

Dietary preferences and behaviour of the Southern Lesser Bushbaby *Galago moholi* (Loriformes: Galagidae) foraging at an entomological light trap

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ABSTRACT

The Southern Lesser Bushbaby *Galago moholi* is a small, nocturnal, strepsirrhine primate, native to Sub-Saharan Africa. Previously considered a strict dietary specialist on tree exudates and insects, recent observations have revealed hitherto unappreciated plasticity in its feeding behaviour, encompassing fruits and even small vertebrates. While arthropods are an important seasonal component of the diet of this species, we still have little idea of the types of insect prey taken in nature, or the extent of any preferences among arthropod taxa. Here, I document behavioural observations made of *G. moholi* foraging at a moth trapping light on two occasions in November 2024 in Limpopo (Republic of South Africa), including details of feeding preferences and previously undocumented foraging vocalisations. To understand species-level preferences among potential insect prey, I presented an individual *G. moholi* with various prey types and recorded which were consumed. In addition, using male Driver Ants *Dorylus helvolus*, I experimentally manipulated prey items to gauge the relative importance of prey appearance, movement, and sound in determining their attractiveness to *G. moholi*. Lepidoptera were strongly favoured among available prey options, with increased discrimination applied to other groups such as Coleoptera and Hemiptera. Both sound and movement were important in attracting attention and predation from *G. moholi*. Although limited by low replication, these observations are the first to document species-level discrimination and preferences among a wide range of insect prey in wild *G. moholi*. Building a clearer picture of the dietary ecology of this species is vital for its conservation, and for better understanding its functional role in woodland food-webs. Future studies should seek to employ more systemic experimental approaches on captive and wild individuals (*i*) to clarify the traits that make different arthropod taxa suitable/attractive prey for this species, and (*ii*) to further explore the sensory ecology of *G. moholi* foraging, particularly the relative role of vision and audition.

KEYWORDS

entomophagy; feeding ecology; generalism; specialism; Coleoptera; Lepidoptera; foraging behaviour; communication

INTRODUCTION

Insectivory is an important feeding strategy for many primates (Lesnik, 2018; Hamad *et al.*, 2014) that becomes increasingly significant (and often obligate) in the smaller species (Kay, 1984; Jesus *et al.*, 2022). Bushbabies (Loriformes: Galagidae) are nocturnal, arboreal strepsirrhine primates, native to Sub-Saharan Africa (Stuart and Stuart, 2014). They have a specialised diet consisting primarily of insects, fruit, and the exudates (sap and gum) of trees, though other food items—such as eggs, flowers, and even small vertebrates—may be taken opportunistically by some taxa (Nekaris and Bearder, 2007; Stuart and Stuart, 2014; Kingdon, 2020). Tree gum is a crucial source of carbohydrates and calcium for Galagids but it is low in protein, making arthropod food items an important complimentary component (Bearder and Martin, 1980). However, among the 17 currently recognised species of Galagidae (Masters *et al.*, 2017), the relative proportion of each food type varies: for example, gum comprises 0%, 48%, and 62% of the diet of the *Paragalago cocos*, *Galago moholi*, and *Otolemur crassicaudatus*, respectively (Nekaris and Bearder, 2007). The degree of specialisation to each food type is likely an important factor for niche partitioning in the Galagidae and, indeed, Lorisiformes more broadly.

In the Southern Lesser Bushbaby *G. moholi*, specialist digestive mechanisms exist allowing it to effectively metabolise through fermentation the complex, linked polysaccharides present in both plant exudates and arthropod exoskeletons (Canton *et al.*, 2001). There is also seasonal variation in the diet of *G. moholi*, which consumes a higher proportion of plant exudates during winter and increases its arthropod intake at the onset of summer, when invertebrates are most abundant (Bearder and Martin, 1980; Harcourt, 1986; Nash, 1986; Nowack *et al.*, 2013; Scheun *et al.*, 2014; 2015). Seasonal dietary switching, coupled with unusual digestive adaptations for a mammal of such small size, likely allow *G. moholi* to remain active throughout the year on comparatively low-quality food and contribute to its distinct phenological and ecological niche (Bearder and Martin, 1980; Mzikazi *et al.*, 2006; Nowack *et al.*, 2013).

Much of the dietary ecology of the Galagidae remains unclear, however, even in relatively abundant and widespread species. *Galago moholi* was formerly considered a strict specialist on gums and insects (Bearder and Martin, 1980; Harcourt, 1986), but has recently also been recorded utilising fruit (Stuart and Stuart, 2014; Scheun *et al.*, 2014; Ray *et al.*, 2016), particularly when insect or gum-producing tree abundance is low (Scheun *et al.*, 2014). Indeed, fruit has traditionally been an important component of the diet of captive *G. moholi* colonies (Doyle and Bekker, 1967). In urban environments, *G. moholi* relies heavily on provisioned anthropogenic food sources, such as bird feeding stations, and has been observed eating bread, fruits (such as apples and bananas), and yoghurt (Scheun *et al.*, 2015). Engelbrecht (2016) has even documented *G. moholi* raiding bird nests, and predated the eggs and nestlings of the African Paradise Flycatcher *Terpsiphone viridis* and Kurrichane Thrush *Turdus libonyana*. These recent findings suggest a great deal of hitherto unappreciated behavioural plasticity in the feeding preferences of this species, which may be an adaptation enabling persistence in harsh, but transient, environmental conditions or sub-optimal habitats (Ray *et al.*, 2016).

