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### OBSERVATIONS ON INCUBATION AND NESTING BEHAVIOR OF THE TROPICAL GNATCATCHER (*POLIOPTILA PLUMBEA*) IN EASTERN ECUADOR

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**Observaciones sobre la incubación y el comportamiento de nidificación de la Perlita tropical (*Polioptila plumbea*) en el este del Ecuador.**

**Key words:** Tropical Gnatcatchers, *Polioptila plumbea*, incubation, nest, eastern Ecuador, aggressive interactions.

The Tropical Gnatcatcher (*Polioptila plumbea*) ranges from southern Mexico to southwestern and northwestern Peru, southeastern Brazil, northern Amazonia, the Guianas, and Venezuela, and occurs from sea level to 1600 m. Throughout its range, it is generally a canopy insectivore that participates in mixed-species flocks (Hilty & Brown 1986, Stiles & Skutch 1989). In Ecuador, the Tropical Gnatcatcher is divided into two subspecies based on morphological differences and song variation (Ridgely & Greenfield 2001). The western subspecies, *bilineata*, is considered by Ridgely & Greenfield (2001) to be a common bird of the canopy and forest borders. While the eastern subspecies remains uncertain due to lack of specimens, it is presumed to be *parvirostris* and, apart from observations on adults at few locations, there is nothing known about this species in eastern Ecuador.

While nests have been studied in Costa Rica, where the species breeds from March to June (Skutch 1960, Stiles & Skutch 1989), and

southwestern Ecuador, where breeding occurs from February to April (Marchant 1960), there is no breeding information for this species from eastern Ecuador. Other data includes breeding condition birds from March to October in northern Colombia (Hilty & Brown 1986) and a fledgling in June in Venezuela (Cherrie 1916). Here we present the first breeding record for *P. plumbea parvirostris* in eastern Ecuador with brief observations on incubation rhythms and behaviors.

On 31 August 2002, we found a nest of the Tropical Gnatcatcher at the Tiputini Biodiversity Station, located in the Sucumbios Province, on the south side of the Napo River, in eastern Ecuador (For a site description, see Freiberg & Freiberg 2000). We observed the nest periodically, over 6 days beginning 1 September, from a canopy tower (Torre 1) approximately 35 m above the ground and built into a large *Ceiba* sp. (Bombacaceae) tree. We stood on the platform of the tower and used binoculars to observe the

nest. We timed on and off bouts with a wrist-watch and jotted notes as we watched the nest. We observed the nest at times when there were several other people on the platform creating excessive noise and also made observations while alone in the tower. We did not notice any change in the behavior of the nesting adults from the noise disturbance. We were able to determine the sexes of the adults by the slight, but noticeable difference in the color of the crown feathers. The cap of the male is darker than that of the female. Adult behavior around the nest suggested that the adults were incubating and, on 6 September, the presence of two eggs was confirmed with a mirror pole. The nest was saddled on a horizontal branch (10 cm diameter) at the point where it met a larger vertical branch (40 cm diameter). It was about 3 m above the tower platform, and about 3 m below the crown of the tree. The nest blended well with the surrounding bark, as it appeared to be decorated with material such as lichen and moss, collected from the nest tree itself. Willis & Bosso (1997) also noted similar camouflaging at a nest of the Cream-bellied Gnatcatcher (*Poliophtila lactea*).

We observed the nest at varying hours of the day, but mostly in the mornings. During 21.4 h of observation, predominantly in the early morning, the eggs were covered for 39.7% of the time. The male performed 72.5% of the incubation duties ( $n = 12$  complete bouts) in bouts averaging ( $\pm$  SD)  $35.4 \pm 14.8$  min. We have coined the term bout to mean the amount of time the nest was attended (on bouts) or unattended (off bouts). The female performed only 27.5% of incubation and only one complete on bout of 38 min was observed. Complete off bouts ( $n = 10$ ) averaged  $32.6 \pm 21.9$  min, with the longest observed off bout being at least 244 min, when no adult had returned to the nest by 11:45 on 2 September. On two occasions, the sex of the adult spending the night on the

nest was determined. Both times it was the female, and she first left the nest at 06:24 and 06:48 h, respectively. We watched the nest from before daylight to determine this information and this time of first departure from the nest is typical of other passerines that we have observed (Greeney pers. observ.).

While approaching the nest, the male often sang a melodious 6–8 note song, changing perches frequently as he approached. The female, however, usually approached quietly. While sitting on the nest, the male occasionally vocalized. We observed both sexes in the nest, drawing their head gently backwards several times. Based on observations of other incubating passerines (Greeney pers. observ.), we feel they were likely rolling the eggs. Both sexes were very alert while on the nest and constantly moved their heads from side to side.

On several occasions, the male exhibited aggressive behavior towards much larger birds. A Black-banded Woodcreeper (*Dendrocolaptes picumnus*), foraging on a branch approximately 5 m away from the nest, drew the male from incubation to a small perch just above the nest. While the woodcreeper hatched up the branch, the male made repeated, garbled chip notes. The woodcreeper flew to a branch closer to the nest (approximately 3 m) and the male responded with aggressive flights to within 10 cm of the woodcreeper. This behavior successfully displaced the woodcreeper to a branch about 3 m further away, and was repeated three more times. The woodcreeper, however, did not appear to react to the last two aggressive flights. Minutes after this encounter, the male showed aggression towards a White-faced Nunbird (*Hapaloptila castanea*) perched approximately 2 m from the nest. The male made five aggressive flights towards the nunbird, which showed no apparent reaction to this behavior. The gnatcatcher retreated to a branch about 1 m away from its nest, where

he sang occasionally and frequently hopped among different perches in the area. We observed similar aggressive behaviors by the male towards a Bare-necked Fruitcrow (*Gymnoderus foetidus*), a single Paradise Tanager (*Tangara chilensis*), and a pair of Masked Tanagers (*T. nigrocincta*). On one occasion, immediately after settling onto the nest, the male flew suddenly off the nest to a nearby perch. It then swooped at the nest and displaced a 3–4 cm long cicada (Cicadidae) which had been perched only several centimeters from the nest.

Our observations agree with those of Skutch (1960) in that the Tropical Gnatcatcher is seemingly undisturbed by human presence around the nest and fairly aggressive towards even much larger avian species. Not only did the male aggressively defend the area around the nest, but he and the female appeared to be unaffected by the heavy foot traffic on the platform we experienced during the observation periods. We do not know the outcome of the nest, but based on our observations, we may assume that the pair carried on incubating and tending to the nest. Contrary to previously described nests of the Tropical Gnatcatcher, which have been located 2 to 8 m from the forest floor (Marchant 1960, Skutch 1960), the nest of *P. plumbea parvirostris* observed here was located 38 m above the ground.

As observed by Skutch (1960) in Costa Rica, the female spent nights on the nest and the male performed the majority of the incubation duties during daylight hours. This is similar to other *Poliophtila* (Woods 1928) but, even within a species, relative amounts of incubation by the sexes may vary (Bent 1949). While other species of *Poliophtila* have been noted to sing from the nest, this appears to be the first report of the Tropical Gnatcatcher showing such behavior (Skutch 1960). Many birds do not begin regular incubation rhythms for several days after completion of the clutch

(Skutch 1945, Greeney pers. observ.). The eggs were covered only 40% of the time during our study period and at least one extended off bout occurred, suggesting that the nest was observed early in the incubation period and that regular coverage of the eggs had not yet begun. We hope these observations encourage others to continue to report findings on this and other aspects of increasingly threatened tropical species.

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