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NOTES ON CENTRAL AMERICAN BIRDS, WITH DESCRIPTIONS OF NEW FORMS

BY W. DEW. MILLER AND LUDLOW GRISCOM

The present paper, like its predecessors,¹ is a by-product of the study of our collections from Nicaragua and faunally related parts of Mexico and Central America, the results of which will appear in a memoir on Nicaraguan birds. The great majority of the new forms described in this paper are from the Subtropical Zone of the mountains in the interior of northern Nicaragua, which are entirely disconnected from the better-known faunas of the Guatemalan and Costa Rican highlands. It is by no means surprising, therefore, that a large proportion of the species have responded to isolation and exhibit marked racial variation. Barring a few scattered specimens in the British Museum and Field Museum, this institution alone possesses an adequate representation of the birds of these remote and relatively inaccessible highlands.

We are again greatly indebted to Dr. J. Dwight for the privilege of using his collections from Costa Rica and Guatemala for comparison. Important loans of rare species and types are gratefully acknowledged from the authorities of the U. S. National Museum, the Bureau of Biological Survey, the Museum of Comparative Zoölogy, and the Field Museum of Natural History.

***Dendrortyx leucophrys nicaraguae*, new subspecies**

SUBSPECIFIC CHARACTERS.—Similar to typical *Dendrortyx leucophrys* (Gould) of Guatemala, but decidedly smaller and generally darker in coloration; rufous centers to the feathers of the nape, back and chest darker, less extensive below; auricular and suborbital region sooty black, with a very few dark chestnut shaft streaks, in marked contrast to the rufous of the side of the neck, instead of rufous and dusky, uniform with the side of neck, as in typical *leucophrys*; tail above and under tail-coverts noticeably darker; gray of mantle and chest distinctly darker.

TYPE.—No. 103,243, Amer. Mus. Nat. Hist.; ♂ ad.; Jalapa (4000 ft.), Nicaragua; January 20, 1909; W. B. Richardson.

¹1921, Amer. Mus. Nov., No. 25; 1925, No. 159.

SPECIMENS EXAMINED

Dendrortyx l. leucophrys.—GUATEMALA: 2? (ex U. S. National Museum, one with wings cut off, both with tails damaged).

Dendrortyx l. nicaraguæ.—NICARAGUA: Jalapa, 3 ♂, 3 ♀.

Dendrortyx hyospodius.—COSTA RICA: Navarro, 1 ♀; Agua Caliente, 1 ♂.

The tree partridges of this group are so rare in collections that the material listed above apparently represents almost all the specimens available in America. The new form is so distinct as to require no additional comment. The status of *D. hyospodius* is by no means so clear, however. It is much more distinct from *leucophrys nicaraguæ* than the latter is from typical *leucophrys*. The male has the shaft streaks of chestnut below greatly reduced in width and on the breast they are blackish or sooty, not chestnut. The female, however, has more chestnut shaft streaks and fewer sooty ones. Both birds have the same dark auricular and suborbital region, and the same generally dark coloration as *leucophrys nicaraguæ*, but the tail above is distinctly lighter, with much less freckling. It is also slightly larger. On the basis of our material, while obviously a representative, it is specifically distinct. We note, however, that the records of *leucophrys* from Costa Rica were probably based on specimens similar to our female with more chestnut than sooty shaft stripes to the breast feathers, and it is possible that when an adequate series exists, this character might lose its specific value.

MEASUREMENTS OF WING

Guatemala (ex Salvin)	sex ?	154 mm.
"	"	159
Nicaragua	2 ♂	144.5–146
"	3 ♀	136–142
Costa Rica	1 ♂	152
"	1 ♀	146.5
" (ex Salvin and Godman)	sex ?	150

***Catharus melpomene albidior*, new subspecies**

SUBSPECIFIC CHARACTERS.—Similar to *Catharus m. melpomene* (Cabanis) of Vera Cruz and Guatemala, but upperparts olive-brown, rufescent only on upper tail-coverts; underparts a slightly paler gray, a little clearer in tone, the white area on the center of the abdomen more extensive and more sharply defined; averaging smaller, especially the tail. Very closely resembling *Catharus m. clarus* Jouy of western Mexico in coloration, but much smaller, the latter the largest of the races. Similar also to *Catharus m. costaricensis* Hellmayr of Costa Rica, but slightly browner, less gray above; much lighter below, and slightly smaller, especially the tail.

