

Breeding Ecology of the Green Broadbill

Cheow-Lim Lee & Lian-Huat Tee

Introduction

The Green Broadbill *Calyptomena viridis* is a compact, round-bodied species characterised by its short bill, short tail, and a distinctive tuft of feathers on its forehead. The male is predominantly iridescent green, with a prominent black patch behind the ear-coverts, a small, obscured yellow spot in front and above the eye, and broad black bands across middle of lesser, middle and secondary wing-coverts (Lambert 2025). In contrast, the female is a duller green, lacks the black in the wing and has a black ear-covert spot, proportionately smaller than in male and comprising the basal half of otherwise green feathers; mostly hidden when plumage relaxed. It also has a less pronounced forehead tuft covering about half of the length of the bill, versus all except the tip in males and a brighter lime-green eye-ring (Lambert 2025) (Plate 1).



Plate 1: Male (left) and female (right) Green Broadbill.

This species inhabits primary and secondary rainforests, particularly mixed dipterocarp forests, where it is most commonly found in the understorey. In Peninsular Malaysia, the Green Broadbill is generally distributed in lowland and hill forests at elevations of up to 760 m above sea level (Wells 2007), although it is found at higher elevation in Borneo and Thailand (Lambert 2025). Breeding occurs from February to August (Wells 2007; Bruce 2024; Lambert 2025), often occurring after heavy rainfall or in association with the monsoon (Lambert 2025).

This report describes the observation of a single Green Broadbill nest along the Talang–Langkap Birdwatching Trail in Negeri Sembilan, Malaysia. It provides valuable information on the species' nesting ecology and habitat use within the study area.

Observations

A male Green Broadbill was first observed on 21 July 2024, perched on a small tree located just beside the Talang–Langkap Road, Negeri Sembilan, Malaysia. It was resting on a branch

approximately 3 m above the ground. The second observation was made on 28 July 2024 at the same location. When one of the authors (CL Lee) walked past the site, a male Green Broadbill, which had been concealed among the foliage, suddenly flew from a tree to higher ground. It then began emitting distress calls while dropping one wing, in an apparent injury-feigning display, a behaviour commonly associated with distraction displays (Wells 2007). The birds observed on both occasions were probably the same individual, based on the identical location and the short interval between the two sightings. This raises an intriguing question: why did the male remain in the area for such an extended period?

Discovery of the Nest

The site, where the male Green Broadbill was first observed back in July, was densely covered with bushes and tall grass. However, upon revisiting the area on 24 August 2024, CL Lee found that the vegetation had been cleared by contractors. While walking through the site, CL Lee inadvertently flushed a female Green Broadbill, which flew from a position below eye level. A closer examination of the area revealed a characteristic gourd-shaped nest suspended from the twig of a young sapling approximately 1.3 m above the ground (Plate 2). The nest was located adjacent to the tree where the male Green Broadbill had previously been observed. This discovery strongly suggests that the male had remained in the vicinity, throughout the intervening period, to guard the nesting site.



Plate 2: Location of the Green Broadbill nest and materials used in construction. Negeri Sembilan, Malaysia, 24 Aug 2024.

Nest Observation Disclosure

The nest, which had previously been concealed by dense vegetation, was now fully exposed. Recognising that it was an active breeding nest, CL Lee immediately retreated and continued observations from across a road to minimise disturbance. He informed LH Tee, who did much

of the nesting observations. Observations were maintained from a distance of approximately eight meters. Further retreat was restricted by a stream running parallel to the road. To ensure the safety of the breeding pair, the exact location of the nesting site was kept strictly confidential. As Talang is a popular birding destination, several visiting photographers encountered the site during the observation period. To mitigate potential disturbance and prevent overcrowding, LH Tee maintained a consistent presence at the site, occasionally remaining overnight. Visitors were restricted from approaching the nest and were explicitly requested to withhold sharing any photographs or location data until the nesting cycle was complete. No signs of distressed was seen in the nesting birds throughout the observation period.

