

Notes on the roosting site, foraging behaviour, and plumage crypsis of the Rufous Potoo (*Nyctibius bracteatus*) from the Ecuadorian Amazon

NOTAS SOBRE EL DORMIDERO, COMPORTAMIENTO DE FORRAJE, Y CRIPSIS DE PLUMAJE DEL NICTIBIO RUFO (*NYCTIBIUS BRACTEATUS*) EN LA AMAZONIA ECUATORIANA

Alejandro Solano-Ugalde

Natural History of Ecuadorian Mainland Avifauna Group, 721 Foch y Amazonas, Quito, Ecuador.

E-mail: jhalezion@gmail.com

Abstract

Here I describe three roosting sites of *Nyctibius bracteatus* (Rufous Potoo) found in the Ecuadorian Amazon, provide data on foraging behavior, and discuss plumage crypsis. Most noteworthy is the combination of field data to support a leaf mimicry hypothesis in the plumage of this little known species of potoo. Giving the nocturnal activity of the family Nyctibiidae, information remains scarce, for which reason further studies are encourage.

Keywords: mimicry, natural history, Nyctibiidae.

Resumen

En esta nota se describen tres dormitorios de *Nyctibius bracteatus* (Nictibio Rufo) hallados en la Amazonia ecuatoriana, se presentan datos sobre forrajeo y se discute la cripsis del plumaje. El resultado más relevante es el apoyo a la teoría de mimetismo de hojas que se obtiene de la combinación de los datos de campo. Debido a la actividad nocturna de la familia Nyctibiidae su conocimiento es escaso, por lo que se sugiere la realización de más estudios.

Palabras clave: historia natural, mimetismo, Nyctibiidae.

The Rufous Potoo (*Nyctibius bracteatus*) is the smallest (21-25 cm, 46-58 gr.) member of the monogeneric and Neotropical endemic family Nyctibiidae (Cohn-Haft 1999). With a patchy distribution, this rare species is known from few sites in west-central Colombia, eastern Ecuador and Perú, north-west Brazil and there are also recent records from Venezuela, Guyana, Surinam and French Guiana (Restall *et al* 2006), where it lingers in undergrowth and middle story of primary rainforest, mainly terra firme and swamps with palms (Cohn-Haft 1999). The Rufous Potoo seems to be an atypical *Nyctibius*: its plumage and vocalizations differ markedly from those of its congeners, however information is scarce to establish whether these differences have taxonomic relevance (Brumfield *et al* 1997). Giving its apparent scarcity, and the general difficulty of studying nocturnal birds, this remains one the least known of the *Nyctibius* species (Cohn-Haft 1999, Holyoak 2001). This species was recently recorded in French Guiana (Cleere & Ingels 2002), and information on its breeding biology has been recently published (Ingels *et al* 2008). However, to date the natural history of *N. bracteatus* remains little studied

in Ecuador, with only a single breeding record reported (Cisneros-Heredia 2006). In this note I present novel data from Ecuador, concerning the natural history of this rarely encountered obscure species, and discuss the functionality of its cryptic plumage.

Data was collected in two reserves in the Ecuadorian Amazon. The first site corresponds to the Huaorani-Guaponi territory (immediate surroundings of Gareno Lodge GL), Napo province, Ecuador (01°04'S – 77°37'W, 450 m.a.s.l). The locality exhibits typical “hilly” terra firme forest with black water streams on clay saturated soils. The Huaorani territory extends for approximately 10,000 ha until merging with Yasuni National Park (980,000 ha), and is located on the south bank of the Río Napo. The second study site was Sani Lodge SL (00°31'S – 76°26'W, 300 m.a.s.l), a community operated ecotourism destination located in the north bank of the Río Napo, with both terra firme and varzea forest adjacent to the afore-mentioned Yasuni National Park.

Observations were conducted opportunistically while surveying Gareno Lodge in two non-consecutive years (12 to 15 March 2007, and 21 to 24 March 2009), and at Sani Lodge I made observations between 9 to 13 February 2009.

On 12 March 2007, a local guide of GL showed me the day roost of a Rufous Potoo *Nyctibius bracteatus* (Fig.1). During the following three days I returned to the site and collected information regarding different variables of the roost. Additionally, on 12 March, I located a bird at a foraging perch, at which behavioral information was recorded on three days at dawn (13, 14 and 15 March) and dusk (12, 13 and 14 March), giving a total time of foraging observations of 55 minutes. All of the foraging observations were made with 10 x 42 binoculars from the entrance trail to the lodge, ~10 m away from the perch. Additionally two other roost sites were located (on 22 March 2007 at GL and on 10 February 2009 at SL), where supplementary data was collected and video recordings were made to document behavior (deposited at Yanayacu Natural History Research Group). The following paragraphs resume the most noteworthy results from these observations.