TYPE.—No. 144,414, Amer. Mus. Nat. Hist.; ♀ ad.; between Jinotega and San Rafael del Norte, Nicaragua (alt. 3000 ft.); April 4, 1917; Miller and Griscom.

SPECIMENS EXAMINED

Catharus melpomene melpomene.—MEXICO: Vera Cruz, Jalapa, 4 ♂, 4 ♀, 1 ? GUATEMALA: 1 ?

Catharus melpomene clarus.—MEXICO: Jalisco, 3 ♂, 1 ♀.

Catharus melpomene albidior.—NICARAGUA: 6 ♂, 5 ♀, 1 ?

Catharus melpomene costaricensis.—COSTA RICA: 7 ♂, 2 ♀, 1 ?

We present below a synopsis of the characters differentiating the four Central American races. We entirely endorse the opinion of Hellmayr and Todd that the South American *birchalli* and *aurantiistrois* are merely races of the species *melpomene*.

1.—*Catharus melpomene melpomene*. Above decidedly russet brown; below light brownish gray, the center of the abdomen white.

2.—*Catharus melpomene clarus*. Above more olive, less rufescent brown; slightly paler below; size slightly larger than *melpomene*.

3.—*Catharus melpomene albidior*. Above olive-brown; below a lighter, purer gray, the white area on abdomen more extensive and more contrasted; size smaller than *melpomene*.

4.—*Catharus melpomene costaricensis*. Above averaging slightly more grayish olive-brown than *albidior*; below darker and more extensively gray even than *melpomene*; we cannot appreciate any trenchant difference in size compared to *melpomene*.

MEASUREMENTS OF MALES

	Wing	Tail
<i>melpomene</i>	76 -81.5 (79.5)	63.5-68 (65.6) mm.
<i>clarus</i>	83.5-88 (85.6)	67.5-72.5 (70.2)
<i>albidior</i>	76 -80.5 (77.3)	58 -62 (60.8)
<i>costaricensis</i>	76 -83 (79)	59 -66 (63)

MEASUREMENTS OF FEMALES

	Wing	Tail
<i>melpomene</i>	75 -81 (78.0)	60 -65.5 (62.8) mm.
<i>clarus</i>	78.5-83 (80.9)	64.5-67 (66)
<i>albidior</i>	72 -76 (74.0)	54 -59.5 (57.4)
<i>costaricensis</i>	75 -76.5 (75.8)	60 -63 (61.5)

***Turdus grayi megas*, new subspecies**

SUBSPECIFIC CHARACTERS.—Most closely related to *Turdus grayi tamaulipensis* (Nelson) of the arid coastal plain of eastern Mexico and Yucatan, but very slightly darker above; underparts distinctly darker, more grayish brown, less clay-colored; size much larger.

TYPE.—No. 101,371, Amer. Mus. Nat. Hist.; ♂ ad.; Matagalpa, Nicaragua (alt. 2200 ft.); March 22, 1907; W. B. Richardson.

SPECIMENS EXAMINED

Turdus grayi grayi.—MEXICO: Jalapa, Vera Cruz, 3 ♂, 1 ♀, 1 ? GUATEMALA:

Turdus grayi tamaulipensis.—MEXICO: Tamaulipas, 6 ♂, 3 ♀; Vera Cruz, 1 ?; Yucatan, 1 ♂, 8 ?

Turdus grayi megas.—NICARAGUA: Matagalpa, 3 ♂, 2 ♀; Rio Grande, 1 ♂; Chontales, 1 ♀; Los Sabalos, 2 ♀; Volcan Viejo, 1 ♂; Chinandega, 1 ♂, 1 ♀.

Turdus grayi casius.—Large series from PANAMA and COSTA RICA.

We offer the following brief diagnosis of the relationships of the Central American races of this thrush.

1.—*Turdus grayi grayi*. Above ochraceous olive; below brownish buff or clay-color; size larger, wing, ♂, averaging 125.2 mm.

2.—*Turdus grayi tamaulipensis*. Above lighter, more grayish olive; below pale wood-brown; slightly smaller, wing, ♂, averaging 122.2.

3.—*Turdus grayi megas*. Above slightly darker grayish olive than the last; below darker and more grayish brown; size largest, wing, ♂, averaging 129.1.