Nest Location and Structure

The nest was constructed primarily from strips of palm and bamboo leaves and was lined internally with dried leaves (Plate 2). It was suspended from the horizontal twig of a young sapling approximately 1.3 m above the ground. Its entrance faced the road, while the rear of the nest was sheltered by a steep earthen bank. Two nestlings were observed in the nest. They appeared to be only a few days old, as indicated by the presence of emerging pin feathers on their heads (Plate 3).



Plate 3: Appearance of the nestlings when the nest was first discovered. Negeri Sembilan, Malaysia, 24 Aug 2024.

Parental Responsibilities

During the observation period from 24 August to 01 September 2024, only the female was seen feeding the nestlings, with feeding visits occurring at intervals of approximately one to two hours. While the female was away foraging, the male remained near the nest, apparently guarding it.

Feeding Behaviour, Feeding Frequency, and Food Items

The Green Broadbill is primarily a frugivorous species. The female fed the nestlings mainly with fruit. Three fruit types were recorded during the observations. These comprised an orangish

soft fig, a roundish dark berry, and a dark, oval-shaped fruit, none of which could be positively identified. The female fed the nestlings by regurgitating the whole fruit, which the nestlings swallowed whole (Plate 4). On average, three to four food items were regurgitated at each feeding session. On one occasion, a nestling was observed regurgitating a berry before swallowing it again. The same nestling was also seen expelling a seed after feeding (Plate 5).



Plate 4: Fruits fed to the nestlings. Negeri Sembilan, Malaysia, 26-30 Aug 2024.



Plate 5: A nestling regurgitating an edible berry and spitting out a seed. Negeri Sembilan, Malaysia, 26-30 Aug 2024.

Although fruit constituted the majority of the diet, the Green Broadbills also fed their nestlings with animal protein. On one occasion, the female returned with four spiders and regurgitated the invertebrates one at a time to feed the hungry nestlings. The spiders were identified as the *Macracantha arcuata* and *Gasteracantha sp.*, which are commonly found in tropical rainforests. (Plate 6).

Faecal Sacs and Their Removal

Before defecating, the nestlings turned their vent towards the nest entrance. Their waste was enclosed within faecal sacs - gelatinous or mucous membranes that encapsulate the excreta, making it easier for the parent to remove. The female was observed swallowing the sacs before departing (Plate 7).



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Plate 6: The nestlings were fed with spiders, identified as the *Macracantha arcuata* and *Gasteracantha* sp. Negeri Sembilan, Malaysia, 26-30 Aug 2024.



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Plate 7: Removal of faecal sacs. Negeri Sembilan, Malaysia, 30 Aug 2024.

Edited video recording of some feeding episodes and faecal sac removal and consumption can be seen here:

<https://www.youtube.com/watch?v=ZimDF--443s>

<https://www.youtube.com/watch?v=N4RtFhdkQLs>

Fledging of the Nestlings

By 30 August 2024, the nestlings had grown considerably with their plumage better developed. The female continued to feed them regularly throughout this stage of their development (Plate 8). However, shortly before the young fledged, she ceased bringing food to the nest, likely encouraging them to leave. This occurred on 31 August 2024 - one feeding session was observed at 1454 hrs where four berries were regurgitated and fed to the nestlings. The final feeding was observed at 1654 hrs where one berry was fed with subsequent removal of a faecal sac.



Plate 8: Older nestlings, close to fledging. Negeri Sembilan, Malaysia, 30 Aug 2024.

Both nestlings fledged on 01 September 2024. The first nestling emerged at 0840 hrs and perched at the nest entrance, seemingly gathering confidence before its maiden flight. Moments later, it took to the air and flew off (Plate 9).

The female continued to feed the second nestling, while the male remained nearby, guarding the nest.