As well as seasonal turnover in the primary food-types (Harcourt, 1986; Nowack *et al.*, 2013), there is likely also important geographical variation in diet both within and between *Galago* species. While prior studies have attempted to quantify the relative frequency of the insect- and gum-eating habits (Harcourt, 1986; Nowack *et al.*, 2013; Nekaris and Bearder, 2007), we have little idea of the specific composition or even of the size of arthropod prey taken in nature (though see Harcourt, 1986). Increasing our understanding of the dietary ecology of the galagids is an important foundation for further research, and is key if we are to accurately assess the impacts of future environmental and climatic change on their populations (Scheun and Nowack, 2024). Here, I recount incidental observations of the behaviour and insectivorous dietary preferences of the Southern Lesser Bushbaby *G. moholi*, made while surveying invertebrates in South Africa. Focusing on one (or two) target individual/s that visited a UV light trap set up to collect nocturnal insects, I recorded feeding

preferences among different insect prey at the species-level. In captivity, *G. moholi* have been shown to prefer moving prey (Ruby, 2017) and the sounds generated by moving insects may be an important attractant in the dark, and a proxy for prey size (Goerlitz *et al.*, 2008). To investigate the relative importance of different sensory cues in prey-finding and attractiveness, I conducted a small-scale manipulative experiment assessing the role of prey appearance, movement, and sound. While limited in scope, these observations are the first to document species-level discrimination between insect prey items in *G. moholi* and offer a foundation for more systematic future research.

METHODS

Study Site and Context

As part of a research project recording invertebrates in the Greater Kruger National Park (Limpopo, Republic of South Africa) I spent 31 October to 5 November 2024 based at Emhosheni River Lodge (-24.1631°S, 30.9349°E; Parsons Reserve, Balule Private Nature Reserve). Situated approximately 100m from the northern bank of the Olifants River (Figure 1), the lodge is unfenced and open to the Kruger National Park in the east, allowing large game animals to freely enter. The surrounding area features low hills, abundant rocky outcrops, and thick low vegetation typical of a bushveld environment (Figure 1). The high-density elephant population in Balule PNR limits the height and extent of any tree cover considerably through herbivory and mechanical damage. Canopy cover in Balule has declined by almost 50% since 2014, coinciding with an approximate doubling of elephant density (Peel, 2019). Emhosheni River Lodge caters for tourists and therefore has well-maintained gardens, including lawns, flower borders, and larger trees (all watered through a sprinkler system)—this makes it an unusual island of green in late October.

To collect and record nocturnal insects (primarily Lepidoptera) I ran specialist light bulbs emitting high quantities of UV light (25W fluorescent Actinic) in front of a white sheet after darkness (Figure 1C). Insects are attracted to the lights in great numbers, often from considerable distances, and either fly close to or land on the sheet. This allows them to be surveyed or captured for closer examination (Fry and Waring, 2001). I set up my trapping equipment on a raised wooden deck facing an area of dry grassland with clear visibility to approx. 750m, running parallel with the river. The deck was set against mature ornamental trees on one side (approx. 6/7m in height), and low flower borders on the other. Light trapping took place nightly from approximately 20:00 to 01:00, except for 31 October when high winds made this impossible.

Foraging behaviour and insect-feeding preferences

On the evenings of the 1 and 4 November I was joined at the light trap set-up by a single Southern Lesser Bushbaby *G. moholi* (Figures 2 and S1) and was able to observe and document its behaviour as it foraged at the light, catching insects. It is difficult to say whether it was the same individual on both nights, but this was my impression. Where possible, I recorded video footage of any foraging behaviour using the camera application of a Google Pixel 4a smartphone. Where the target individual made audible vocalisations, I later extracted the audio component from video footage using the sound editing software Audacity (version 3.1.3). I generated sonograms of any calls using the spectrogram function in Audacity and ‘noise reduction’ to increase the visibility of the call trace.

