

FIELD STUDY

Further notes on the nesting of the Red-bearded Bee-eater *Nyctyornis amictus* in Peninsular Malaysia

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Introduction

The Red-bearded Bee-eater *Nyctyornis amictus* is the only bee-eater resident in lowland and submontane evergreen forest in Sundaic South-East Asia (Wells 1999, Fry 2001). Like many forest birds in the region its life history, particularly breeding ecology, is poorly documented and there are considerable gaps in knowledge of its nesting cycle and lifespan. Our first observation of the species was a single nest monitored over a month in March and April 2010 in the Panti Forest Reserve, Johor, southern Peninsular Malaysia (Foley & Yong 2011), and we established that the time to fledge is approximately 31–34 days post-fledging. The clutch size was three, larger than that described in the literature (Wells 1999), but apparently consistent with our later observations. As a follow up to the 2010 observations, we have documented three further nesting attempts (one in 2011 and two in

2012) in Panti, the details of which we summarise here.

Nesting observations in 2011

In 2011, a Red-bearded Bee-eater nest was located and monitored regularly from 9 April to 5 May. This nest was located about 350 m away from the 2010 nest (Foley & Yong 2011), and may have been built by the same pair. During our observations of the nest on 9 April, incubation apparently was still ongoing as we did not see any prey being brought to the nest. However by 15 April the adults were observed bringing food to the nest. Presumably the chicks hatched sometime between 9–15 April, which suggested that the chicks would fledge sometime between 8 and 15 May, assuming a nestling period of 31–34 days (Foley & Yong 2011).

Altogether we were able to document the provisioning activities of the parenting bee-eaters

Plate 1. Female Red-bearded Bee-eater *Nyctyornis amictus* with cicada, Panti Forest Reserve, Johor, Malaysia, 18 April 2011.





Plate 2. Male Red-bearded Bee-eater *Nyctornis amictus* carrying lizard, Panti Forest Reserve, Johor, Malaysia, 28 April 2011.

over six days (18, 20, 25 and 28 April, 3 and 5 May 2011). At this time of year, sunrise is about 06h55 and sunset is about 19h00. Typically, the earliest time chicks were fed was around 07h30, although on a single occasion the adults were already present at the nest with prey at 07h10. The last food was usually brought by 17h30, but on the 28 April the last prey item was brought at 16h30. Around 29 provisionings were recorded per day although the delivery intervals and quantity of prey brought back varied, possibly depending on factors such as weather and ease of locating prey items of a suitable size in the surrounding forest habitat. Altogether we documented 104 food deliveries over a total of 40 hours of observation, or an average of 2.6 deliveries per hour (Figures 1 & 2). The majority of prey items included multiple species of cicadas, large hymenopterans (bees and wasps), other unidentified insects and the Common Gliding Lizard *Draco sumatranus*. On one occasion, feeding by the adults ceased for two hours due to nearby human disturbance, but resumed immediately the disturbance ceased.

The behaviour of the adults at the nest site was as documented in our earlier article—the adults, carrying prey, arrived at a lookout perch near the nest burrow (possibly used to check for predators) and issued a guttural call lasting approximately 30

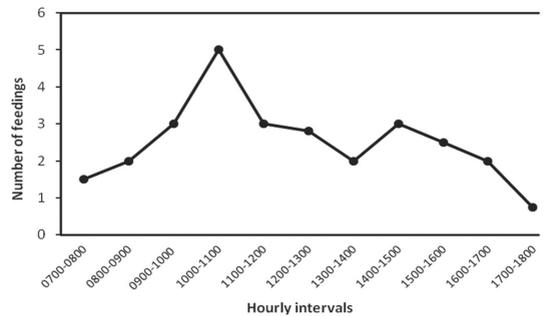


Figure 1. Graph showing variation in food delivery on an hourly basis recorded throughout the observation period (18 April–5 May 2011).

