



FIRST OBSERVATIONS OF DISPLAY BY SHORT-TAILED PYGMY-TYRANT *MYIORNIS* *ECAUDATUS*

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Abstract · Courtship displays are known in the genus *Myiornis* solely from a single anecdotal report pertaining to Black-capped Pygmy-Tyrant *M. atricapillus* in the tertiary literature. I present a description of what I believe to be a courtship display for the Short-tailed Pygmy-Tyrant *M. ecaudatus* from observations in northern Peru. The display consisted of both perched and hovering components, the former involving near-vertically raised wings and the latter in a remarkably fixed position but again with raised wings lasting c. 5 seconds. It was perhaps unusual, compared to known displays of other small tyrant-flycatchers (genera *Atalotriccus* and *Hemitriccus*), in apparently lacking any audible sound release but instead seemed to be exclusively visual. Further observations are required to adequately characterize the behavior and to ascertain its precise social function. In the absence of a complete molecular phylogeny for the five (including one undescribed) species currently placed in *Myiornis*, behavioral data could prove informative in constructing a robust taxonomic hypothesis for the group.

Resumen · Primeras observaciones del despliegue del tirano-pigmeo de cola corta *Myiornis ecaudatus*

Los despliegues de cortejo se conocen en el género *Myiornis* únicamente a partir de un solo informe anecdótico de *M. atricapillus* en la literatura terciaria. En esta nota, presento una descripción de lo que interpreto es un comportamiento de cortejo de *M. ecaudatus* a partir de observaciones en el norte de Perú. La exhibición constaba de componentes posados y suspendidos, el primero con las alas levantadas casi verticalmente, y el segundo suspendido en el aire en una posición notablemente fija, pero nuevamente con las alas levantadas por cerca de 5 segundos. Tal vez fue inusual, en comparación con los despliegues conocidos de otros pequeños atrapamoscas tiranos (géneros *Atalotriccus* y *Hemitriccus*), aparentemente sin ningún sonido audible, sino exclusivamente visual. Sin embargo, se requieren más observaciones para caracterizar adecuadamente el comportamiento y para determinar su función social. En ausencia de una filogenia molecular para las cinco especies (incluida una no descrita) actualmente ubicadas en *Myiornis*, los datos de comportamiento podrían resultar informativos para construir una hipótesis taxonómica sólida para el grupo.

Key words: *Breeding · Courtship · Phylogeny · Tyrannidae*

The genus *Myiornis* A. de W. Bertoni, 1901, comprises four species of tiny-bodied passerines (Ridgely & Tudor 1994, Fitzpatrick 2004, Dickinson & Christidis 2014, del Hoyo & Collar 2016): Eared Pygmy-Tyrant *M. auricularis*, which is endemic to the southern Atlantic Forest of southeast Brazil, adjacent eastern Paraguay, and northeast Argentina; White-bellied Pygmy-Tyrant *M. albiventris*, on the east slope of the Andes from southeast Ecuador to northern Bolivia; Black-capped Pygmy-Tyrant *M. atricapillus*, from Costa Rica to northwest Ecuador, west and north of the Andes; and the geographically most widespread of the group, Short-tailed Pygmy-Tyrant *M. ecaudatus*, which is found across much of the Amazon Basin, as well as in northern Venezuela and on Trinidad (Clock 2020 a, b, c; Heaton Crisologo 2020). Traylor (1979), however, lumped the last two-named species (presumably following Zimmer 1940). A fifth species, believed to be endemic to northeast Brazil, was discovered early in the present century but remains to be described (see, for example, https://xeno-canto.org/species/Myiornis-sp.nov.Maranhao_Piaui).

Breeding data for any of these species are very sparse. Nothing is known for White-bellied Pygmy-Tyrant (Crozariol 2016, Clock 2020b). Based on five nests found in the state of São Paulo, Brazil, Eared Pygmy-Tyrant seems to breed between October and December, builds a pensile, domed structure with a side entrance, and lays 2–3 eggs (Pizo et al. 2010). For Black-capped Pygmy-Tyrant, Heaton Crisologo (2020) summarized the available published data, mainly from southern Central America (but also Colombia), where it apparently nests from March to May, constructs a long pendant nest with a round side entrance, and lays two eggs. However, in northwest Ecuador, I observed two still-dependent fledglings in the second week of August, hinting at a more prolonged season at least locally (see <https://ebird.org/checklist/S121755705>). Finally, for Short-tailed Pygmy-Tyrant,

Clock (2020c) noted nests in Amazonian Brazil between mid-June and mid-September, and seasonality is similar in south-east Peru, but not in northernmost South America where breeding appears to occur between January and May in Colombia, Venezuela, and Suriname. Photographs available online further evidence season in the Brazilian Amazon (e.g., <https://macaulaylibrary.org/asset/365276521>), which continues into November (<https://macaulaylibrary.org/asset/184519391>, <https://www.wikiaves.com.br/6325&t=s&s=11258>), but also indicate nest building in northern Bolivia in late October (<https://macaulaylibrary.org/asset/186047571>) and nesting in east Ecuador in late August (<https://macaulaylibrary.org/asset/204896171>). Like other *Myiornis*, the nest is a long pensile closed structure with a side entrance (McNeil & Martinez 1968, Kirwan 2009, Clock 2020c; <https://macaulaylibrary.org/asset/250048551>), and the clutch comprises two eggs (McNeil & Martinez 1968, Clock 2020c). There is no information regarding incubation behavior or nestling period for any species in the genus.

