THE NEST, EGGS, AND RELATIONSHIPS OF THE HALF-COLLARED GNATWREN (*MICROBATES CINEREIVENTRIS*)

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Although the Half-collared (or Tawny-faced) Gnatwren (*Microbates cinereiventris*) is a fairly common resident of the humid Caribbean lowlands of southern Central America and northwestern South America, no description of its nests and eggs has been published.

On 3 April 1971 I found a nest of this species in the understory of a mature stand of "Tropical Wet Forest" (Holdridge 1957) about 2 km SE of Puerto Viejo, Heredia Province, Costa Rica, at an elevation of less than 50 m. The nest was located ½ m off the ground in a broad-leafed shrub growing in a rather open area along a wide trail. Despite the small size of the shrub (1 m tall), it also contained what appeared to be an old sleeping nest of the White-breasted Wood-Wren (*Henicorhina leucosticta*).

At the time it was found, the gnatwren nest was in the final stages of construction. While I investigated it, two gnatwrens, presumably a mated pair, circled me at close range, uttering nasal whining notes and carrying bits of green moss in their bills. When I withdrew to a vantage point 30 m from the shrub, both birds flew to the nest in rapid succession and added the bits of moss to its outer walls.

I was not able to return to the site until 17 April. When I approached to within 2 m of the nest, a gnatwren flew off it, scolded briefly, then disappeared into the forest understory. Both the nest and the two eggs it contained were collected and subsequently deposited in the collection of the Western Foundation of Vertebrate Zoology (WFVZ no. 58456).

The nest was an open cup with an exterior diameter of 10 cm and exterior depth of 15 cm, the inner cup being 5 cm in diameter and 4 cm deep. The outer walls were composed of green moss, papery bark fragments, leaf petioles, and bits of dead brown dicot leaves, all held together by plant fibers. The inner cup was lined with a soft layer of dead leaf skeletons, plant fibers, and a few strands of fine grass. The nest was attached by slender plant fibers to the trunk of the shrub along one entire vertical surface, and another side was built around a small limb which grew off the trunk at a sharp angle. The overall appearance of the nest was that of a semi-suspended, bulky cup of green moss, partially concealed by the leaves of the shrub.

The eggs measured 18.8 × 13.8 and 18.5 × 14.2 mm with empty dry shell weights of 0.101 and 0.103 g, respectively. Both contained embryos approximately 4–5 days old. The eggs were white with a liberal sprinkling of fine reddish-brown and dark brown spots over their entire surface, but slightly denser on the larger ends. They were ovate in shape and blunt at the small ends.

The taxonomic relationships of *Microbates* and the similar neotropical monotypic genus, *Ramphocaenus*, have never been satisfactorily resolved. Most early workers (e.g., Ridgway 1911, Cory and Hellmayr 1924) placed both genera in the Formicariidae, a suboscine family. Miller (1924) was the first to point out that these genera possess certain external structural characters, especially the presence of an aftershaft, more typical of oscines. Subsequently, Wetmore (1943) found upon dissection that *Ramphocaenus* possesses an oscine syrinx, and he placed it in the Sylviidae. Mayr and Amadon (1951) included both *Microbates* and *Ramphocaenus* in the tribe Polioptilini, the only group of New World sylviids which they recognized. This treatment has generally been followed by recent authorities, including Paynter (1964), who commented on the probable lack of close relationship between the gnatcatchers (*Polioptila*) and the two genera, *Microbates* and *Ramphocaenus*.

A comparison of the nests and eggs of these forms, insofar as they are known, further emphasizes the similarities between *Microbates* and *Ramphocaenus* and their shared differences from *Polioptila*. Details of the nidification of the South American *Microbates collaris*, the only other species in that genus, still await description.

Nests, and in most cases, eggs of the widespread *Ramphocaenus melanurus* (including the Middle American *rufiventris*) have been described from Brazil (Pinto 1953, Sick 1954), Trinidad (Belcher 1932, Belcher and Smooker 1936), Venezuela (Skutch 1968), Panamá (Eisenmann 1953), Costa Rica (Skutch 1960), Nicaragua (Howell 1957), and British Honduras (Russell 1964). I have examined an additional nest and set of this species collected in Costa Rica by Andrew Williams and now at the WFVZ (no. 58178).

