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ARBOREAL FORAGING BY WAXBILLS IN THE CANOPIES OF LEGUMINOUS TREES AND CREEPERS IN KWAZULU-NATAL, SOUTH AFRICA

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Abstract

Although waxbills and allies (Estrildidae) are ground-foraging birds, this note shows that three forest and forest-edge species regularly forage in the canopy of trees and arboreal creepers. Twelve incidents of arboreal foraging are described for Grey and Swee Waxbills and Green Twinspot from KwaZulu-Natal. All observations fell during late winter and early spring (July to September) and all were in leguminous trees/creepers belonging to the families Mimosaceae (*Vachellia* and *Albizia* spp) and Fabaceae (*Dalbergia* and *Millettia* spp). It is speculated that the waxbills may be directly selecting leguminous trees because of the higher nitrogen levels of both the leaves as well as the invertebrates that feed on them.

Introduction

Waxbills and their relatives (Estrildidae) feed predominantly on the ground, grass stalks and shrubs (Clement *et al.* 1993). However, those waxbill species that live in or at the edge of forests may be seen feeding not only at ground-level but high in the canopy of forest trees. In this note, I describe 12 incidents of arboreal foraging by Grey *Estrilda perreini* and Swee *Coccopygia melanotis* Waxbills and Green Twinspot *Mandingoa nitidula* in the canopies of leguminous trees/arboreal creepers in the forests of KwaZulu-Natal, South Africa. The incidence of canopy foraging has occasionally been mentioned in the literature, but I feel this behaviour has been inadequately emphasised to date.

Results

Green Twinspot

On 24 August 1997 I watched an adult female and juvenile feeding for *ca* 15 minutes in the early morning in the canopy of a large *Vachellia robusta* (Mimosaceae) growing at the edge of coastal forest in Burman Bush Nature Reserve, Durban. The birds foraged throughout the canopy *ca* 5-10 m above the ground. The twinspots did not fly or hop from branch to branch but rather moved along branches with a peculiar, shuffling, crab-like gait, bobbing all the while like tiny clockwork toys. The *Vachellia* had fresh green leaves and the twinspots nipped or gleaned from the leaflets, sometimes stretching their necks and craning their heads to examine the upper surface of leaves. The female and juvenile foraged separately (sometimes up to 7 m apart), exchanging occasional *tick* contact calls or sharper *tik* notes when meeting. The twinspots did not interact with other passerines feeding in the tree (Bar-throated Apalis *Apalis thoracica*; Cape White-eye *Zosterops virens*). When the pair had finished foraging in the *Vachellia* they flew off swiftly to another *V. robusta* tree approximately 25 m away.

On 13 July 2001 I found a solitary adult female twinspot in a largely leafless *Albizia adianthifolia* (Mimosaceae) along the forest edge in Pigeon Valley Nature Reserve, Durban during the late afternoon. The feeding behaviour resembled the previous encounter, the female shuffling along branches sideways picking or gleaning off presumed invertebrates from the tops of the *Albizia* leaflets. She foraged for *ca* 10 minutes before eventually darting into the forest. The following day, a pair of twinspots was feeding over 8 m up in the canopy of an

A. adianthifolia just outside Pigeon Valley. On 31 August 2001, another pair of twinspots was briefly watched foraging high in the canopy of a *V. robusta* once again in Pigeon Valley. During the same month, Richard Boon (pers. comm.) saw a Green Twinspot also feeding in an *A. adianthifolia* at Pigeon Valley.

Grey Waxbill

On 12 August 1997 I saw a small party of these waxbills high in the canopy of a *Vachellia* (unidentified at the time, but probably *V. robusta*) at Kenneth Stainbank Nature Reserve, Durban. The *Vachellia* had fresh green leaves and the waxbills were gleaning the compound leaflets by running the leaves through their bills with a nibbling action. The waxbills did not seem to be eating the fresh leaves but rather gleaning something from them. The flock of waxbills spent *ca* 15 minutes in the canopy.

On 30 August 1998, an undetermined number of Grey Waxbills were noticed nibbling at the leaves of the creeper *Dalbergia armata* (Fabaceae) festooned in the canopy at the edge of coastal forest in Vernon Crookes Nature Reserve, near Umzinto. The waxbills were foraging together with Swee Waxbills. Along the Nkonka Trail at Oribi Gorge Nature Reserve, near Port Shepstone, on 12 September 1998, a flock of 8 were seen feeding in the canopy of a *Millettia grandis* (Fabaceae) tree for several minutes. On 19 September 1999, at Vernon Crookes Nature Reserve, a pair of Grey Waxbills were seen nibbling at fresh *D. armata* leaflets at the top of a forest edge tree. Lastly, on 22 August 2004, the waxbills (number not stated in my notes) were seen eating *D. armata* flowers (and possibly the flower buds) at Vernon Crookes, again high in the canopy.