In order to quantify the taxonomic preferences of the individual/s *G. moholi* attending the light trap, I presented it with a number of potential insect prey items on the evenings of the 1 and 4 November. These were collected at random around the trap, identified as precisely as possible, and then placed or held 1.5m away from the bushbaby and level with its current position (Figure 3A). Mode of presentation (placed/held) was haphazard, and there were no systematic differences

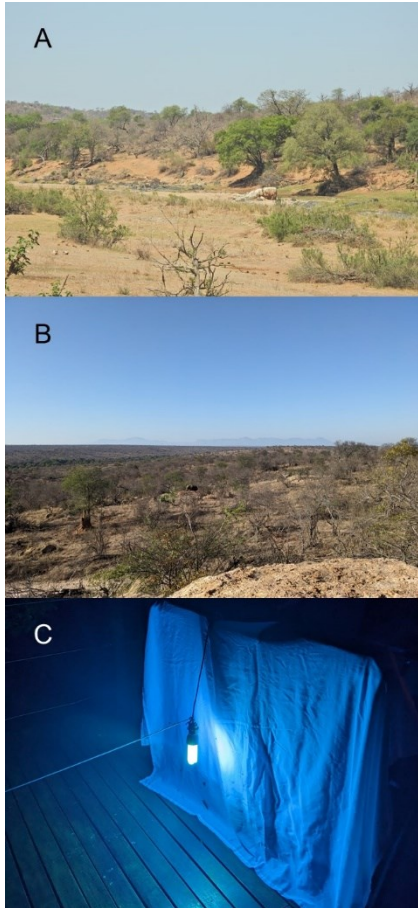


Figure 1. (A) Riverine and (B) neighbouring bushveld habitats of the Southern Lesser Bushbaby *Galago moholi* in Parsons Reserve, Balule Private Nature Reserve, Greater Kruger National Park (South Africa). (C) Entomological light trap setup at Emhosheni River Lodge, Balule PNR. The specialist bulb used for the trap emits UV light to attract insects, and is hung in front of a sheet to allow specimens arriving to be easily examined and/or collected. All photos © Jamie C. Weir.



Figure 2. (A) The Southern Lesser Bushbaby *Galago moholi*. (B) Feeding on the body of a large moth (?Sphingidae) after removing the wings. (C) Examining specimen tubes containing moths collected at an entomological light trap—it was particularly attracted to those with moving/fluttering insects inside. All photos © Jamie C. Weir.

among prey types. Trials were performed only when the target individual was not already engaged in pursuing/consuming prey and was observing its environment. It approached the insect in each trial—probably associating my repeated action with potential food—and examined it in close physical proximity (sometimes sniffing or licking) before either leaving or consuming it. There was no obvious difference in the probability of taking or rejecting prey whether held or placed at ground-level. If the prey item moved or flew away before an encounter was concluded it was discarded from the dataset. In addition, where identification was possible prior to predation, I also recorded species naturally taken while the bushbaby was foraging around the light trap on its own.

To gauge how feeding preferences might relate to the availability of different prey types, I recorded the absolute abundance of several major insect groups around the trap at three occasions on the night of 1 November (21:45, 22:45, 23:45hrs). Although UV light is attractive to a wide range of insects, the strength of the attractiveness varies at different wavelengths and among species and higher taxa (Brehm *et al.*, 2021c).

Stimuli used in insect prey-finding

From observing *G. moholi* actively foraging around the light trap, both movement and sound appeared to be important factors governing the allocation of attention to a particular prey item (Figures 2C and S1) and in stimulating prey-finding behaviour. To quantitatively assess the extent to which different stimuli affected prey attractiveness, I collected 12 male Driver Ants *Dorylus helvolus* during the early evening of the 2 November, which were kept refrigerated at ~5°C. Male Driver Ants flex their abdomen in a mock-threatening display when handled and their wing movements create noise that I had observed attract the attention of *G. moholi*. I divided the ants evenly into three treatment groups ($n = 4$ per group; Figure 3B):

- (AMS) unaltered individuals, with prey appearance, movement, and sound;
- (AM) individuals where the wings were removed (by cutting at the base), and hence provided only the appearance of prey and movement, with no wing-flapping sound; and
- (A) euthanised individuals, which had only the appearance of prey and no other stimuli.

On the evening of the 4 November, I presented the foraging bushbaby with these prey items in a fully randomised order and, as described above (Figure 3A), interspersed with other prey. In each trial (Figure 3C), I used a stopwatch to record (1) the time taken for the individual to first make eye contact with the prey item being presented, (2) the time taken until it made an approaching jump, and (3) whether or not the prey was consumed.

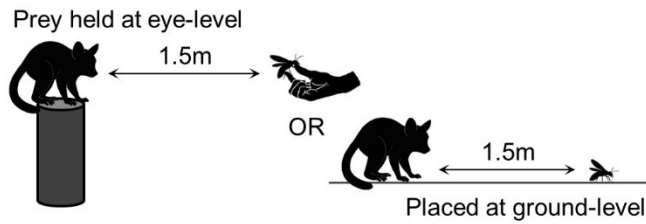
RESULTS

Behavioural observations

The individual *G. moholi* arrived at 21:11 on 1 Nov and was still present at the trapping site when I packed up at 00:30 (3hrs 19mins). On 4 Nov, it arrived at 21:20 and remained active until trapping ended at 02:15 (4hrs 55mins). Sunset/sunrise occurred at 18:10/05:08 on 1 November and 18:12/05:06 on 4 November, meaning that 30.2% and 44.6% of the night was spent foraging at this single location, respectively.

