



# Afrotropical Bird Biology

## Journal of the Natural History of African Birds

Volume 1

### Opportunistic avian nectarivory on flowering *Aloe maculata* with a review of visiting bird species

**Dawid H de Swardt & Aphiwe Kozana**

Department of Ornithology, National Museum, PO Box 266, Bloemfontein, 9300

Email: [dawie@nasmus.co.za](mailto:dawie@nasmus.co.za)

#### Abstract

Eight bird species were recorded feeding on *Aloe maculata* (Soap Aloe) nectar at Biddulphsberg, Senekal, Free State, from 23–26 August 2021. Birds were mist-netted as part of a bird ringing study and aloe pollen was noticed on some birds. The flowering aloes attract mainly Malachite *Nectarinia famosa* and White-bellied Sunbirds *Cinnyris talatala* as well as Cape *Zosterops virens* and Orange River White-eyes *Z. pallidus*. Of the 108 birds ringed or collected, 34 birds (eight species) had aloe pollen on them. These species, including a first record of Black-chested *Prinia flavicans*, and a confirmed record of Streaky-headed Seedeaters *Crithagra gularis*, represent the first observations of birds probing *A. maculata* flowers.

**Keywords:** opportunistic avian nectarivory, *Aloe maculata*, pollen, nectarivores, bird ringing

Received: 8 September 2021; Accepted: 12 November 2021

DOI: <https://doi.org/10.15641/abb.v1i.1123>

A review of avian nectarivory in southern Africa lists 157 obligate and facultative avian nectarivores across the region (Engelbrecht et al. 2014). In particular, aloe nectarivory was recorded as widespread, with *Aloe marlothii* dominating as a nectar food plant for many species. The list of *A. marlothii* nectarivores now stands at 106 species (Symes et al. 2008, Engelbrecht et al. 2014, Grosel 2020, Grosel and Engelbrecht 2021). Many other *Aloe* species are also known to attract obligate avian nectarivores such as sunbirds (Nectariniidae) and sugarbirds (Promeropidae). However, opportunistic nectarivory by species not explicitly adapted for probing nectar is less common in the smaller *Aloe* species.

In this paper, we report on additions to the list of opportunistic nectarivores visiting flowering *Aloe maculata*. This small aloe flowers from August to October and has a widespread distribution along the temperate southern and

eastern coastal regions and the Drakensberg foothills of South Africa and Lesotho (Van Wyk and Smith 1996). The flowers of the various aloes are known to attract sunbirds (Amethyst Sunbird *Chalcomitra amethystina*, Malachite Sunbird *Nectarinia famosa*, White-bellied Sunbird *Cinnyris talatala*), Cape White-eye *Zosterops virens*, and Orange River White-eye *Zosterops pallidus* (De Swardt 2001, Brown 2005, Hargreaves et al. 2010, Payne et al. 2021, DDS pers. obs). To contribute to our observations, we also review published records of obligate and opportunistic nectarivores probing *A. maculata* flowers.

During 23–26 August 2021, birds were caught in mist nets near flowering *A. maculata* at Biddulphsberg, Senekal (−28.27°; 27.77°). At this locality, *A. maculata* grows on the lower slopes of the Biddulphsberg Mountain and surrounding hills and was flowering at the time (Figure 1). The dominant tree in the area is *Vachellia karroo*.



**Figure 1:** Flowering *Aloe maculata*

We caught and ringed 108 birds representing 35 species during this period. Each bird controlled was inspected for pollen traces, and its presence/absence was noted. Although no pollen swabs were taken to confirm pollen species identity, we did note that *A. maculata* was the only species flowering at the site during that time. Malachite Sunbird, White-bellied Sunbird, Cape White-eye, Orange River White-eye, and five species of opportunistic avian nectarivores were recorded with pollen (Table 1). Of the opportunistic nectarivores, all three African Red-eyed Bulbuls *Pycnonotus nigricans* controlled (100%), 17 of the 20 Cape Weavers *Ploceus capensis* (85.0%), two of seven (28.6%) Black-chested Prinias *Prinia flavicans*, one Southern Masked Weaver *Ploceus velatus* (100%) and one Streaky-headed Seedeater *Crithagra gularis* (100%) were observed with pollen. Figure 2 shows Black-chested Prinia and Orange River White-eye with *A. maculata* pollen-stained plumage.