Even less is known concerning displays in *Myiornis*. DF Lane (in Heaton Crisologo 2020) observed two Black-capped Pygmy-Tyrants perched “on *Cecropia* petioles at about 4 m up. One would hover, like [a] hummingbird, in front of the other while giving the grunting calls. Eventually, one flew farther away (male?), giving the ‘song’ to be joined by the other and do [the] display again.” Nothing further is known.

On 12 November 2022, on a trail at Quebrada Mishquiyaquillo, south of Moyobamba, San Martín, in northern Peru, I observed an apparent courtship display by Short-tailed Pygmy-Tyrant in a small patch of relatively more stunted vegetation (canopy height c. 10 m) on an exposed ridgeline (c. 06°04'S, 76°58'W). At c. 07:45 h my attention was drawn to an individual of this species perched below eye level in the forest understorey c. 10 m away, close to the tip of a very narrow branch/twig. As the tree in which the bird was perched was on a slope, the real height above ground was probably closer to 3 m. The bird was facing slightly away from me with its bill held virtually horizontally, raising both wings almost vertically over the back but with their tips slightly curved outwards, giving the wings a slightly bowed shape. The wings (and body) were held motionless in this position for less than five seconds, but I do not know when the posture was first assumed. During this brief period, I did not notice how the tail was held, but it was certainly not cocked upwards. Thereafter, the bird launched itself slightly forwards (perhaps c. 20 cm) into the air and hovered/fluttered for a similar length of time (i.e., no more than five seconds) facing intently in the same direction with the bill closed, and still held perpendicular to the wings, which were more markedly bowed than they had been when the individual was perched but still raised above the line of the body. While hovering (surrounded closely on most sides by foliage), the bird remained surprisingly stable, i.e., it did not move at all from side to side and very little up and down, and the wings appeared to be moved surprisingly little, given the effort presumably involved to maintain this position. The tail was angled slightly down. No audible sounds were associated with this display, despite that the species' wings can produce a slight buzzing sound in flight (Clock 2020c; pers.

observ.). The bird then disappeared into the vegetation, but it or another individual of the same species was heard vocalizing on several occasions over the following 10–15 minutes. I recorded these vocalizations and have made them available on Macaulay Library (<https://macaulaylibrary.org/asset/508194151>) and xeno-canto (<https://xeno-canto.org/763990>). Although only one individual was visible during the display, the intent way in which the bird fixed its gaze in one direction throughout and the apparent lack of any sound (vocal or mechanical) component to the performance strongly suggested that a second bird must have been in close attendance.

Lane's notes on the display of Black-capped Pygmy-Tyrant that he witnessed are insufficient to draw many comparisons with the behavior I observed in Peru, but the obviously vocal accompaniment to the hovering movement and the apparent lack of any preparatory wing-lifting are obvious differences from that described above for Short-tailed Pygmy-Tyrant. A number (possibly many) Tyrannidae possess visual/sound displays that include hovering flights (see McCullough & Londoño 2017), but such behaviors have been described from very few of the small-bodied species whose repertoires are perhaps most likely to incorporate them.

One of these is the Pale-eyed Pygmy-Tyrant *Atalotriccus pilaris*, which often makes buzzing sounds with rapid wing vibrations (produced by the modified outer primaries) that have been presumed to form part of a display (Clock 2020d). The only species for which a truly detailed description of such displays is available is Black-throated Tody-Tyrant *Hemitriccus granadensis*, initially provided by Botero-Delgadillo & Krabbe (2011), and subsequently amplified by McCullough & Londoño (2017). The latter is supported by a video by T Forrester (<https://macaulaylibrary.org/asset/487218>) illustrating the display. As described in both these works and is audible in the just-mentioned video, the displaying male Black-throated Tody-Tyrant makes a high-pitched buzzing sound with the wings, but this is produced by the very fast wingbeats, rather than by modifications to the feathers. Other differences from the display of Short-tailed Pygmy-Tyrant that I witnessed include the side-to-side motion of the male, slight upward inclination to the head (as the female is usually perched higher than the male's flight path), and the lack of an initial wing-lifting component. In the *Hemitriccus*, the hovering display is customarily repeated multiple times with brief pauses and each flight can last up to 65 s, mean 11.82 s (Botero-Delgadillo & Krabbe 2011), but McCullough & Londoño (2017) observed shorter displays, maximum 8.5 s, and the Forrester video shows several flights of about five seconds each. Another video, made by A. Montes and available on Facebook (<https://www.facebook.com/andres.montes3/videos/10216430034853580>), suggests that the male's hovering movements can sometimes be more up and down, rather than sideways, perhaps due to the nature of the available space. Given that I saw just one display, it is difficult to make further comparisons based on such a short observational fragment.

Further and far more detailed observations of displays by any one of the four (or five) species of *Myiornis* would be welcome. To date, there is evidence of presumed courtship (rather than antagonistic) displays in two of the four described

species. In the future, behavioral data, including breeding ecology information, could provide useful clues and supporting evidence for either maintaining the current status quo or revising the generic limits.

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