

## FIRST OBSERVATIONS OF INCUBATION BEHAVIOR FOR THE STRIPE-BREASTED WREN (*THRYOTHORUS THORACIUS*)

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**Primeras observaciones sobre el comportamiento de la incubación en *Thryothorus thoracius*.**

**Key words:** Costa Rica, incubation, Mesoamerica, nesting behavior, Stripe-breasted Wren, *Thryothorus thoracius*, Troglodytidae.

### INTRODUCTION

The Stripe-breasted Wren (*Thryothorus thoracius*) is a regional endemic restricted to the Caribbean slope of Mesoamerica, from Nicaragua south to central Panama (Stiles & Skutch 1989, Brewer 2001). They inhabit the dense understory and edges of primary and secondary tropical forest and adjacent plantations, and have been reported from sea level to elevations of 1100 m (Brewer 2001). Though not considered at risk (IUCN 2004), their populations have undoubtedly declined from the extensive loss of forested habitat in this region.

In a recent monograph of wrens, Brewer (2001) notes a distinct lack of basic life history information for many tropical species. Stripe-breasted Wrens are thought to pair throughout the year and have been observed breeding in Costa Rica from March through July (Stiles & Skutch 1989, Brewer 2001). Their nest design and eggs have been described (Stiles & Skutch 1989), but their incubation period and behaviors remain

unknown and there are no detailed accounts of their nesting habits. This paper reports specific observations on the nesting behavior of Stripe-breasted Wrens during the incubation period, with the goal of expanding our knowledge and directing future research on this little-studied bird.

### METHODS

This study was carried out at the La Selva Biological Station in Canton Sarapiquí, Heredia Province, Costa Rica. The station includes 2500 ha of wet tropical forest and adjoins Braulio Carrillo National Park, forming the largest intact forest in the region (described in detail in McDade *et al.* 1994). One Stripe-breasted Wren nest was located on 24 February, and observed for a total of 403 min from 25 February through 9 March, 2006 (Fig. 1). Observations were made from two partially concealed points located 6 and 9 m from the nest, offering different views of the entrance and approach areas. The birds appeared unaffected by the observer's pres-



FIG. 1. Nest of the Stripe-breasted Wren (*Thryothorus thoracius*) found at La Selva Biological Station, Costa Rica, 24 February 2006.

ence, passing within 2 m on several occasions while approaching the nest without visibly altering their behavior. Observations were assisted by the use of 10 x 40 binoculars.

## RESULTS

*Nest description.* The nest was located 3.1 m above the ground, suspended from the petiole of a broad-leaved araceous epiphyte (*Anthurium* sp.) and partially obscured by the leaves of an adjacent woody epiphyte. The spherical structure measured 10 cm in diameter, with a round side opening 4.5 cm across. A vestibule or half-sphere covered the opening, measuring 5 cm in diameter, with the entrance pointing downward. The entire structure was woven from and lined with fine roots and plant fibers, particularly fibers

apparently stripped from dead palm leaves. Moss and leaves sparsely decorated the outside of the nest and fine, nodulated rootlets trailed 15–45 cm below. Not used elsewhere in the nest structure, these nodulated roots effectively mimicked the bumpy surface of aerial roots descending from many epiphytes in the immediate area.

*Incubation behavior.* The nest contained three ovoid eggs measuring 18 mm by 12 mm, colored white with a bluish tint. The adults were observed approaching the nest on six separate occasions, and were observed departing the nest on four occasions. Sex identification was nearly always possible from vocalizations. Of the 403 min of diurnal observations, the female spent 170 min (42%) incubating the eggs and 233 min (58%) off the nest, foraging

together with the male. The male was never observed entering the nest or incubating the eggs. Observations of complete incubation periods averaged 60 min ( $N = 2$ ), while complete foraging bouts averaged 40.5 min ( $N = 2$ ). First exits from the nest were observed near dawn (06:03 h; 06:09 h), while the female appeared to be on the nest for the night for all observations after 18:00 h.

The nest was unoccupied when discovered at 21:30 h on 24 February, but the female was in residence on the night of 25 February and on all subsequent nocturnal observations. Regular diurnal nest visits during this period suggest that incubation began on or around 25 February. The full three-egg clutch was counted and measured on 28 February and 9 March. Incubation was still underway on 9 March, indicating a minimum incubation period of 13 days.

All observed approaches to the nest were made by the pair together, exchanging soft contact calls. Upon arriving at the nest, the female would perch below, calling and looking in all directions before silently entering. The male then sang a single loud three or four note phrase that was usually unanswered by the female from the nest (five of the six instances). The male then departed silently and could be heard later calling, scolding or singing from distant parts of the territory. The female remained silent while on the nest.

Exits from the nest were stealthier. While the male was foraging silently or with subdued calls in the vicinity of the nest ( $< 15$  m), the female would drop silently from the nest entrance towards thick vegetation at ground level. The pair then moved off quietly together before beginning normal foraging and contact call behavior in another part of the territory.

## DISCUSSION

This study indicates that breeding behavior

for the Stripe-breasted Wren in Costa Rica begins earlier than March, as previously reported (Stiles & Skutch 1989). This active nest observed in February and concurrent mist-net captures of recently-fledged chicks nearby (S. Woltmann pers. com.) suggest that breeding must begin as early as January. Clutch size, egg color and nest construction details observed in this study match earlier descriptions (Stiles & Skutch 1989, Brewer 2001), while observations appear to confirm that incubation is solely the purview of the female. The incubation period was measured as  $>13$  days, within the range (12–19 days) reported for other members of the genus (Brewer 2001).

Observations support the strong pair bonding previously reported (Stiles & Skutch 1989), as all approaches and departures from the nest were made together and the female was never observed foraging apart from the male. The female was not provisioned by the male, as reported for the related Carolina Wren (*Thryothorus ludovicianus*) (Haggerty & Morton 1995). Rather, she made numerous foraging trips throughout the day, spending more than half of observed time away from the nest. This behavior resembles the habits of other wren species, some of which make as many as 71 daily foraging sorties while incubating (Armstrong 1955).

Though their secretive nature, densely-vegetated habitat and well-camouflaged nests make field observations challenging, this study suggests that the birds are tolerant of observation once a nest is located. Future research efforts may benefit from the distinctive series of events observed during most nest approaches. The pattern of regular contact calls leading up to the nest, an unanswered 3–4 note song by the male, and the subsequent reappearance of the male alone elsewhere in the territory should help researchers locate active nests to further

expand our knowledge of this little-studied species.

#### ACKNOWLEDGMENTS

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