I first noticed the individual on 2 November when it jumped down from a railing around the deck, about 5m from the light. Although initially timid—retreating back into the trees when I moved closer—it relaxed in my presence over the course of about an hour. The sheet and light were supported in the middle of the deck (Figure 1C), and the bushbaby would either leap from a high vantage point onto the chairs supporting my equipment, or jump from a post down onto the deck and hop towards the lighted sheet for closer inspection (Figure S1). It moved by leaping between

(A) TRIAL SET-UP



(B) PREY TREATMENTS



Unaltered prey
Appearance
Movement
Sounds



Wings removed
Appearance
Movement



Euthanised prey
Appearance

(C) MEASUREMENTS

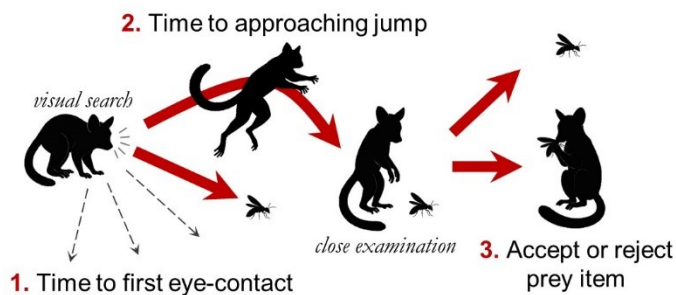


Figure 3. (A) General set-up of the prey acceptance trials, and the (B) treatments and (C) measurements of attractiveness used in the prey stimuli trials. To test the suitability of a potential prey item, it was held at eye-level 1.5m from the bushbaby, or placed at ground-level, depending on its current position. After the prey item had been examined, I recorded whether or not each prey item was taken as food (see *Insectivorous diet preferences*). To test the relative effects of appearance, movement, and sound in contributing towards the attractiveness of a given prey item, I used male Driver Ants (Figure 5F) that were either unaltered, had their wings removed, or were euthanised ($n = 12$, divided evenly between treatment groups). To determine prey attractiveness, I measured the time taken to notice the prey item, the time taken to make an approaching jump to examine it, and whether or not the prey item was accepted or rejected as food (see *Stimuli used in insect prey-finding*).

high points, climbing, or, when at ground level, through bipedal hopping—no ground-level quadrupedal locomotion was observed on either occasion (cf. Skinner and Chimimba, 2005). At one point it leapt from a nearby tree onto the roof of an adjacent structure and hung there for several seconds by its arms, before hauling its body up.

On sighting a desired prey object, the individual would visually track its movement for several seconds. In a single, precise, long-distance jump or a series of smaller, approaching jumps it closed the distance between itself and the insect (Figure S1). Typically, it grasped the prey with both hands simultaneously, trapping it against a surface. After the insect was secured and passed to its mouth, the bushbaby immediately retreated to the adjacent tree cover to consume it (Figures 2B and S2). Even smaller prey items ($< 20\text{mm}$) were not consumed on the spot—it may have felt too exposed to do so comfortably, due to a combination of both the bright light and being in an open area with little cover. When eating smaller Lepidoptera (forewing length $< \text{approx. } 30\text{mm}$) or other insects, the entire body was consumed. For larger hawk-moths (Sphingidae) and silkmooths (Saturniidae), the wings were first removed by chewing them off at the base, in a behaviour similar to that seen in insectivorous birds (e.g. Kettlewell, 1973).

Foraging vocalisations

I noted audible vocalisations only during the 4 November observation. The bushbaby arrived at 21:20hrs, jumping directly from nearby foliage onto my shoulder—presumably, I was a useful mid-way point to ground-level and the insects at the light. While still on my shoulder it made a series of

gentle, repetitive ‘clucks’ (#0709, EAPDCP, 2025) for around 30s, and examined the area around the light closely before jumping to the ground. Later that evening (00:26hrs) it began a series of descending, high-pitched, ‘whistle’ calls combined with ‘yaps’ (?#0713, EAPDCP, 2025; Zimmerman, 1990; Anderson *et al.*, 2000). These lasted for several minutes as it climbed through the trees overlooking the deck and observed both my activities and the insects at the light (Figure S3). Although these vocalisations have previously been classified as indicative broadly of alarm or anxiety (EAPDCP, 2025) there were no obvious behavioural signs of either state—the individual seemed alert but relaxed and curious. During these calls it approached me very closely, of its own accord, and showed no aggression.

In the second sequence, calls were of the metronomic, two-unit type common in *G. moholi* (Génin *et al.*, 2016). I recorded 17 calls in this sequence, over a period of approximately 1.5 minutes (Figure 4). Calls had an average duration of 0.65s (SE = 0.16; SD = 0.04), with an average interval length between calls of 5.09s (SE = 1.38; SD = 0.35). I noted three variants of this call (Figure 4), two of which seemed truncated to the initial descending chirp (Calls 8 and 9), and another (Call 7) where the second component was flat and drawn-out, extending the call to 1.00s in duration (the longest 4call by 0.18s).