Roosting Site

At the first roosting site, a single bird was found perched ~ 3 m above the ground on a thin horizontal branch of a semi woody vine. The perch was located bordering a small natural light gap (roughly 12 X 8 m), on a fairly steep hill (55°), approximately 40 m uphill from the Gareno black water creek. The bird was always found to be facing east while on its day roost. Less than a meter above the bird, a tangle of vines served as cover from direct sunlight. However, this site was not found to provide shelter during rains on the afternoon of 14 March. The main plants in the immediate surrounding understory were *Sellaginella spp* (Sellaginellaceae), *Calathea spp* (Maranthaceae), several unknown genera of the family Cyclanthaceae, large leaved Poaceae and various pteridophytes. The middle storey was 5-6 m tall where Piperaceae and Melastomataceae shrubs were dominant. Canopy was uneven and fairly open, with a couple of large *Cecropia spp* (Cecropiaceae) trees, undetermined large-leaved palms, and other unidentified trees of 25 m in height. In general the adjacent forested areas seemed pristine or little disturbed, “hilly” terra firme habitat. The second roost site was found in a more level terrain, and the bird was perched 2, 5 m above the ground inside terra firme forest with the nearest

watercourse being a blackwater creek 100 m away. The unidentified roosting treelet was 5 m high and there was a vine tangle covering half the tree crown under which the bird roosted. Additionally, a third roost site was also found inside level continuous terra firme forest, where the roosting bird was found close to 3 m high in a treelet 7 m tall at which no vine tangle was observed but the very broad leaves of the plant itself shaded the area efficiently. Overall composition of family plants and forest structure surrounding the latter roost sites were similar to the first, with the only notable difference being the absence of a nearby light gap.

Observations on Behavior

Foraging - On 12 March at 18:25 h, a bird was observed landing on a perch in close proximity (10-15 m) to the first mentioned roosting site. The foraging perch was a thin, dead tree (3 cm of diameter), no higher than 2 m, and which was angled at about 35°, perpendicular to the slope of the terrain. In general the habitat resembled the nearby roosting site, however the foraging perch was slightly closer to the light gap, contained fewer vine tangles, and was located on steeper terrain closer to the Gareno black water creek.

During the three days of observation the bird would typically alight at the perch between 18:18 h and 18:25 h, coming from the same direction of the roosting site and would leave the perch between 18:32 and 18:45 h, when light became poor. Thereafter the bird was not relocated. Once on the perch and before the first foraging attempt, the bird preened breast feathers and stretched wings and tail rapidly. The main foraging strategy involved acrobatic flycatching maneuvers (30 cm to 9 m distance), returning to the perch in the same or different trajectory, with often changing direction suddenly. Of the observed foraging attempts (n=65), 61.5% were performed higher than the perch (of these 88% towards the light gap-LG), 17% were at the same height of the perch (75% towards LG), and the rest lower than the perch (15% LG). Interestingly, always upon first arrival to the perch, prior to sallying and after returning, the bird invariably perched facing west towards the Gareno black water stream. At dawn observations, the bird arrived between 06:00 h and 06:07 h, only to perch and preen before flying towards the roosting site 5 to 7 min later. Only on 15 March the bird did a couple of sallies before preening and then heading to the roost site. During the entire observation period at GL, vocal activity was restricted to a single call note;

“wúp” on 12 March at 18:37 h, a full song consisting of a series of ten notes at 18:39 h and two full songs (18:26 and 18:28 h) of a different individual 50 m away from the observation point on 14 March. At the two other sites no vocal activity was recorded as the roost were visited only during the day.

Additional behaviors - On 13 March (15:45 h) at GL, while approaching the bird on its roost, the bird reacted in a curious manner. As I was close to 1.5 m from the roost, the bird opened its eyes completely and started

moving its body in a rocking motion as if it was a leaf moved by the wind. Also noteworthy were observations of 10 February at SL and 22 March 2009 at GL, at which times I witnessed diurnal preening behavior. In order to engage in such activity both birds were observed to wait for winds to blow and move surrounding vegetation and only while the vegetation of the roosting tree moved itself the birds would start preening in shoulder joints, breast and back feathers, noticeably stopping its activity as soon as the breeze would cease.