4.—*Turdus grayi casius*. Above warm brownish olive; below resembling *megas* in being darker than *tamaulipensis*, but clay-color and not grayish olive; the smallest race, wing, ♂, averaging 120.3.

This summary will make it evident that typical *grayi* is the most distinctly colored race, while *casius* is also very different in the color of its upperparts. In coloration *megas* and *tamaulipensis* are closely related, but the difference in size is marked, and geographically they are widely separated. Birds from Los Sabalos in extreme southeastern Nicaragua show a slight approach to *casius* in size and in the color of the underparts, but should be referred to *megas* on the color of the upperparts. We append the measurements of the new race.

	Wing	Tail
Four males	124–132 (129.1)	99–107.5 (104) mm.
Five females	118.5–127 (123.5)	95–107 (100.8)

***Turdus plebejus rafaelsensis*, new subspecies**

SUBSPECIFIC CHARACTERS.—Intermediate in color between typical *T. plebejus* Cabanis of Costa Rica and *T. plebejus differens* Nelson of Chiapas; dark hair-brown above instead of olivaceous hair-brown or warm sepia; streaking of throat less developed than in *plebejus*, absent in *differens*; less gray below than *plebejus*, but lacking the raw umber tints of *differens*; under tail-coverts decidedly buffier than in *plebejus*, similar to *differens*; bill brownish as in *differens*; much smaller than either.

TYPE.—No. 144,409, Amer. Mus. Nat. Hist.; ♂ ad.; San Rafael del Norte (4300 ft.), Nicaragua; March 30, 1917; Miller and Griscom.

SPECIMENS EXAMINED

Turdus plebejus plebejus.—COSTA RICA: 11 ♂, 3 ♀. PANAMA: 6 ♂, 4 ♀.

Turdus plebejus rafaelsensis.—NICARAGUA: 6 ♂, 2 ♀.

Turdus plebejus differens.—MEXICO: Chiapas, 2 ♂ (including type).

The intermediate character of the new form removes any reason for treating *differens* as a distinct species. We are greatly indebted to the

authorities of the Biological Survey for the opportunity of examining the two known specimens of the latter. We find that a series from Cerro Flores, eastern Chiriqui, is smaller than typical *plebejus* from Costa Rica and western Chiriqui, but, as they do not differ in any other respect, so slight a difference does not seem worthy of formal designation. Color-change with age seems particularly marked in this species. Not only is an old Costa Rica skin browner than others more recently collected, but a series from the Volcan de Chiriqui collected in 1901 is appreciably browner than material only five years old or less from Costa Rica and eastern Chiriqui, making it appear as if they were subspecifically distinct. Our Nicaragua series, collected in 1907 and 1917 does not show any differences in color with age.

MEASUREMENTS OF ADULT MALES

	Wing	Tail
Two males; Chiapas (<i>differens</i>)	133 -138	104 -105 mm.
Six males; Nicaragua (<i>rafaelensis</i>)	127.2-134.5	96 -102
Seven males; Costa Rica (<i>plebejus</i>)	135 -139	101.2-109.5
One male; western Chiriqui (<i>plebejus</i>)	135.3	103.2
Three males; eastern Chiriqui (<i>plebejus</i>)	128 -136.2	94.5-102

***Myadestes unicolor pallens*, new subspecies**

SUBSPECIFIC CHARACTERS.—Similar to typical *Myadestes unicolor unicolor* Selater of Vera Cruz, Mexico, but paler throughout, much paler below, becoming light gray or even grayish white on the center of the belly; edgings of primaries and secondaries buffy grayish brown, instead of slate; a little smaller.

TYPE.—No. 144,399, Amer. Mus. Nat. Hist.; ♂ ad.; San Rafael del Norte (5000 ft.), Nicaragua; March 29, 1917; Miller and Griscom.

SPECIMENS EXAMINED

Myadestes u. unicolor.—MEXICO: Vera Cruz, 3 ♂, 3 ♀; Chiapas, 2 ♂; no locality, 4?

Myadestes u. pallens.—NICARAGUA: Rio Coco, 1 ♂; Ocotal, 1 ♂, 2 ♀; Jalapa, 1 ♂; San Rafael del Norte, 4 ♂, 3 ♀.

