

## Brooding behaviour and nestling growth of the Lyre-tailed Nightjar *Uropsalis lyra*

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Se observaron el comportamiento y ritmos de atención de una hembra del Chotacabras colilira *Uropsalis lyra* a su nido y pichón de cinco a diez días de edad. El nido estaba situado adentro de una choza de leña abandonada. La hembra atendía sola al pichón. Durante el estudio, los ritmos de atención cambiaron poco. Durante la noche la hembra se encontraba junto al pichón entre 64% y 78% del tiempo. El pichón era alimentado entre nueve y doce veces por noche. La apariencia del pichón cambió poco durante el estudio, pero aumentó 3,1 g por día.

The genus *Uropsalis* contains two species of South American nightjars: Swallow-tailed Nightjar *U. segmentata* and Lyre-tailed Nightjar *U. lyra*. In both, the males have the outermost pair of tail feathers greatly elongated for use in territorial and courtship displays. Whilst there is no published record of nesting for *U. lyra*, *U. segmentata* nests in small scrapes on the ground<sup>2,6</sup> in similar fashion to other nightjars<sup>7</sup>.

*Uropsalis lyra* is locally distributed from north-west Venezuela to southern Peru<sup>9</sup>. In Colombia, courtship songs have been noted in July, August, and December and a breeding condition male was captured in June<sup>6</sup>. Apart from these observations, nothing is known concerning the breeding biology of *U. lyra*. Here we present observations on brooding, feeding, and nestling growth from a single nest found in north-west Ecuador.

### Study site and methods

Observations were made on 21–26 August 2002 at a nest located inside an unused, man-made fireplace at El Monte Biological Station, in the Mindo Valley. The station is at 1,750 m elevation and the area immediately around the station and nest site consists of heavily disturbed forest and pasture in a small, 30-ha valley surrounded by primary cloud forest. The surrounding terrain is extremely rugged, with vegetation characterised by heavy epiphyte loads and a canopy height of 25–35 m.

The nest was observed for a total of 73.95 hours, from c.18h00 to 06h30 each night. Observers sat 8 m from the nest and recorded the arrival or departure of the adult to the nearest minute. To minimise disturbance, the nest was checked for eyeshine using a weak beam of light directed slightly away from the nest. The adult did not appear to be affected by this nor by activity and lights in the dining facility 8 m from the nest.

On 25 August, at 18h30–19h10 the nest was videotaped using infrared light to document behaviour at the nest. The placement of the camera and beam of infrared light appeared to agitate the adult and filming was discontinued. Video

recordings and photographs have been deposited at the Yanayacu Natural History Video, Sound, and Image Library.

Each evening, immediately after the adult left the nest for the first time, the nestling was weighed to the nearest 0.1 g using a microgram balance. On 26 August the nestling was weighed as described and subsequently following each of the next three feeds.

### Nest site and description

The nest was a simple circular area, 16 cm in diameter, cleared of debris, and located in an abandoned brick-and-cement fireplace built into the side of a natural bank surrounded by 4–6-year-old regrowth. The fireplace, which was sheltered by a 3-m wide roof c.3 m above the nest, faced roughly west and was elevated 1 m above ground. Approximately 8 m to the north was a building, but the area immediately in front of the nest was well cleared and provided an open approach from 180°.

### Brooding and feeding rhythms

Only the adult female was seen to care for the young (Fig. 1). During the entire ten days of our stay in the area, no male vocalisations were heard and no male was seen in the area. Throughout the six days of observation, nightly feeding remained fairly constant (Table 1). In general, the nestling was fed fairly intensively, in three bouts, at the beginning of each evening, again in the middle of the night, and then several times in the early morning. It was never fed at 20h00–22h30, during which time the female maintained 100% brooding. From 01h30 to 05h30 the nestling was never fed more than once. This period was also usually that during which the longest off-bout occurred, generally immediately following the final feed of the middle night feeding session. The overall percent time spent brooding each night and the total numbers of feeds were fairly constant throughout the observation period (Table 2). Mean off-bout duration, maximum off-bout duration and maximum time between successive feeds, all showed a general increase with time (Table 2). For

**Table 1.** Summary of six days of brooding and feeding activity of Lyre-tailed Nightjar *Uropsalis lyra*. Time periods are EST. Day number refers to nestling age with percent of time brooding and in parentheses the number of feeds during this time period.

Time period	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
18h00–20h00	40% (4)	46% (5)	66% (4)	62% (4)	62% (4)	53% (4)
20h00–22h30	100% (0)	100% (0)	100% (0)	100% (0)	100% (0)	100% (0)
22h30–01h30	61% (4)	66% (4)	72% (3)	56% (3)	33% (3)	56% (3)
01h30–03h30	97% (1)	88% (1)	58% (0)	100% (0)	100% (0)	81% (1)
03h30–05h30	87% (0)	93% (0)	60% (1)	82% (0)	54% (1)	100% (0)
05h30–06h30	75% (2)	40% (2)	40% (2)	38% (2)	35% (4)	38% (3)

all of these, day nine (25 August) appears slightly unusual, possibly because the disturbance caused by filming may have resulted in the mild fluctuations observed.