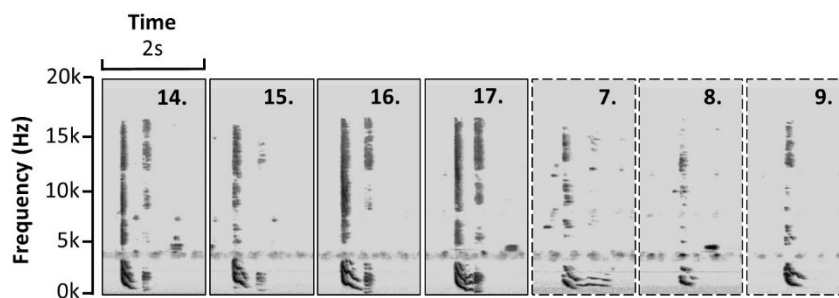


Figure 4. Sonogram of Southern Lesser Bushbaby *Galago moholi* calls made while foraging at an entomological light trap. Calls 14-17 are typical of the recorded sequence of two-note calls, with a distinct initial descending component. These appear to be a combination of the ‘whistle’ and ‘yap’ calls given by Anderson *et al.* (2000). Calls 7-9, vocalised mid-sequence, were audibly atypical and may represent distinct call formulations.

Insectivorous diet preferences

Initial observations suggested that Lepidoptera were considerably favoured among available prey options, especially large individuals, although they were also most abundant at the light trap (54% of the insects present, see Table S1). Hawk-moths (Sphingidae), silkmooths (Saturniidae), and male Driver Ants *Dorylus helvolus* seemed particularly attractive (Figure 5), flapping noisily along the deck or into and around the light bulb (see *Stimuli used in insect prey-finding*). Targeted prey varied considerably in their size, from micro-moths with forewing lengths of <10mm, to the silkmooth *Gonimbrasia zambesina* at 63-75mm forewing length.

In the presentation trials, Lepidoptera were strongly favoured and all species and individuals presented were consumed (Table 1; Figure 5). Notably, Coleoptera were abundant at the light trap (23%; Table S1) but were subject to much more scrutiny before consumption, and were often avoided (Table 1). The small number of Hemiptera (Heteroptera) tested were entirely avoided.

Table 1. Insect-feeding preferences of the Southern Lesser Bushbaby *Galago moholi* foraging at an entomological light trap. Insects were captured, identified, and then presented for feeding on two occasions (1 and 4 Nov 2024). Where specific identification was possible, insects freely selected and predated around the light trap are also included (*). Taxon name is shown with English vernacular name beneath, where available. Column shading at each taxonomic level reflects whether all (blue), some (grey), or none (amber) of each taxon presented was eaten. Driver Ants (♂) included are the four unaltered individuals from the foraging stimuli experiment (see *Stimuli used in insect prey-finding*).

| Order | Family | Species | No. Presented | No. Taken | % Taken |
|------------------------------------------------|---------------|------------------------------|---------------|-----------|---------|
| LEPIDOPTERA Butterflies and Moths | Erebidae | <i>Anoba</i> sp. | 3 | 3 | 100 |
| | | <i>Hypopyra capensis</i> | 2 | 2 | 100 |
| | | <i>Hypopyra carneotincta</i> | 2 | 2 | 100 |
| | | <i>Hypopyra</i> sp. | | 2 | * |
| | Geometridae | <i>Xanthorhoe</i> sp. | 1 | 1 | 100 |
| | Noctuidae | <i>Acontia porphyrea</i> | 2 | 2 | 100 |
| | | <i>Acontia trimaculata</i> | 1 | 1 | 100 |
| | | <i>Ozarba bipartita</i> | 1 | 1 | 100 |
| | | <i>Gonimbrasia zambesina</i> | 1 | 1 | 100 |
| | Saturniidae | <i>Agrius convolvuli</i> | | 1 | * |
| | Sphingidae | Convolvulus Hawk-moth | | | |
| | | <i>Hippotion roseipennis</i> | | 2 | * |
| COLEOPTERA Beetles | Curculionidae | Weevil | 2 | 1 | 50 |
| | Tenebrionidae | <i>Himatismus</i> spp. | 6 | 0 | 0 |
| | | Tapering Darkling Beetle | | | |
| | Scarabaeidae | <i>Aphodius</i> spp. | 3 | 2 | 67 |
| | | <i>Adoretus ictericus</i> | 3 | 0 | 0 |
| | | Wattle chafer | | | |
| DIPTERA True Flies | Asilidae | <i>Hypopholis sommeri</i> | 9 | 2 | 22 |
| | | <i>Alcimus tristrigatus</i> | 1 | 1 | 100 |
| | Calliphoridae | Large grasshopper robber fly | | | |
| | | Blowfly | 2 | 2 | 100 |
| HEMPTERA (Heteroptera) Shield/Stink Bugs | Pyrrhocoridae | <i>Dysdercus</i> sp. | 2 | 0 | 0 |
| | | Cotton stainer shieldbug | | | |
| | Pentatomidae | | 2 | 0 | 0 |
| HYMENOPTERA | Formicidae | <i>Dorylus helvolus</i> | 4 | 4 | 100 |
| | | Driver Ant (♂) | | | |
| ORTHOPTERA | Gryllidae | | 1 | 1 | 100 |
| | Cricket | | | | |