This new form is so distinct as to require no comment. It should be noted, however, that it shows no approach to *M. melanops* Salvin of Costa Rica. Two specimens from Chiapas are even smaller than *pallens*, but similar in color to typical *unicolor*. They may represent an undescribed form.

		Wing	Tail
Vera Cruz	2 ♂	98.3-103	94.5-100 mm.
Nicaragua	5 ♂	91.5- 96	83 - 92.5
Chiapas	2 ♂	90.5- 93	82.5- 87
		Wing	Tail
Vera Cruz	3 ♀	94.5-96.5	87 - 93.5 mm.
Nicaragua	4 ♀	91 -95	79.5- 87.5

Cyclarhis flaviventris nicaraguæ, new subspecies

SUBSPECIFIC CHARACTERS.—Similar to *Cyclarhis flaviventris flaviventris* Lafresnaye of southern Mexico but yellow of underparts paler, particularly on the flanks and under tail-coverts, fading to white on the center of the belly and vent. Similar also to *Cyclarhis flaviventris subflavescens* (Cabanis) of Costa Rica, but yellow of underparts deeper, less tinged with green on the chest; white area on belly greatly reduced.

TYPE.—No. 144,472, Amer. Mus. Nat. Hist.; ♂ ad.; Matagalpa, 2200 ft., Nicaragua; April 21, 1917; Miller and Griscom.

SPECIMENS EXAMINED

Cyclarhis flaviventris flaviventris.—MEXICO: Vera Cruz, 4 ♂, 1 ♀; Oaxaca, 1 ♀. GUATEMALA: 1 ? HONDURAS: 1 ♂.

Cyclarhis flaviventris nicaraguæ.—NICARAGUA: 8 ♂, 7 ♀.

Cyclarhis flaviventris subflavescens.—COSTA RICA: 8 ♂, 2 ♀.

The new race is exactly intermediate between *C. flaviventris* and *C. flavipectus subflavescens*, making it impossible to continue them as distinct species. As *flaviventris* is the older name, *flavipectus* and various South American races will become races of *flaviventris*. The following summary may assist in distinguishing the three main subspecies in Central America. It should be noted that the Honduras specimen is apparently typical *flaviventris*. None of the Nicaragua specimens show any real approach to *flaviventris*. One, however, has considerably more white below than the others, in this respect a connecting link between *nicaraguæ* and *subflavescens*.

1.—*Cyclarhis f. flaviventris*. Uniform rich canary-yellow below.

2.—*Cyclarhis f. nicaraguæ*. Paler canary-yellow below; under tail-coverts yellowish white; middle of belly and vent white.

3.—*Cyclarhis f. subflavescens*. Greenish lemon-yellow below; abdomen, vent and under tail-coverts abruptly white.

Certhia familiaris jaliscensis, new subspecies

SUBSPECIFIC CHARACTERS.—Resembling *Certhia familiaris alticola* Miller of Vera Cruz, but browner, less black above, the rump tawny rather than chestnut; averaging smaller, especially the wing. Similar also to *Certhia familiaris albescens* Berlepsch of Durango, differing not only in the respects given above, but underparts more brownish gray, less white.

TYPE.—No. 105,852, Amer. Mus. Nat. Hist.; ♂ ad.; Volcan de Nieve, Sierra Nevada de Colima, 13,000 ft., Jalisco, Mexico; September 6, 1905; J. H. Batty.

Certhia familiaris extima, new subspecies

SUBSPECIFIC CHARACTERS.—Resembling *Certhia familiaris alticola* Miller of Vera Cruz, but wing shorter, bill much longer; underparts and spots on primaries whiter, as in *albescens*.

TYPE.—No. 144,478, Amer. Mus. Nat. Hist.; ♂ ad.; San Rafael del Norte, 4000 ft., Nicaragua; March 23, 1917; Miller and Griscom.

SPECIMENS EXAMINED

Certhia familiaris albescens.—MEXICO: Jalisco, Guadalajara, 2 ?; Durango, 1 ♂, 3 ♀; Sonora, 1 ♂; Chihuahua, 1 ♀. Southern ARIZONA: large series.

Certhia familiaris jaliscensis.—MEXICO: Jalisco, Volcan de Colima, 3 ♂, 1 ♀; La Cienaga, 1 ♂; Zapotlan, 1 ♂; Las Cañas, 1 ♀; Volcan de Fuego, 1 ♀; La Pisagua, 1 ♂.