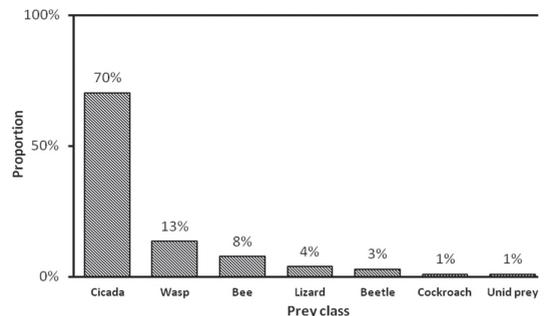


Figure 2. Bar chart showing relative proportions of all prey items recorded throughout the observation period (18 April–5 May 2011).



Plate 3. Red-bearded Bee-eater nest entrance, Panti Forest Reserve, Johor, Malaysia, 15 April 2011.



Plate 4. Red-bearded Bee-eater chick, Panti Forest Reserve, Johor, Malaysia, 5 May 2011.

seconds, possibly as a signal to the three chicks to move to the burrow entrance to be fed. The adults were never observed to enter the nest burrow, and always delivered food to the chicks waiting at the entrance. Whilst we noted that the chicks were silent prior to feeding throughout the early stages of the 2010 observations, approximately a week prior to fledging, the chicks called persistently with a repeated soft guttural note *kkkkkk* in response to the parent's 'dinner is ready' call. This behaviour was again observed on 3 May 2011, hinting that they would fledge within a week based on our 2010 observations.

On 5 May, at about 07h30 the adult female was observed to fly to the nest entrance with food, then return to her lookout perch without delivering it.

Plate 5. Rescued Red-bearded Bee-eater chicks, Panti Forest Reserve, Johor, Malaysia, 5 May 2011.



This was repeated up to eight times and on the last attempt, she successfully located and fed a chick which was on the forest floor. Upon closer examination, all three chicks were seen to be on the ground although the reason for this was not clear to us. We attempted to return the chicks to the nest but were unsuccessful as they refused to re-enter the burrow. They had well-developed feathers, but were unable to fly. The parents adapted to the unusual situation by delivering food to the three chicks on the ground. For reasons unknown to us at the time, the chicks repeatedly shunned the nest and moved further and further away from the burrow. We were concerned for the survival of the chicks given that small terrestrial predators were

Plate 6. Termites inside the nest, Panti Forest Reserve, Johor, Malaysia, 5 May 2011.





Plate 7. Ding Li Yong examining the nest, Panty Forest Reserve, Johor, Malaysia, 5 May 2011.

known to be present in the area (e.g. Short-tailed Mongoose *Herpestes brachyurus*, Malay Civet *Viverra zangalunga*) and arrangements were made to hand the chicks over to the state wildlife department (Perhilitan), although by then one was already dead—its body was swarming with termites. Later the same day, we examined the abandoned nest burrow with a fibre optic probe. Observations made through the probe showed that the nest tunnel had been invaded by a large colony of termites, forcing the chicks to abandon the nest. The subsequent fate of the other two chicks is not known.

Nesting observations in 2012

In 2012, we were able to observe two pairs based at two active nest burrows in Panty Forest Reserve. Whilst one pair used an apparently newly-dug burrow in close proximity to the burrow abandoned in 2011, the second pair used the old 2010 nest burrow (Foley & Yong 2011). This appears to be the first documented re-use of an old nest burrow by this species (D. R. Wells *in litt.* 2012). We were unable to distinguish the individuals concerned and are not sure whether the original 2010 pair are still together, whether birds from that successful brood have returned or whether other birds have moved into the area. Tagging birds with coloured leg bands would help to identify individuals and also allow survival rate and life expectancy to be estimated. The fact that the burrows were only about 350 m apart suggests either that the area can support relatively high local densities or that the soil conditions in this part of the forest are particularly suitable for digging nest burrows. Offspring were successfully fledged from both nests in 2012 (although the total number is unknown) in spite of

considerable human activity in the area, reinforcing our conclusion that the species is fairly tolerant of disturbance.

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