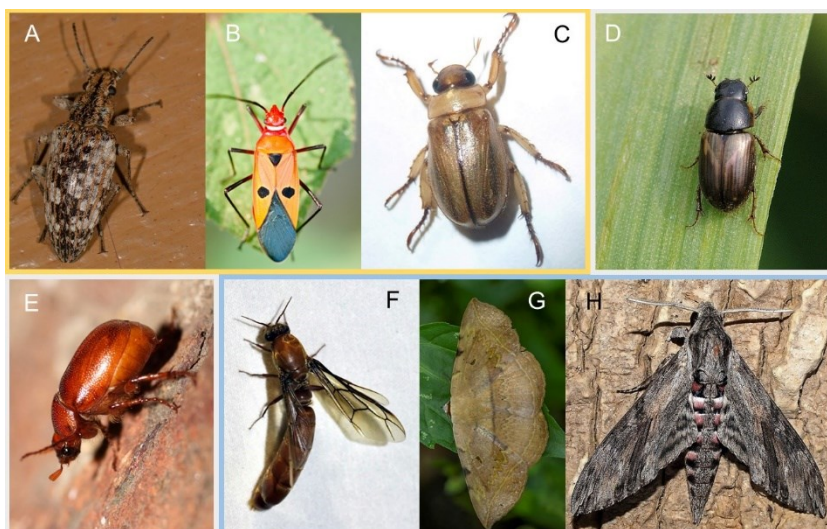


Figure 5. Selection of South African insect species taken or reject as food by the Southern Lesser Bushbaby *Galago moholi*. (A) *Himatismus* sp. Tapering Darkling Beetle, (B) *Dysdercus* sp. Cotton Stainer Shieldbug, (C) *Adoretus ictericus* Wattle Chafer, (D) *Aphodius* sp., (E) *Hypopholis sommeri*, (F) *Dorylus helvolus* Driver Ant male, (G) *Hypopyra capensis*, (H) *Agrius convolvuli* Convolvulus Hawk-moth. The colour-coded border reflects whether none (amber, A - C), some (grey, D - E), or all (blue, F - H) of each taxon was eaten. All images are reproduced under a Creative Commons licence. Image credits: (A) Michel Candel, (B, C, E) Wikimedia Commons, (D) Tim Worfolk, (F) Dr. Alexey Yakovlev, (G) Charles J. Sharp, (H) Len Worthington.

Stimuli used in insect prey-finding

Where euthanised prey were presented for predation, they were noticed but none were investigated closely or consumed (Figure 6). Movement decreased the time taken to notice prey, and all moving prey items were approached for examination (Figure 6B). Three out of four moving prey were predated (Figure 6A). The addition of sound from the prey reduced both the time taken to notice it and, particularly, the time to jump (Figure 6B)—all of this treatment group were predated (Figure 6A).

DISCUSSION

Although limited to one or two individuals over a short time-frame, these observations provide the first species-level data of insect-feeding preferences in the Southern Lesser Bushbaby *Galago moholi*. Obligate insectivorous primates can show quite distinct taxonomic preferences in their diet—for example, in the Spectral Tarsier *Tarsius spectrum*, native to Indonesia, Lepidoptera and Blattodea together make up 50% of the diet (Gursky, 2011). In *G. moholi*, there is clearly discrimination among prey items at a far higher taxonomic resolution (Table 1). Harcourt (1986) provides the most detailed previous analysis of the insect component of the diet of *G. moholi*, using faecal samples. However, this only allows very broad classification of the prey items consumed. My data suggest that Lepidoptera are the favoured prey type, even when presented with a wide range of available options. Lepidoptera had a 100% consumption rate across all species presented (Table 1). More discrimination was exercised among Coleoptera and some species were only occasionally consumed after examination, such as the scarab beetles *Hypopholis sommeri* and *Aphodius* spp.—