Sunbirds are suggested to be the principal nectarivore pollinators of *A. maculata* flowers and this was confirmed in

this study (see Table 1) (De Swardt 1992, Hargreaves et al. 2010). However, prior to this study, Streaky-headed Seedeater *Crithagra gularis* was the only known opportunistic nectarivore of *A. maculata* (De Swardt 1992). This species is generally regarded as a nectar 'robber' and appears to add little value to flowering aloes in terms of pollination; they tend to tear apart the base of the flower to obtain the nectar (De Swardt 1992, Engelbrecht et al. 2014). All the species recorded during our observations have been identified as either obligate or opportunistic nectarivores of other *Aloe* species (e.g. *A. greatheadii*, *A. ferox*, *A. marlothii*) (Oatley 1964, Oatley and Skead 1972, Dean 2005, Symes 2010, Engelbrecht et al. 2014). However, six of these species (Table 1) represent the first observations of *A. maculata* nectarivory. Given the limited duration of our study, we suggest that a wider diversity of known opportunistic nectarivores in the study area may also probe *A. maculata* flowers for nectar (see Table 2). Furthermore, the role of opportunistic (or generalist) nectar feeders in the pollination of *A. maculata* may be more important than previously suggested.



**Figure 2:** Black-chested Prinia and Orange River White-eye with *A. maculata* pollen-stained plumage

## References

- Brown M. 2005. Malachite Sunbird. In: Hockey PAR, Dean WRJ, Ryan PG (eds), *Roberts Birds of southern Africa* (7th edn). Cape Town: Trustees of the John Voelcker Bird Book Fund. p. 985–986.
- Dean WRJ. 2005. Black-chested Prinia. In: Hockey PAR, Dean WRJ, Ryan PG (eds), *Roberts Birds of southern Africa* (7th edn). Cape Town: Trustees of the John Voelcker Bird Book Fund, Cape Town. p. 844.
- De Swardt DH. 1992. Streepkopkanaries “steel” nektar van *Aloe maculata*. *Mirafra* 9: 10–11.
- De Swardt DH. 2001. Preliminary observations of Malachite Sunbird movements in the Free State. *Ostrich* 72: 203–206.
- Engelbrecht D, Grosel J, Engelbrecht D. 2014. Nectar-feeding by southern African birds, with special reference to the Mountain Aloe *Aloe marlothii*. *Ornithological Observations* 5: 49–74.
- Grosel J. 2020. Pied Crows feeding on Mountain Aloe nectar. *The Lark* 31: 75–76.
- Grosel J, Engelbrecht D. 2021. Aloe nectarivory by a Short-toed Rock Thrush. *The Lark* 37: 70.
- Hargreaves AL, Harder LD, Johnson SD. 2010. Native pollen thieves reduce the reproductive success of a hermaphroditic plant, *Aloe maculata*. *Ecology* 91: 1693–1703.
- Oatley TB. 1964. The probing of aloe flowers by birds. *Lammergeyer* 3: 28.
- Oatley TB, Skead DM. 1972. Nectar feeding by South African birds. *Lammergeyer* 15: 65–74.
- Payne SL, Symes CT, Witkowski TF. 2021. Temporal partitioning of diurnal and nocturnal small mammal visitors to a winter flowering endemic succulent. *African Zoology* 56: 146–156.
- Symes C. 2010. The sweet option: the importance of *Aloe marlothii* for opportunistic avian nectarivores. *Bulletin of the African Bird Club* 17: 178–187.
- Symes CT, Nicolson SW, McKechnie AE. 2008. Response of avian nectarivores to the flowering of *Aloe marlothii*: a nectar oasis during dry South African winters. *Journal of Ornithology* 149: 13–22.
- Tree AJ. 2005a. White-bellied Sunbird. In: Hockey PAR, Dean WRJ, Ryan PG (eds), *Roberts Birds of southern Africa* (7th edn). Cape Town: Trustees of the John Voelcker Bird Book Fund. p. 993–995.
- Tree AJ. 2005b. Amethyst Sunbird. In: Hockey PAR, Dean WRJ, Ryan PG (eds), *Roberts Birds of southern Africa* (7th edn). Cape Town: The Trustees of the John Voelcker Bird Book Fund. p. 981–982.
- Van Wyk B-E, Smith G. 1996. *Guide to the aloes of South Africa*. Arcadia: Briza Publications.

**Table 1:** Species observed either probing *Aloe maculata* flowers for nectar or with pollen on their plumage as recorded at Biddulphsberg, Senegal, in August 2021. Nectarivory: O – observed probing, P – pollen on plumage (in this study). ‘Other species’ include opportunistic nectarivory reported for the species at flowers other than *A. maculata*.

