

NOTES ON A NEST AND BEHAVIOR OF THE CHESTNUT-CROWNED GNATEATER

STEVEN L. HILTY

Department of Biological Sciences
University of Arizona
Tucson, Arizona 85721

The Chestnut-crowned Gnatcatcher (*Conopophaga castaneiceps*), an interesting but little-known member of the Formicariidae (formerly Conopophagidae, see Ames et al. 1968) lives in cool humid mountain forests from Colombia south through eastern Peru. Retiring of habit, nothing has been recorded about its biology. I made the following observations during 1972 and 1973 in the Río Anchicayá Valley (3°32'N, 76°48'W) on the Pacific Andean slope of Colombia.

Chestnut-crowned Gnatcatchers are plump, dark gray birds with long pale bluish legs and a silvery white post-ocular stripe ending in a tiny tuft. The short tail is carried depressed. Live weights of six birds were 24–30 g (mean 26.8) and measurements were, culmen 11–12 mm (mean 11.7), tarsus 27.5–33 mm (mean 30.2), and wing 67–72 mm (mean 70.5). Only two of the six birds showed wing molt, a male on 24 September and a female on 17 October. The latter, identifiable by its color band, was observed nesting the following January–March. Capture dates for the four non-molting birds—10 May, 9 July, 17 October, and 19 December—suggest no molt pattern.

These birds are probably most abundant at elevations of 1000 m and above on the Pacific slope but I frequently found them as low as 680 m in the Anchicayá Valley. Willis (1966) described some of the phytophagic features of this foggy, rain-drenched area. Treefalls and a sharply tiered staircase-like canopy permit light to reach the forest floor in many places, resulting in a dense undergrowth of aroids, heliconias, and vines crowding upward around fallen mossy logs and boulders. In other regions, the Chestnut-crowned Gnatcatcher also occurs in more open undergrowth forests; however, "typical" habitat for this species as well as several gnatcatchers of the Amazon lowlands usually includes older treefalls surrounded by tall saplings or dense second growth (Willis, pers. comm.).

Chestnut-crowned Gnatcatchers appear to show alarm by wing-flicking, uttering a raspy call, and peering intently at the observer, often at close range. When startled by an observer, they may bound up from a low concealed perch to cling adroitly to nearly vertical branches in full view. When alarmed they do not tail-pound or tail-flick in the manner of many antbirds (for a discussion of these terms see Willis 1967).

Adults forage singly or in pairs, are relatively sedentary, and are hesitant to cross trails if the clearings are more than 8–10 m. Twenty-four sightings of two banded birds representing two mated pairs were recorded between October 1972 and May 1973. From these data I learned that the maximum width of the foraging area was about 240 m along a plane horizontal to the slope.

The foraging zone is low in the undergrowth. Of 48 prey-capture heights recorded, 6 were on the ground, 10 between 0.1 and 0.8 m up, 20 between 0.8–1.5 m, 9 between 1.5–2.5 m, 3 between 2.5–4.0 m, and 1 above 4 m. For 27 foraging perch diameters recorded, 9 were < 1.0 cm, 12 were from 1.0–5.0 cm and 6 were > 5.0 cm. Typically gnatcatchers choose low sloping stems of aroids or heliconias or the tops of

mossy logs. From these vantage points they cock the head from side to side or upward to peer at overhanging vegetation or the forest floor. With a quick lunge or bound they take small prey, usually insects, from trunks, limbs or leaves. Chestnut-crowned Gnatcatchers often flutter-perch briefly from a movable leaf or stem to capture prey, but they hover clumsily. Occasionally prey is taken in flight from a leaf (= flycatch) with a loud snap of the bill. They seldom descend to the ground except to capture prey, after which they return almost immediately to a low perch. Twice I saw a female in flight taking small ripe berries from *Ossaca brenesii* and an unidentified shrub in the understorey. I have no records of them scratching or tossing leaves as has been reported for other conopophagids (Chubb 1910).