Apart from off-bouts when the female flew out of sight, the adult occasionally made brief (less than 30-second) sallies from the nest. On one occasion the female was observed to catch a 1–2-cm long scarab beetle (Coleoptera, Scarabaeidae, Melolonthinae), which flew up from the vegetation

2 m in front of the nest. The female was never observed to feed the nestling after such sallies, which usually occurred in the early morning.

### Nestling growth and behaviour

When observations commenced, the nestling was estimated to be four days old, determined by questioning locals, who reported seeing the nestling and broken eggshell for the first time on the morning of 17 August. On 21 August, the nestling was well covered in down, was able to make small steps and had its eyes fully open (Fig. 2). It was observed to have no reflective eyeshine, even when illuminated with a direct beam of light. The nestling's eyes remained unreflective until 26 August when faint eyeshine was first detected, indicating advanced development of the tapetum.

On 21 August, at 18h30, the nestling weighed 15.6 g. On 22, 23, 24 and 26 August the nestling weighed 18.8 g, 19.9 g, 23.5 g and 28.0 g respectively; i.e. a mean daily weight gain of 3.1 g. On 26 August, after each of the first three feedings the nestling weighed 29.0 g, 30.3 g and 32.3 g respectively. This indicates a mean prey load mass of 1.4 g. When approached by an observer, the nestling would suddenly stand up and lunge forward with its beak open and wings held outwards in a



Figure 1. Adult female Lyre-tailed Nightjar *Uropsalis lyra* brooding nestling during daylight (Harold Greeney)



Figure 2. Four-day-old nestling of Lyre-tailed Nightjar *Uropsalis lyra* in nest scrape (Harold Greeney)



Figure 3. Four-day-old Lyre-tailed Nightjar *Uropsalis lyra* nestling in threat position (Harold Greeney)

horizontal to almost vertical position (Fig. 3). This behaviour was similar to the begging behaviour observed during feeding bouts. The begging, however, was not accompanied by lifting of the wings and we interpret this response to observers' approach as a threat display. During feeding (N=3 observations) the nestling would stand with open bill and lunge forward towards the adult, often making contact with the bill several times before the adult would feed. Begging began immediately upon arrival of the female and subsided immediately following regurgitation.

### Adult feeding behaviour

During each of the three feeding events videotaped on 25 August the female landed adjacent to the cleared nest area and looked around for 5–10 seconds before regurgitating to the nestling. Regurgitation lasted 5–8 seconds and consisted of the female arching the neck with the head pointed downwards into the nestling gape. Eyes closed, the female would violently vibrate the neck and head, generally in an up-and-down motion. On all three occasions the movement was sufficiently forceful to unbalance the nestling.

### Additional observations in eastern Ecuador

During field work in the Napo province of eastern Ecuador, HFG has observed, on several occasions, male Lyre-tailed Nightjars displaying on a cliff side along the Coca–Loreto road. At least twice there were females present, perched in crevices and small recesses of the cliff face. Males would make short sallies, hovering briefly at the apex of the flight. Additionally they would lean forward while perched and flash their elongated tail feathers over their head, swishing them sideways.

### Discussion

Like other strikingly adorned caprimulgids, but unlike most other, less dimorphic species, only the female Lyre-tailed Nightjar was observed to care for the young<sup>7</sup>. The clutch size of one follows the norm of 1–2 eggs for tropical caprimulgids<sup>7</sup>. Due to the proximity of the observed nest to heavy human traffic, and its location in a man-made structure, we

do not know how representative such behaviour is for this species. The adult appeared relatively tolerant, however, and we feel it possible that further studies will yield similar results.

The location of the nest site, on a recessed, sheltered ledge, other observations in eastern Ecuador and Lyre-tailed Nightjar's frequent association with ravines and cliffs<sup>7</sup>, suggest the species may often breed in sheltered sites on embankments or cliffs. As other caprimulgid nestlings are quite mobile soon after hatching, and may move locations in response to predator activity or abiotic factors<sup>3–5,10</sup>, the physical limitations to nestling mobility imposed by such nest sites raises interesting questions concerning nest site selection and anti-predator behaviour in this species. At no time during the study, despite frequent handling of the nestling, was the young observed outside of the nest scrape. Indeed, due to its location in the fireplace, there were only several square metres available without the risk of falling from the edge. In other caprimulgids, nestling movement is induced by parental behaviour<sup>1,8,11</sup>, and perhaps the acclimatisation to human disturbance observed in this female, induced no such behaviour. Conversely, should similar nest locations prove to be the norm for this species, perhaps nestling Lyre-tailed Nightjar movement has been curtailed by the choice of precarious nest sites. We feel it important that conservation efforts for the species take account that terrain features such as steep cliffs, ravines and cave entrances may prove important for breeding. We encourage others to continue publishing observations on this and other widespread yet poorly known species.

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**Table 2.** Summary of data for six nights of observation on brooding and feeding of Lyre-tailed Nightjar *Uropsalis lyra*. Day refers to nestling age.

	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
Mean off-bout (minutes)	15	14	18	20	22	20
Off-bout range (minutes)	3–28	5–34	5–48	4–53	1–103	2–57
Total feeds per night	11	12	10	9	12	11
% brooding per night	78	78	76	73	64	72
Longest time between feeds (minutes)	201	224	224	288	204	277

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