Family and species	Scientific name	<i>Aloe maculata</i>	Nectarivory	Other species
<b>Fringillidae</b>				
Streaky-headed Seedeater	<i>Crithagra gularis</i>	De Swardt (1992) Hargreaves et al. (2010)	P	Oatley (1964) Oatley and Skead (1972) Symes (2010) Engelbrecht et al. (2014)
<b>Nectariniidae</b>				
Malachite Sunbird	<i>Nectarinia famosa</i>	Brown (2005) De Swardt (2001) Hargreaves et al. (2010)	O	Brown (2005) Symes (2010) Engelbrecht et al. (2014)
White-bellied Sunbird	<i>Cinnyris talatala</i>	Hargreaves et al. (2010)	P	Tree (2005a) Symes (2010) Engelbrecht et al. (2014)
Amethyst Sunbird	<i>Chalcomitra amethystina</i>	Hargreaves et al. (2010)	O	Tree (2005b) Symes (2010) Engelbrecht et al. (2014)
<b>Cisticolidae</b>				
Black-chested Prinia	<i>Prinia flavicans</i>	New record	P	Oatley and Skead (1972) Symes (2010) Engelbrecht et al. (2014)
<b>Ploceidae</b>				
Cape Weaver	<i>Ploceus capensis</i>	New record	P	Symes (2010) Engelbrecht et al. (2014)
Southern Masked Weaver	<i>Ploceus velatus</i>	New record	P	Oatley and Skead (1972) Symes (2010) Engelbrecht et al. (2014)
<b>Pycnonotidae</b>				
African Red-eyed Bulbul	<i>Pycnonotus nigricans</i>	New record	P	Oatley and Skead (1972) Symes (2010) Engelbrecht et al. (2014)
<b>Zosteropidae</b>				
Cape White-eye	<i>Zosterops capensis</i>	New record	P	Symes (2010) Engelbrecht et al. (2014)
Orange River White-eye	<i>Zosterops pallidus</i>	New record	P	Engelbrecht et al. (2014)

**Table 2:** Known obligate or opportunistic nectarivores (see Engelbrecht et al. 2014) present at Biddulphsberg, Senekal during the study (August 2021) but without visible evidence of *Aloe maculata* pollen on the plumage.

Family and species	Scientific name	Main diet
<b>Emberizidae</b>		
Cape Bunting	<i>Emberiza capensis</i>	Granivorous
<b>Fringillidae</b>		
Yellow Canary	<i>Crithagra flaviventris</i>	Granivorous
Black-throated Canary	<i>Crithagra atrogularis</i>	Granivorous
Cape Canary	<i>Serinus canicollis</i>	Granivorous
<b>Lybiidae</b>		
Crested Barbet	<i>Trachyphonus vaillantii</i>	Omnivorous
<b>Macrospenidae</b>		
Long-billed Crombec	<i>Sylvietta rufescens</i>	Insectivorous
<b>Muscicapidae</b>		
Mocking Cliff Chat	<i>Thamnotlaea cinnamomeiventris</i>	Insectivorous
Karoo Thrush	<i>Turdus smithi</i>	Insectivorous
Cape Robin-Chat	<i>Cossypha caffra</i>	Insectivorous
Karoo Scrub Robin	<i>Cercotrichas coryphoeus</i>	Insectivorous
Fiscal Flycatcher	<i>Melaenornis silens</i>	Insectivorous
<b>Paridae</b>		
Ashy Tit	<i>Melaniparus cinerascens</i>	Insectivorous
<b>Phoeniculidae</b>		
Common Scimitarbill	<i>Rhinopomastus cyanomelas</i>	Insectivorous
<b>Stenostiridae</b>		
Fairy Flycatcher	<i>Stenostira scita</i>	Insectivorous
<b>Sturnidae</b>		
Red-winged Starling	<i>Onychognathus morio</i>	Omnivorous
Cape Starling	<i>Lamprotornis nitens</i>	Omnivorous
<b>Sylviidae</b>		
Chestnut-vented Warbler	<i>Curruca subcoerulea</i>	Insectivorous

*Afrotropical Bird Biology* (ABB) is a free, open-access, online journal for articles that describe aspects of the natural and cultural history of birds in the Afrotropical region, including its offshore islands. These include, but are not restricted to, identification features, sounds, distribution and demography, movements, habitats, diseases and parasites, general habits, foraging and food, breeding, interactions with humans, human cultural beliefs and practices as they pertain to birds, moult and biometrics of birds. ABB publishes original contributions focused on presenting information about the natural history of Afrotropical birds. This includes short communications (<2 500 words, including references) and data papers. All contributions will be reviewed by at least one editor and external, independent referees may also be employed at the discretion of the editors.

All papers are published under the [Attribution-NonCommercial CC BY-NC](https://creativecommons.org/licenses/by-nc/4.0/) license.

<https://journals.uct.ac.za/index.php/ABB>