The eggs of *Ramphocaenus melanurus* and *Microbates cinereiventris* are virtually identical in coloration and shape. Those of *Ramphocaenus* are slightly smaller (av. of 10 = 17.8 × 13.2 mm) than the two known eggs of *M. cinereiventris* (av. = 18.65 × 14.0 mm), presumably owing to size differences between the species. The mean weight of 18 ♀ *Ramphocaenus* from Central America and northern South America is 9.4 g, while four ♀ *M. cinereiventris* from Costa Rica average 10.4 g.

Both species build similar nests, deep, bulky open cups placed very low off the ground (mean height reported for nine *Ramphocaenus* nests was only 4.5 cm, ranging from 2.4 to 7.0 cm) and usually suspended between upright plant stems. The only substantive difference between the nests of the two species is that nearly all of the reported nests of *Ramphocaenus* had the outer walls composed chiefly of dry grass blades or leaves (often bamboo), plus bits of moss and other plant matter, while green moss formed the virtual entirety of the only known *Microbates* nest.

These differences in the choice of nest materials may simply reflect the different habitat preferences of the two species. In Central America, I have invariably encountered *Ramphocaenus melanurus* in second growth or forest edge situations, while *Micro-*

bates cinereiventris seems always to be confined to the understory of mature humid forest, at least in Costa Rica. Mosses are ubiquitous in the latter habitat, and a mossy nest there presumably enjoys cryptic advantages. Similarly, broad-bladed grasses and bamboos are pervasive constituents of most neotropical second growth, and a nest constructed of these readily available materials would surely be less obvious to visual predators than one made mainly of green moss.

The *Ramphocaenus* nest found by Howell, now at the WFVZ (no. 35221), appeared to be sewn on one side to a large green leaf in the manner of the Old World tailorbirds (*Orthotomus*). While other observers have remarked on the tendency for *Ramphocaenus* to surround its nest with large broad leaves, there are no other reports of tailorbird-like "stitching." I did not note this characteristic in the *Microbates cinereiventris* nest, although the nest was partially surrounded by the large leaves of the shrub which held it.

Eggs of *Ramphocaenus* and *Microbates* are superficially similar to those of *Polioptila* species in coloration, i.e., white with fine brown dots or small spots, although at least two *Polioptila* species, *P. caerulea* and *P. plumbea,* lay eggs with a greenish-blue ground color (which fades in museum specimens to pale bluish-white or pure white). *Polioptila* eggs are relatively shorter than those of *Microbates* and *Ramphocaenus*. The length/breadth ratios of the eggs of four species of gnatcatchers in the WFVZ collection are as follows: *P. albiloris*, 1.24 ($N = 8$), *P. nigriceps*, 1.28 ($N = 4$), *P. caerulea*, 1.28 ($N = 20$), and *P. plumbea*, 1.28 ($N = 20$). The same ratios for eggs of *Microbates cinereiventris* and *Ramphocaenus melanurus* are 1.33 ($N = 2$) and 1.35 ($N = 10$), respectively.

Major differences exist between the *Ramphocaenus-Microbates* group and *Polioptila* in the form, materials, and placement of their nests. The nests of the above-mentioned gnatcatcher species in the WFVZ collection are all neat compact cups, resembling oversized hummingbird nests. All are composed of soft, fine vegetable fibers and are decorated on their exterior surfaces with lichens, the whole mass being held together by cobwebs. In contrast, neither *Ramphocaenus* nor *Microbates* appear to decorate the exterior of their bulky nests with lichens, and there is only one report of *Ramphocaenus* utilizing cobwebs as a cementing material (Skutch 1960). The available data indicate that *Ramphocaenus* and *Microbates* nests are typically placed very near the ground and suspended between upright plant stems. An inspection of over 200 data slips pertaining to *Polioptila* egg sets in the WFVZ collection indicated that gnatcatcher nests are typically placed much higher off the ground and situated in the forks of woody branches, or placed on their flat surfaces.

Rand and Traylor (1953) analyzed the external characters of *Microbates, Ramphocaenus, Polioptila,* and a genus of African sylviids, *Macrosphenus*. Concluding that *Ramphocaenus* and *Microbates* are far more similar to *Macrosphenus* than to *Polioptila,* they suggested that there may have been two intrusions of Old World warblers into the neotropics, one resulting in the well-defined *Polioptila,* the other in the *Ramphocaenus-Microbates* group. Further study, especially the discovery of the nest and eggs of some member of *Macrosphenus*, all apparently undescribed, may shed more light on the respective origins of the New World sylviids.

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