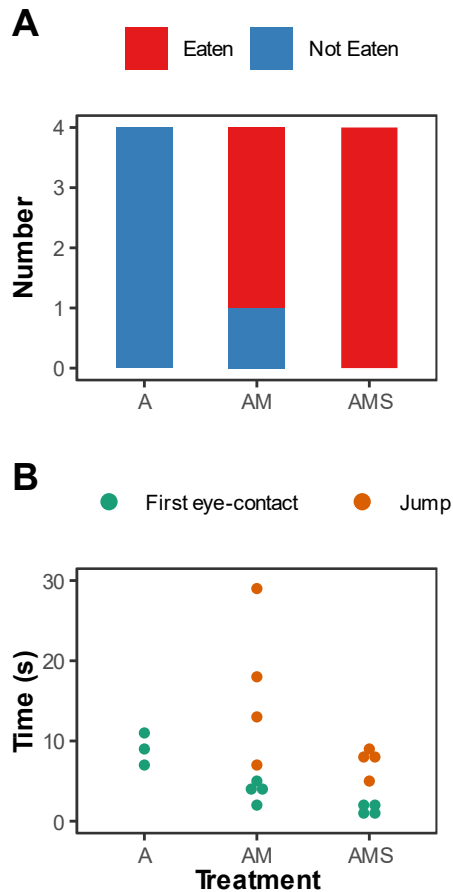


Figure 6. Stimuli affecting prey attractiveness in the Southern Lesser Bushbaby *Galago moholi*. A single individual was presented with Driver Ant *Dorylus helvolus* males (Figure 5F) that were either euthanised (i.e., had prey appearance only, A), or that had their wings removed (i.e., had prey appearance and movement, AM), or that were unaltered (had prey appearance, movement, and sound from wing flapping, AMS). I recorded (A) the number of each prey treatment eaten, (B) the time taken until it was first noticed by the bushbaby, and (B) the time until it jumped closer to investigate it.

others, such as the Tapering Darkling Beetle *Himatismus* spp., not at all (Figure 5). The small number of Hemiptera presented were also universally rejected.

As well as having tougher cuticles than many other insect groups, many beetles and most heteropteran Hemiptera (shield or ‘stink’ bugs) produce pungent chemical defensive secretions, which act to deter predation (McGavin, 1993). Primates can adopt behavioural strategies to ‘prepare’ otherwise noxious insects for consumption (e.g. Rufo *et al.*, 2024) and some groups, such as the Lorisinae, may specialise in feeding on distasteful Hemiptera and Lepidoptera that are typically ignored by birds and other predators (Toddes and Slifka, 2001; Nekaris, 2014). The lack of interest shown by *G. moholi* in my observations, however, suggests that these kinds of chemical defences may be effective deterrents against this species. In the nocturnal primates more broadly, a combination of mechanical properties (toughness) and chemical defences (distastefulness) seems to drive selectivity among insect prey (Rothman *et al.*, 2014)—and even preferences for certain developmental stages. Captive slender lorises *Loris tardigradus*, for example, have been shown to prefer the larval rather than adult stage in choice experiments across several species of Coleoptera and Lepidoptera (Clayton and Glander, 2011). Larval stage individuals typically have softer bodies with a lower chitin content (Rothman *et al.*, 2014).

In their review, Rothman *et al.* (2014) classified most *Galago* spp. as ‘hard-bodied’ insect feeders, specialising on Coleoptera and Orthoptera, with masticatory adaptations that allow them to process the chitin in the cuticle into finer, more digestible pieces, with an increased surface-to-volume ratio (Kay and Sheine, 1979; Strait, 1993). In contrast, ‘soft-bodied’ insect feeders have distinct dentition better able to slice through the relatively pliant body wall, such as in the Angwantibo *Arctocebus calabarensis*, which consumes (generally softer) Lepidoptera (Strait, 1993). The view of *Galago*

species as hard-bodied insect feeders aligns with earlier dietary studies. For example, Harcourt (1986) found no traces of Lepidoptera in the diet of *G. moholi* and concluded instead that Coleoptera and Orthoptera contributed >50% of the insect component of the diet in all seasons, increasing in summer. In more recent, observation-based studies, however, Lepidoptera have been noted as the favoured prey (Nowack *et al.*, 2013; Scheun *et al.*, 2014)—as in my own data. Indeed, I found that the impressive jumping ability of *G. moholi* (Aerts, 1998) made it surprisingly adept at catching flying Lepidoptera. I observed it pluck a large Convolvulus Hawk-moth *Agrius convolvuli* from the air, mid-flight—this moth is a powerful flier, with a forewing length of 40-50mm. It may be that the remains of Lepidoptera were not evident from the faecal samples used in earlier work (e.g. Harcourt, 1986), leading to this potentially significant dietary component being overlooked. Equally, there may simply be considerable differences in dietary preference among individuals and populations. Understanding these patterns of variation is an important step towards the effective conservation of these difficult to monitor primates (Cuozzo *et al.*, 2024; Scheun and Nowack, 2024), as well as shedding light on the ecosystem services they may provide as biological control agents of agricultural pests.

Male Driver Ants were extremely attractive to the individual bushbabies I observed (Table 1; Figure 5), which is surprising because these insects are typically aggressive and the workers and soldiers will both bite and sting. The winged males and females (Queens), however, do not sting and have atrophied mouthparts that are incapable of delivering strong bites (Picker *et al.*, 2019). These forms may regularly find their way into tree canopies and therefore be a familiar prey for *G. moholi*, while the other, more aggressive castes remain at ground level.

