

TABLE 1  
DATA ON 3 PALE-BILLED WOODPECKER NESTS AND 1 LINEATED WOODPECKER NEST AT  
TIKAL IN JANUARY AND FEBRUARY 1976

Parameters	Nesting pairs			Comparisons with 1 nest of <i>D. lineatus</i>
	A	B	C	
Location of nest	Dead stub in forest	Dead stub edge of forest	Bole of living tree, edge of forest	Dead stub; part of living tree. In open.
Height above ground	3 m	9.5 m	10 m	9 m
Nestlings	1 Nestling	Not seen	1 Nestling	Nest excavation completed and copulations begun.
Date fledged	25 January	—	2 February	

away and again on the morning after, when I located it 50 m from the nest tree. The male made "kwirra" notes as if in response. When the male flew the young one followed, and when the young one approached, the parent moved away. These performances, kept up for 20 min, appeared to be a successful effort of the male to lead the fledgling into the forest.

*Comparisons with Lineated Woodpecker.*—Like the Crimson-crested (*C. melanoleucos*) (Kilham 1972, Wilson Bull. 84: 28) the closely related Pale-billed Woodpecker is sympatric with the Lineated Woodpecker (*Dryocopus lineatus*) of similar size. It would seem possible that the *Campephilus* species might compete with the latter for nesting sites. Although my data were limited, it did seem that competition was avoided in Panama by Lineateds breeding later than the Crimson-crested Woodpeckers and choosing different types of nest sites. I found much the same situation at Tikal. In the last of January and the first day of February, when young from three nests of Pale-billed Woodpeckers were well developed or fledged, a pair of Lineateds (Table 1) was excavating a nest hole and copulating. The copulation on 1 February lasted 7 sec and took place on a tree 60 m from the excavation. While the excavation was in a stub similar to those used by the Pale-bills it stood more in the open being surrounded, in part, by lawns and open roadways.—LAWRENCE KILHAM, *Department of Microbiology, Dartmouth Medical School, Hanover, New Hampshire 03755*. Accepted 9 July 76.

**Pale-billed Woodpeckers robbed of nest hole by Collared Araçaris.**—On 14 January 1976, while staying at LaSelva, a station run by the Organization for Tropical Studies, Inc., in Costa Rica, I found a male Pale-billed Woodpecker (*Campephilus guatemalensis*) excavating a nest in a stub 10 m tall and 45 cm dbh. The stub had fungal brackets and appeared to be well rotted, for the male threw many billfuls of sawdust from a hole 7 m above the ground. I watched the male excavating for 115 min in the morning and the female for 57 min in the afternoon. Although able to get completely within the hole, the male flew off at dusk and did not roost there. On the next day, heavy rains fell, and I watched the male excavate for 73 min in the middle of the day. On 16 January, at 0755, the pair of woodpeckers had an abortive copulation, followed in 3 min by a full copulation lasting 7 sec on a tree 50 m from the nest.

The nest stub rose above small trees in second growth forest at the edge of a field. A group of 4 Collared Araçari Toucans (*Pteroglossus torquatus*) came by frequently and on 14 January I noticed that one paused 6 m away, as if watching the male woodpecker excavating. My wife found an araçari looking from the nest hole at 0945 two days later. At 1000 I was watching as 4 araçaris came to a branch 7 m from the hole. First one, then a second flew to the hole and entered, remaining inside for several minutes. I did not see the woodpeckers by their nest stub during the morning.

Both the male and female woodpeckers excavated briefly in the afternoon. The tapping and exchanges of intimate notes accompanying their meetings were similar to those described (Kilham 1972, Wilson Bull. 84: 28) for the Crimson-crested Woodpecker (*C. melanoleucos*), a closely related species. I returned in the late afternoon to see what bird, araçari or woodpecker, might roost in the hole. On arrival at 1710 I found an araçari looking from the entrance. When the male Pale-billed Woodpecker flew to a tree 6 m away, the araçari withdrew inside. The woodpecker slowly ascended the tree, occasionally rapping (a displacement activity). It flew away as dusk came on 10 min later. This was the last that I saw of the woodpeckers by the nest stub. The araçari had taken possession of the hole, it seemed, at the time of its completion, a situation previously witnessed for Crimson-crested Woodpeckers and Collared Araçari in Panama (Kilham, *ibid.*).

Skutch (1958, Condor 60: 201) noted that the Pale-billed and Lineated (*Dryocopus lineatus*) are the only

woodpeckers providing holes large enough for Araçari Toucans, among which he includes both the Collared and the similar sized Fiery-billed (*P. frantzii*).