The second nestling fledged at 1434 hrs. After emerging, it climbed to the top of the nest, where it paused to stretch its wings and carefully survey its surroundings before taking its first flight. It landed briefly on a roadside branch (Plate 10) before taking off toward an adult calling from across the stream, successfully completing its inaugural journey away from the nest.

Although both parents were present during both fledging episodes, it remains uncertain whether the fledglings flew toward or were accompanied by the male or the female parent.



Plate 9: Fledging of the first nestling. Negeri Sembilan, Malaysia, 01 Sep 2024.



Plate 10: Fledging of the second nestling. Negeri Sembilan, Malaysia, 01 Sep 2024.

The fledging of the second nestling marked the successful conclusion of the nesting cycle of the Green Broadbill along the Talang–Langkap Birdwatching Trail.

Interaction with Other Birds and Animals

No interaction was observed with other birds and animals.

Discussion

These observations document a successful breeding attempt by the Green Broadbill along the Talang–Langkap Birdwatching Trail, offering valuable insights into the species' nesting ecology and parental behaviour. The male's sustained presence at the site prior to nest discovery, coupled with its distraction displays, strongly suggests a significant role in territorial and nest defence, while feeding the nestlings was exclusively by the female throughout the observation period.

The nestlings were fed primarily with fruit through regurgitation, supplemented periodically with spiders, highlighting the importance of both fruit and animal protein during early development. The female also maintained nest hygiene by removing faecal sacs, a behaviour that likely reduces predation risk and promotes nestling health.

Despite the unexpected exposure of the nest due to vegetation clearance, both nestlings fledged successfully following approximately five weeks of monitoring. This successful outcome demonstrates a degree of resilience to localised habitat alteration. These observations underscore the conservation importance of maintaining suitable forest habitats within the Talang–Langkap Birdwatching Trail.

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Commentary on the Observation:

David Wells, Frank Lambert & Amar-Singh HSS

This is good work by the observers, yielding important new data on the Green Broadbill. While female-only nest construction and incubation (Lambert 2025) are on record, uniparental care of nestlings is, to our knowledge, a new observation. The observation reported in this paper, and in literature, suggests that only females feed nestlings. However, there are a few images online of males feeding nestlings (e.g. Michael Gillam, Si Phang Nga National Park, Thailand, Apr 2013, Flickr <https://www.flickr.com/photos/26931849@N04/8596941071>)

The male's screeching and vigorous wing-flapping distraction displays are familiar, but we are unaware of any previous records of the male remaining in close proximity throughout the entire nesting cycle or any involvement in the fledging process. It may be that broods are split between the parents. It is worth noting that Green Broadbills can sit silently for hours, undetected, between feeding bouts; hence individuals could do the same near their nest.

Ultimately, much remains to be discovered about the remaining stages of the breeding cycle of the Green Broadbill, particularly male courtship display behaviour.

We reviewed the literature, images of nesting in the Macaulay Library (ML) and images online for the species in the genus *Calyptomena* (green broadbills) on nest building and parental care of nestlings. All three species make a particular form of nest suspensor not seen in other Asian broadbills. From photos available it looks as if the higher elevation species commonly start with trailing green bryophytes (not so available in Green Broadbill habitat) for suspensor and some outer framework, then infill with leaves.

Hose's Broadbill *Calyptomena hosii*

There is little information in literature (Lambert 2025) and there are very limited images of Hose's Broadbill nests available for review. Hence, the role of adults in nesting activities is uncertain.

Whitehead's Broadbill *Calyptomena whiteheadi*

It has been observed that only females build nests while both the sexes feed nestlings (Lambert 2025). A study of 52 nests over a 12-year period showed that only females incubated and brooded but both parents fed the young (Şahin Arslan et al. 2023); there was no mention about parental role in nest building. A review of images online show a fair selection of individuals carrying nest material – they are all females, in one or more instances, accompanied by males that carried nothing (e.g. Julie Edgley, Kinabalu Park, Sabah, Malaysia, Sep 2023, ML609486594).

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