Swee Waxbill

As mentioned under Grey Waxbill, I observed Swee Waxbills nibbling at *D. armata* leaves on 30 August 1998, Vernon Crookes Nature Reserve, >5 m high in the canopy. A few days later, on 5 September 1998, a small party of Swee Waxbills were seen biting at *D. armata* leaves again at Vernon Crookes Nature Reserve. A year later on 8 August 1999, also at the same locality, I saw Swee Waxbills (number not stated in my notes), gleaning from *D. armata* leaflets. All these incidents were at the margin of coastal forest.

Discussion

There are two features regarding this canopy foraging behaviour that I wish to emphasise. First, all my records are from leguminous tree or creeper species either in the families Mimosaceae or Fabaceae. Together with the family Caesalpiniaceae, these families are sometimes united in a larger family Leguminosae (Van Wyk and Van Wyk 1997). Mimosaceae and Fabaceae have many common representatives in the coastal forest flora of KwaZulu-Natal (Boon 2010), but the fact that all twelve observations were from trees/creepers in these families (and not other non-leguminous families) suggests there was deliberate selection for these leguminous species rather than the waxbills merely gleaning from ubiquitous trees in their environment. Second, there is strong seasonality to this behaviour, the 12 records being spread over just three months (July-September), with six of the records from August alone. These months correspond to late winter and early spring in South Africa.

It is unfortunately not known what the birds were consuming. In the case of the twinspots, it is probable they were nipping off small invertebrates. The nibbling action of the other two waxbills suggests they may have gleaning an exudate from the leaves or insect larvae/nymphs. On two occasions it was specifically noted that Grey Waxbills nibbled young, fresh foliage of *D. armata* rather than older

leaves. *Albizia adianthifolia*, *Vachellis robusta* and *Dalbergia armata* are deciduous or semi-deciduous sprouting fresh growth in winter and spring (Boon 2010). Fresh leaves, especially of leguminous trees and plants, have a higher content of soluble nitrogenous amino acids than older leaves (White 1993). Therefore, young foliage is often preferentially attacked by homopteran bugs (e.g. Aphididae, Psyllidae, Cercopidae). It is possible that the waxbills may have been gleaning bug nymphs or even the exudate these bugs extrude to assist with their nitrogen balance (White 1993).

The literature does have reference to such arboreal foraging behaviour by these estrildines (e.g. Fry 2004; Keith 2004; Nuttall 2005 a-c), but I was unable to trace any mention of selection for leguminous trees and the apparent seasonality in the behaviour.

Ryan (in: Nuttall 2005b) observed that Green Twinspots will eat "small invertebrates attracted to tree exudates", but unfortunately no further information was provided. In Malawi, Dowsett and Hunter (1980) reported twinspots "feeding at small flowers" in the canopy. Vernon (1989) has seen Green Twinspots eating stinging nettle *Urera* (Urticaceae) fruits high in the canopy at Selinda Forest, eastern Zimbabwe.

For Grey Waxbill, Nuttall (2005c) noted that the species "also forages in tree canopy taking small insects incl termites also floral parts and nectar". In Mozambique, Brooke (1968) observed them "in a party of birds combing the canopy of a riparian *Acacia [Vachellia]*" and Pinto and Lamm (1960) "twice found flocks of Grey Waxbills feeding high up in dead trees of [Licuati Forest]". Chittenden and Chittenden (1993) observed a Grey Waxbill "feeding on small green aphids under the fresh Marula (*Sclerocarya caffra* [Anacardiaceae]) leaf sprigs in the way one sees warblers or white-eyes searching for their insects"; Palmer and Pitman (1972) noted Grey Waxbills will also eat the flowers of Marula trees. In Zambia, Dowsett *et al.* (2008) stated that Grey Waxbills "often [feed] at flowers (including those of eucalyptus [Myrtaceae])". The closely-related Black-cheeked Waxbill (*Estrilda erythronotos*) was found by Skead (1975) to "often search amongst the *Acacia [Vachellia]* leaves up to 5 m above ground level for insects".

There are very few references to Swee Waxbills feeding in canopies of trees. Nuttall (2005a) reported that Swee Waxbill will eat the buds of *Buddleja* (Loganiaceae), 4-5 m up in the canopy. In Malawi, Dowsett-Lemaire (2006) watched the closely-related Yellow-bellied Waxbills (*C. quartinia*) eating *Urera* fruit (cf. Green Twinspot), some way up in the canopy and also taking nectar from flowers of fairly large *Syzygium cordatum* (Myrtaceae) trees on the Viphya Plateau, Malawi (Dowsett-Lemaire and Dowsett 2006; F Dowsett-Lemaire *in litt*.). In eastern Zimbabwe, Swynnerton (1908) saw them feeding in the "tender red foliage of a *Brachystegia* [Casealpinoideae]" tree during the month of September.

These accumulated observations indicate that canopy foraging by these waxbills is fairly common, although restricted seasonally, at least in KwaZulu-Natal coastal forests. Further observations would be particularly welcome, especially to see whether the connection with leguminous trees and creepers is borne out by other observers or whether it is merely an observational artefact.

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