In his experience araçarís only occupied holes after the woodpeckers were through nesting. He describes, however, how a male Lineated guarded its nest at a time when Fiery-billed araçarís were searching for holes in the neighborhood (1969, *Pacific Coast Avifauna* 35: 428).

Special features of my observations on two species of *Campephilus* woodpeckers, *C. guatemalensis* and *C. melanoleucos* were (1) that they made no effort to either guard or to defend their nests and (2) that the araçari took over the holes at a time when the woodpeckers were copulating and about to lay eggs. It would seem from these observations that araçarís, by disrupting the nesting of the woodpeckers, might be a factor limiting their populations. It may be, however, that the severity of competition between the *Campephilus* woodpeckers and araçarís is related to habitat. Both of the incidents witnessed were in low second growth forest where dead stubs and trees suitable for nest excavations were scarce and the toucans plentiful. In a mature forest at Tikal in Guatemala, in contrast, where I found three pairs of Pale-billed Woodpeckers feeding young in January 1976, suitable stubs appeared to be relatively abundant and Collared Araçarís scarce. I saw none while watching the woodpeckers. It is of interest from this point of view that Skutch (1958) states of Fiery-billed Araçarís that he did not find them "sleeping or breeding in the midst of intact forest."—LAWRENCE KILHAM, *Department of Microbiology, Dartmouth Medical School, Hanover, New Hampshire 03755*. Accepted 9 July 76.

**Some clarifications about *Ramphastos "aurantiiostris."***—The toucan known as *Ramphastos aurantiiostris* Hartert (1925, *Nov. Zool.* 32: 143) has been considered similar to the sympatric *R. t. tucanus* except that the sides of the bill are light yellowish orange to reddish orange instead of dark red to black. Until 1975 the indicated *aurantiiostris* character had been recorded only from museum specimens taken in eastern Venezuela, the Guianas and northeastern Brazil. In this regard, over some 15 years I have spent several months accumulated time in eastern Venezuela from where specimens that show this character have been collected, but I have never seen a living bird display it. The closest have been individuals of *R. t. tucanus* (identified by voice) with the bill color somewhat dusky scarlet instead of the more usual darker hue. The first published evidence of *aurantiiostris*-like birds in life was recently given by Bourne (1975, *Living Bird* 13: 102), who reported birds from Guyana with bill "dark cadmium orange" (as a minority amidst birds showing "dark alizarine crimson").

Although most recent publications recognize *R. aurantiiostris*, they usually indicate doubt (of one kind or another) about its status. Recently, Haffer (1974, *Nuttall Ornithol. Club* 14: 291, 305) indicated his belief that *aurantiiostris* specimens are "merely particular phenotypes of the variably red-billed *tucanus* population of eastern and northeastern Amazonia, which in life may be less distinct than they are as discolored museum specimens." He considered the form taxonomically invalid. Bourne (1975: 103) also considered the orange-billed birds he observed to be only variants of *R. tucanus* as they interbred with red-billed birds.

I hope that the opinions of Haffer and Bourne will be generally accepted, but as *R. aurantiiostris* has shown considerable persistence in the past, I present the following more recent evidence. It documents beyond doubt that the orange bill can also result from postmortem color change and also calls attention to a character that Hartert regarded as more important than the orange-red color.

In July 1975, while showing some visitors the synoptic series of the bird collection of the Estación Biológica de Rancho Grande in Venezuela, I noticed that among the *R. t. tucanus* were two specimens of "*aurantiiostris*." Circumstances prevented closer investigation at the time, but I took color transparencies of these two specimens. Examination in December 1975 revealed the following colors for the normally dark red areas of the sides of the bill of these birds. The colors are approximated from Smithe (1975, *Naturalist's Color Guide*, Amer. Mus. Nat. Hist.) and are capitalized only when used in direct reference.

EBRG #6986, ♀, 27 Feb 1969, Río Grande (ca. 20 km east of El Palmar), n. Bolívar state, Venezuela. Maxilla: orange washed with very pale gray (a slightly dull, but not dark Spectrum Orange); some scattered mottling of light to medium gray, sparse on the right side, profuse on the left. Mandible: similar except that the distal fifth of the area is dull scarlet, and this color extends posteriorly in a thin line bordering the blackish areas of the tomium and the gonyx.

EBRG #6985, ♂, same date and locality. Maxilla: yellowish orange washed with very pale gray (approximating Buff but somewhat lighter and more orange); some mottling of light to medium gray relatively sparse on both sides. Mandible: yellowish orange so thoroughly masked by dark gray as to result in a yellowed Dusky Brown with only scattered flecks of the pale base hue showing through; in the proximal region on the left side is one large spot of color as on the maxilla.