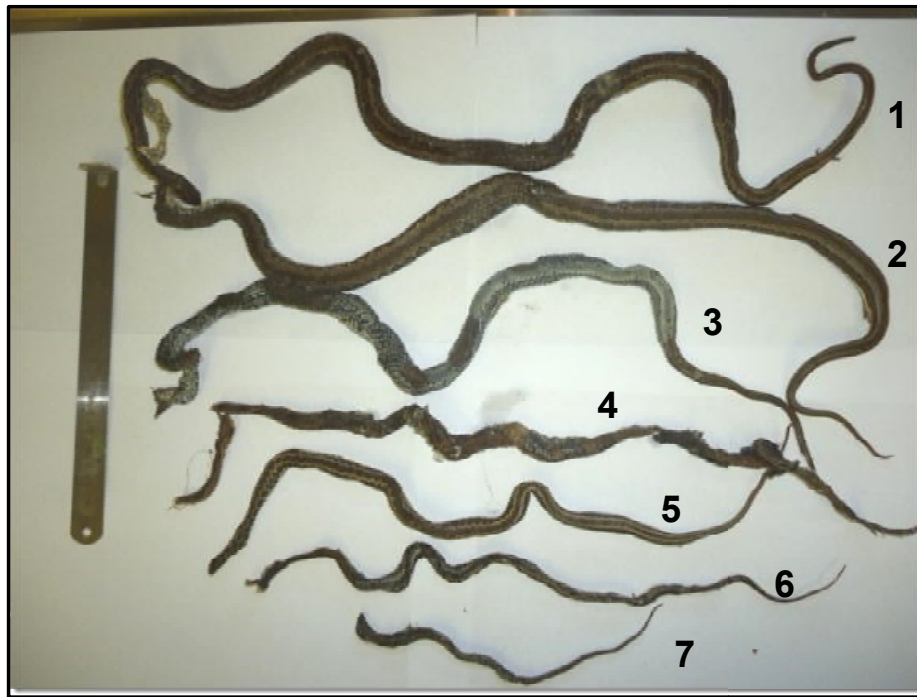


Fig 2 – Photo of the seven snakes eaten by the Secretarybird.
 1, 2, 5= Skaapstekers, 3,4, 6, 7 = Cross-marked Grass Snakes.
 The ruler is 20 cm long.



Fig 3 – Photo of some of the grasshoppers eaten by the Secretarybird, the individuals showing black bars in the hind wings are *Gastrimargus* cf. *africanus* and the plain, yellow-winged individuals are *Heteracris* sp.

When the body cavity was cut open it was found that the gizzard (stomach) was distended and dissection revealed two Spotted (Rhombic) Grass Snakes or Skaapstekers *Psammophylax rhombeatus*; Lamprohiidae: Psammophiinae, five Cross-marked Grass Snakes *Psammophis crucifer*; Lamprohiidae: Psammophiinae, 11 grasshoppers and a small amount of dark mammal fur (presumably from a rodent). The two Spotted Grass Snakes were intact and measured 42.5 and 62 cm respectively while the four Cross-marked Grass Snakes measured 18 cm (anterior part of body

missing), 36.5 cm (head missing), 53 cm (anterior part of body missing) and 61 cm (head missing). The grasshoppers measured 4-7 cm and were identified as *Gastrimargus* cf. *africanus* and *Heteracris* sp, both in the Family Acrididae. Furthermore, the crop was also bulging and upon investigation another Spotted Grass Snake (measuring 73 cm) and two more grasshoppers (5 cm long) were found. Therefore, this Secretarybird had eaten 8 snakes and 13 grasshoppers, presumably all in one day.



Discussion

Based on one bird, it would be inappropriate to generalize, but clearly Secretarybirds in southern Africa will consume a significant number of snakes if the opportunity arises.

Although there is no record of Spotted Grass Snake being eaten by Secretarybirds in the Afrotropical bird literature (e.g. Brooke and Hodgson 1971, Broadley 1974, Dean and Simmons 2005), Fitzsimons (1962) commented that this species "falls a ready prey to Secretary Birds and snakes such as the Rinkhals and other cobras". Broadley repeated this comment in his work (1983: 123). The primary source of Fitzsimons information is not known. We can find no record of Cross-marked Grass Snake being eaten by Secretarybirds in the literature.

Within their grassland habitat, Spotted and Cross-marked Grass Snakes are common and diurnal (Branch 1998; Bates *et al.* 2014). Presumably, the fairly high number caught by this Secretarybird is merely reflective of their abundance in the grasslands around Balfour.

The importance of Orthoptera (grasshoppers and locusts) in the diet of Secretarybirds has long been stressed (Brown 1955; Steyn 1961; Brooke and Hodgson 1971; Kemp and Kemp 1978; Steyn and Myburgh 1992; Kemp 1994, 1995) and this Balfour Secretarybird conforms with that trend. The only previous study to identify the orthopterans consumed was Brooke and Hodgson (1971) who identified three genera – *Catantops*, *Cyrtocanthacris* and *Acanthacris* – none of which being encountered in the Balfour Secretarybird.

Lastly, this episode also reveals the value of donating dead birds to natural history museums; much information (which would otherwise

be difficult to obtain) can be carried by a single dead bird. Anyone finding a dead bird is urged to donate it to their nearest natural history museum.¹

- oo0oo -

Acknowledgements

Darren Pietersen kindly assisted with the identification of the snakes. The grasshoppers were identified by Dr Piotr Naskrecki (Entomology Department, Harvard University, USA).

References

Bates MF, Branch WR, Bauer AM, Burger M, Marais J, Alexander GJ, de Villiers MS 2014. Atlas and Red List of the Reptiles of South Africa, Lesotho and Swaziland. Suricata 1. South African National Biodiversity Institute, Pretoria.

Branch B 1998. Field Guide to Snakes and Other Reptiles of Southern Africa. Struik, Cape Town

Broadley DG 1974. Predation by birds on reptiles and amphibians in south-eastern Africa. Honeyguide 78: 11-19.

Broadley DG 1983. Fitzsimons' Snakes of Southern Africa. Jonathan Ball and AD Donker, Johannesburg.

¹ **Editors note:** Wrap the dead bird lightly with newspaper and then wrap the "parcel" in plastic before freezing the specimen till such time it can either be collected or delivered at a museum. Try not to squeeze it too much out of its natural shape.



Brooke RK, Hodgson CJ 1971. Winter food of the Secretarybird as revealed by pellets. Bulletin of the British Ornithologists' Club 91(5): 121-125.

Brown L 1955. Supplementary notes on the biology of large birds of prey of Embu district, Kenya colony. Ibis 97(1): 38-64.

Fitzsimons VFM 1962. Snakes of Southern Africa. Purnell and Sons, Cape Town.

Kemp AC 1994. Secretarybird. In: Del Hoyo J, Elliot A, Sargatal J (eds), Handbook of the Birds of the World, Volume 2, pp. 206-215. Lynx Edicions, Barcelona.

Kemp AC 1995. Aspects of the breeding biology of the Secretarybird *Sagittarius serpentarius* near Pretoria, South Africa. Ostrich 66 (2&3): 61-68.

Kemp MI, Kemp AC 1978. *Bucorvus* and *Sagittarius*: Two modes of terrestrial predation. In: Anon. (ed.), Proceedings of the Symposium on African Predatory Birds, pp 13-16. Northern Transvaal Ornithological Society, Pretoria.

Steyn P 1961. Observations on the Secretary Bird. African Wildlife 15(3): 191-198.

Steyn P, Myburgh N 1992. Notes made at two Secretarybird nests. Birding in Southern Africa 44(1): 19-21.