Gnatcatchers are rather silent, and only three types of calls have been heard. A sharp, raspy *chek* note indicates alarm or disturbance, and pairs occasionally uttered this note when foraging. A raspy, chippy rattle *chit*, *chit-it*, *chit-it-it-it* is given by both sexes and was heard especially during the months of August and January when birds may have been courting. During these months a banded female was often chased by a male, one or both birds giving this rattle call. A raspy scream uttered when birds were held in the hand was not heard in the field. No song has been reported from this species such as the melodious ones described for *Conopophaga lineata* and *C. melanops* (Sick 1964). When flying, the wings in both sexes of the Chestnut-crowned Gnatcatcher often produce a low but diagnostic whirring sound as though flying on stiff primaries. Sick (1965) discussed a more pronounced rattling wing sound produced by *C. lineata*, where the male has primaries modified for sound production.

Chestnut-crowned Gnatcatchers appear to be stimulated by mixed flocks. Joining the activity, they wing-flick, rattle-call, and forage more actively but do not leave the concealing undergrowth or follow the flocks. Large noisy flocks of tanagers (*Tangara*) which pass high overhead seem more stimulating to these gnatcatchers than smaller wandering bands of tanagers (*Chlorospingus*, *Chlorothraupis*) and warblers (*Basileuterus*) that often search the undergrowth. Vocalizations and wing-whirring sounds indicating increased activity were seldom heard when these small groups foraged through a gnatcatcher's territory. According to Willis (pers. comm.) two lowland species, *Conopophaga roberti* and *C. aurita*, do occasionally follow mixed flocks.

Chestnut-crowned Gnatcatchers do not appear to follow swarms of army ants, but in the cooler highlands above 1000 m fewer ant swarms and ant-following birds are encountered than in the lowlands (Willis 1967). I saw no Chestnut-crowned Gnatcatchers at seven army ant swarms found between 900–1250 m elevation although I saw five species of antbirds attending the swarms.

On 12 February 1973, I watched a banded female gnatcatcher and later her mate carry food into a thicket where a rather bulky nest, looking much like a pile of debris, was wedged among ferns, aroids and a fallen limb. The nest, 65 cm above ground, was located on a steep west-facing slope at 1000 m elevation, about 1.5 m from the trunk of a large buttressed canopy tree. Approximately 5–6 m downhill from the nest location was an old land slump filled with a dense growth of melastomes (especially *Miconia theaezans*, and *M. multuplinervia*), *Cecropia* sp., vines, and aroids. The nest cup, measuring 60 × 40 mm inside diameter, was oval (from above) and lined

with fine rootlets and small pieces of dry leaves. The remainder of the nest was coarsely fashioned of small twigs (15%), leaves and leaf pieces (35–40%), and rootlets and fibers (45–50%). The nest was completely covered from above and sides by a curled heliconia leaf and other vegetation, making it almost invisible from any outside view. The adults always entered the nest from behind the large buttresses of the nearby tree.

The two blind, nearly naked young, about two days old on 12 February, weighed 6.0 and 6.3 g respectively. On 15 February one chick disappeared. By 23 February the remaining chick weighed 21.5 g and was largely feathered although it retained considerable body down and the primaries were still one-half sheathed. The juvenile already resembled the adults but with paler gray upperparts and the feathers of the crown and mantle heavily edged rusty buff presenting a scaled appearance. On 24 or 25 February the young fledged and remained with the adults throughout March and early April. On 6 April all three birds foraged in the undergrowth less than 5 m from the nest. This juvenile, last seen on 11 April and still with the adults, was distinguishable by a duller coloration, pale horn-colored legs, and only a trace of the broad silvery eye stripe.

Distraction behavior at the nest site does not seem to be well developed. When a human approached the nest both adults *chek* called, wing-flicked, and fluttered from perch to perch nearby but never far from concealing vegetation.

The present range of the Chestnut-crowned Gnat-eater in Colombia is reduced due to habitat destruction, particularly in the Central Andes. Colombia

is presently making remarkable efforts to preserve interesting and unique habitats through a national park system, and there is promise that this interesting little gnat-eater may be spared from the growing list of disappearing species.