The loud buzzing noise made by the wings of male Driver Ants seemed to make them particularly attractive to *G. moholi*. In general, however, we lack a detailed understanding of the sensory ecology of this species while foraging. Functional loss of colour vision in *Galago* has been attributed to the primary importance of luminance for detecting tree exudates (Veilleux *et al.*, 2021) and they have comparatively low visual acuity (Bonds *et al.*, 1987). However, activity levels in this species are positively associated with the bright phases of the moon ('lunarphilic') such that visual searching seems to be important for foraging, avoiding predators, and identifying conspecific individuals (Bearder *et al.*, 2006; Sauter *et al.*, 2024). Though formal statistical analysis is not possible due to small sample size and low replication, my results suggest that both movement and sound are key factors for determining predation by *G. moholi* (Figure 6). The precise relative contribution of these senses (and others, such as olfaction) towards prey-finding and attraction is very likely to influence the sorts of arthropod taxa/guilds taken by bushbabies in the wild. Detailed experiments focused on this question, using captive and wild individuals, would be an important contribution to the literature—both towards understanding the fundamental bases of primate foraging behaviours, and the functional role of *G. moholi* in forest ecosystems more particularly. Such work is a necessary precursor to developing a fuller appreciation of the impacts of anthropogenic disturbance and climate change, which are likely to affect the composition and abundance of insect faunas.

The speed with which the bushbabies I observed became accustomed to my presence, and the unusual circumstances of the moth trap, would be surprising for completely wild individuals. Staff at Emhosheni River Lodge (2024) advertise the presence of a Southern Lesser Bushbaby on social media, and guests regularly report sightings. My own observations around the site suggested the presence of more than a single individual, other than those encountered first-hand while trapping. The species can quickly habituate to human activity and it is likely that the close proximity to both tourists and lodge staff has contributed to a population with already rather tame behaviours before my own encounters. Food is not provisioned for the species on site, however, so the observations made on diet preference are likely to be indicative of wild populations.

Galago moholi usually has a bimodal pattern of nocturnal activity, which peaks in the hours just after sunset and particularly before sunrise (Sauter *et al.*, 2024). In this case, the individual/s remained active foraging around the moth trap at a constant rate until the early hours of the morning, spending a substantial portion of the night in this single location. This suggests that the typical

activity pattern could be highly plastic in the presence of an ephemeral but abundant food resource. However, it is notable that—if only a single individual—it did not also return on the 2 and 3 November, despite the conspicuousness of the light with which the insects were associated. Furthermore, although the vocalisations I documented are generally considered indicative of varying levels of alarm (Bearder, 2007), the animal's behaviour and the duration of each visit suggests that it did not feel particularly threatened. Although there are many call types documented from *G. moholi*, they tend to occur intraspecifically, and more frequently within larger groups (Schneiderova *et al.*, 2016). No calls have hitherto been directly associated with foraging or finding food, either in relation to arthropods as prey or more broadly (Zimmerman *et al.*, 1988; Zimmerman, 1990; Anderson *et al.*, 2000; Bearder, 2007). Particularly for call variants 7-9 (Figure 4) I can find no prior published reference, suggesting that—as well as considerable and persistent gaps in our ecological knowledge of *G. moholi* and other galagids—there may also remain substantial undiscovered diversity, and perhaps functionality, in their vocalisation behaviour.

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DATA

All data and supplementary materials supporting this study are archived on the Figshare repository at: <https://doi.org/10.6084/m9.figshare.29359835>.

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SUPPLEMENTARY FIGURES S1 to S3

Figure S1. Southern Lesser Bushbaby *Galago moholi* catching a moth (?*Hypopyra* sp.) at an entomological light trap. November 2024. Balule Private Nature Reserve, Limpopo, Greater Kruger National Park, South Africa.

Figure S2. Southern Lesser Bushbaby *Galago moholi* consuming a hawk-moth (Sphingidae) caught when foraging at an entomological light trap. Wings were removed first before feeding on the most substantial body parts. November 2024. Balule Private Nature Reserve, Limpopo, Greater Kruger National Park, South Africa.

Figure S3. Southern Lesser Bushbaby *Galago moholi* vocalisations made while foraging at an entomological light trap. November 2024. Balule Private Nature Reserve, Limpopo, Greater Kruger National Park, South Africa.

Table S1. Abundance of four major insect orders at a UV light bulb (25W Actinic), Balule Private Nature Reserve, Limpopo, Greater Kruger National Park, South Africa. All individuals resting on the sheet (see Figure 1) and >3mm in size were counted at three time intervals on the night of 1 November 2025 (21:45, 22:45, 23:45hrs).

| Order | Abundance (total over three counts) | Relative Abundance (%) |
|--------------|----------------------------------------------------|-----------------------------------|
| Lepidoptera | 264 | 54.2 |
| Coleoptera | 110 | 22.6 |
| Diptera | 87 | 17.9 |
| Hymenoptera | 26 | 5.3 |