Fig. 1. Rufous Potoo (*Nyctibius bracteatus*: Nyctibiidae) at a roosting site, Garena Lodge, Napo province, Ecuador. (Photo: L. Semo).

Discussion

Regarding foraging behavior, potoos are known as crepuscular and nocturnal insectivorous birds, with a foraging technique similar to that of the new world flycatchers (Cohn-Haft 1999). Rufous Potoo has the typical crepuscular and flycatcher behavior of the members of its family. Giving the fact that potoos are nocturnal, studies documenting foraging data are still needed. The data presented is preliminary, and could be use as baseline for further studies on behavior and diet. Although the plumage of other potoos has been well discussed in terms of cryptic functionality, little has been

mentioned regarding the plumage of Rufous Potoo (Cohn-Haft 1999). According to the information herein presented, it seems plausible to suggest that the plumage of the Rufous Potoo is aiding in concealment as well but not mimicking a dead tree, branch or stump as in other potoo species. Base on the interpretation of field experience the plumage of *Nyctibius bracteatus* could be regarded as a mimic of dead leaves trapped in vine tangles or thickly branched trees. As the observed roosting sites had thick tangles of vines (2 sites) or were cover with abundant leaves trapped on top thickly branched trees (1 site), I could noticed that leaves caught on top roosts develop holes and white dermal fungus,

similar to the white spots exhibited on the plumage of the species. In fact, during a diurnal checked of one of the roosts, I found two reddish *Cecropia spp* leaves curled in a semi-round shape with holes and white fungus, which in dim light conditions very closely resembled the plumage and shape of a Rufous Potoo.

This interpretation is complementary to the stamen earlier presented (see Cohn-Haft 1999), in which the species plumage is mentioned as of “reddish tone blending with color of dead leaves”, however the mentioned text lacks the connection and possible relation of roosting sites and the presence of vine tangles (or thickly branch trees) in which leaves easily get trapped and its likely correlation to the plumage crypsis of this potoo. Additionally, the white spots on its body feathers have been referred to as “flakes of sunlight that dapple the dark rainforest interior” (Cohn-Haft 1999), the hypothesis presented here is contrary, however a combination of the two is rather more comprehensive. The observations of birds preening while breeze moved the vegetation of roosting sites add to the strengthened hypothesis of “leaf mimicking” because the dead foliage was trembling in a way such that the birds could benefit from disguise while performing daily hygiene practices and being efficiently protected.

Literature cited

- Brumfield, R. T., Swofford, D. L. & M. J. Braun. 1997. Evolutionary relationships among potoos (Nyctibiidae) based on isozymes. *Ornithological Monographs*. Vol. 48:129-145.
- Cisneros-Heredia, D. F. 2006. Notes on breeding, behaviour and distribution of some birds in Ecuador. *Bull. B. O. C.* 126(2):153-164.
- Cleere, N. & J. Ingels. 2002. First record of the Rufous Potoo *Nyctibius bracteatus* and in-flight drinking by the Semi-collared Nighthawk *Lurocallis semitorquatus* in French Guiana. *Bull. B. O. C.* 122:154-155.
- Cohn-Haft, M. 1999. Family Nyctibiidae (potoos). In: del Hoyo, J., Elliott, A. & Sargatal, J. (eds.) *Handbook of the birds of the world*, 5. Barcelona: Lynx Editions.
- Holyoak, D. T. 2001. *Nightjars and their allies*. Oxford: Oxford University Press.
- Ingels, J., Cleere, N., Pelletier, V. & V. Hequet. 2008. Recent records and breeding of Rufous Potoo *Nyctibius bracteatus* in French Guiana. *Cotinga* 29:144-148.
- Restall, R., Rodner, C. & M. Lentino. 2006. *Birds of Northern South America*. London, UK: Christopher Helm

The “rocking motion” behavior, if better studied, could further support the theory of “leaf mimicking”. The latter in addition would corroborate more in detail what has been proposed in the literature (see above). Others have witnessed this “rocking-motion” behavior (R. Garriguez com. pers.) but as of now this has remained unaddressed. Certainly, observations presented here are preliminary and could be use as baseline for further studies. Extended knowledge on the natural history of this and the many others of Neotropical bird species is pivotal in trying to better assess the morphological functionality of certain characters and behaviors from which an extended understanding could be transmitted to proper management and urgently needed conservation practices.

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