I thank J. J. Wurdack for identifying the melastomes. Edwin O. Willis read the manuscript and provided much useful information on the genus. Stephen M. Russell helped in many ways and the people of the Corporación Autónoma Regional del Cauca (C.V.C.) made living and working in the Anchicayá Valley possible. A joint Peace Corps-University of Arizona program provided support.

LITERATURE CITED

- AMES, P. L., M. A. HEIMERDINGER, AND S. L. WARTER. 1968. The anatomy and systematic position of the antpipits, *Conopophaga* and *Corythopsis*. Postilla 114:1–32.
- CHUBB, C. 1910. On the birds of Paraguay. Ibis, 9th ser. 15:517–519.
- SICK, H. 1964. Family Conopophagidae. p. 57. In A. L. Thomson (ed.), A new dictionary of birds. McGraw-Hill, N.Y.
- SICK, H. 1965. Sons emitidos pelas aves independentemente do órgão vocal; caso de *Conopophaga lineata* (Wied). An. da Acad. Bras. de Cienc. 37: 131–140.
- WILLIS, E. O. 1966. Ecology and behavior of the Crested Ant-Tanager. Condor 68:56–71.
- WILLIS, E. O. 1967. The behavior of Bicolored Antbirds. Univ. California Publ. Zool. 79:1–132.

Accepted for publication 23 May 1974.

THE EVOLUTIONARY REAPPEARANCE OF ANCESTRAL MUSCLES AS DEVELOPMENTAL ANOMALIES IN TWO SPECIES OF BIRDS

ROBERT J. RAIKOW

Department of Biology
University of Pittsburgh
Pittsburgh, Pennsylvania 15260

In the course of a survey of the hind limb muscles in the order Passeriformes, I have discovered two examples of the apparent reappearance of ancestral muscles occurring as individual anomalies in two species. Although numerous species have been studied (George and Berger 1966, Berger 1969, Gaunt 1969, Raikow unpublished studies), these two muscles have never been found in any passerine bird, and indeed their absence constitutes part of the technical diagnosis of the order Passeriformes. Because these structures are present in a variety of other avian orders but absent in Passeriformes, we may suspect that they were lost somewhere in the history of this order. The occurrence of such a structure as an individual anomaly would then represent the reappearance of an ancestral feature. I will first describe the anomalies, then explain why they may represent ancestral reversions, and finally will speculate on the possible genetic mechanism that could produce them.

DESCRIPTION OF FINDINGS

M. iliofemoralis externus is present in many non-passerine orders, and is designated by the letter "D"

in the leg-muscle formulas that have been used by avian taxonomists. It is absent in the Coraciiformes and Piciformes, which are generally regarded as being close to the ancestry of the Passeriformes. It is called *M. gluteus medius et minimus* by George and Berger (1966: 393) who listed the groups in which it occurs.

In a Common Myna, *Acridotheres tristis* (Sturnidae) from Hawaii, I discovered what appears to be a perfectly distinct and normally developed *M. iliofemoralis externus* in the left hind limb (fig. 1A). The muscle has a fleshy origin 4 mm wide from the iliac crest just caudal to *M. ilirotrochantericus caudalis*. The fibers of the fan-shaped belly converge at the level of the cranial edge of the antitrochanter onto a flat tendon 0.6 mm wide and 4 mm long. The tendon passes distad, superficial to the tendon of *M. obturatorius medialis* and inserts on the femur just proximal to the tendon of *M. ischiofemoralis*. Its origin, insertion, and structure are perfectly normal, and its size and position relative to surrounding muscles are comparable to those in species in which it occurs normally. Unfortunately I was unable to examine the other limb of the specimen because it was incomplete when I obtained it, having been originally collected for other purposes. In six other specimens from the same population, I found no trace of this muscle in either limb (fig. 1B). Thus its presence is clearly an individual anomaly and not a species characteristic.

M. caudiliofemoralis pars iliofemoralis is designated by the letter "B" in muscle formulas. Its occurrence in birds is listed by George and Berger (1966: 407–408), where it is called *M. piriformis pars iliofemoralis*.