Certhia familiaris alticola.—MEXICO: Vera Cruz, Las Vigas, 3 ♂, 2 ♀, 1 ?

Certhia familiaris extima.—NICARAGUA: San Rafael del Norte, 5 ♂, 1 ♀.

Certhia familiaris alticola G. S. Miller (1895, Auk, p. 186) is a new name for *Certhia mexicana* Gloger, preoccupied, described from "Mexico." We suggest Las Vigas, Vera Cruz, as a definite type-locality. Birds from parts of Jalisco prove to be lighter above and smaller. It is noteworthy that they are in no way intermediate between *alticola* and *albescens*, which occurs in northern Jalisco. A single old Guatemalan skin is a much richer brown above than any other specimen, but we note that Mr. Ridgway was unable to appreciate any color differences between Guatemalan and Mexican birds, so our specimen is perhaps abnormal or has undergone some post-mortem change. The brown creeper in Nicaragua is as dark above as *albescens* or *alticola*, but is white below as in *albescens*, and has a remarkably long bill. We give a summary of the characters of the races, as we understand them. The measurements given are all of males, the only sex adequately represented for purposes of comparison. Brackets around the tail measurement indicate that the rectrices were greatly worn.

	Upperparts	Underparts
<i>jaliscensis</i>	Browner, less sooty above; rump paler	Brownish gray
<i>alticola</i>	Darker above, more sooty black; rump darker	Brownish gray
<i>albescens</i>	As in <i>alticola</i>	Whiter below
<i>extima</i>	As in <i>alticola</i>	As in <i>albescens</i>

	Wing	Tail	Culmen
<i>jaliscensis</i>	58-62.2	52.5-63	12 -13.8 (12.9) mm.
<i>alticola</i>	64-67.8	[49.5-57.8]	13.7-14.5 (14)
<i>albescens</i>	59-66	57 -62	12.5-14 (13.1)
<i>extima</i>	59-61.4	54 -60.4	15.5-16.3 (16)

***Vermivora superciliosa parva*, new subspecies**

SUBSPECIFIC CHARACTERS.—Similar to typical *Vermivora superciliosa superciliosa* (Hartlaub) of Guatemala in color, but much smaller, bill proportionately longer; wing, ♂, 56 mm.; tail, 39.2; culmen, 11.

TYPE.—No. 144,485, Amer. Mus. Nat. Hist.; ♂ ad.; near Jinotega (alt. 3500 ft.), Nicaragua; April 6, 1917; W. DeW. Miller.

SPECIMENS EXAMINED

Vermivora superciliosa mexicana.—MEXICO: Tamaulipas, 1 ♂; Nuevo Leon, 1 ♂; San Luis Potosi, 1 ♂, 1 ♀; Jalisco, 7 ♂; Mexico, 1 ♂, 1 ♀.

Vermivora superciliosa superciliosa.—GUATEMALA: 6 ♂.

Vermivora superciliosa parva.—NICARAGUA: 1 ♂, the type.

This warbler is now known to have a much wider distribution than was suspected a few years ago. It was first recorded from northeastern Mexico by Phillips (1911, Auk, p. 84). We entirely endorse the generic distinctness of this species and *gutturalis* from *Compsothlypis*, as pointed out by Mr. Ridgway ('Birds of N. and Mid. Amer.', II, p. 475), but we cannot see how *Oreothlypis* is separable generically from *Vermivora*. The only structural character claimed, the relatively longer tail, does not hold. The different style of coloration, if used as a generic character, would divide the genus into four other groups.

With an excellent series of males from Guatemala in the Dwight Collection available for comparison, the Mexican series proves to be noticeably lighter above, particularly the slate-gray pileum. The greatest contrast, however, is found in the auricular region below the superciliary. This region is dark slate or blackish in the typical form, just as light-colored as the pileum in Mexican birds. The name *mexicana* Cabanis is apparently available for the Mexican subspecies. Our single Nicaraguan male is perceptibly darker than the typical form, but a series would be required to confirm this character. In the following table of measurements we would point out that our specimens from northeastern Mexico are larger than those from Jalisco.

	Wing	Tail	Culmen	
One male; Tamaulipas (<i>mexicana</i>)	66	49.2		mm.
One male; Nuevo Leon (<i>mexicana</i>)	67	50.8	11.5	
Five males; Jalisco (<i>mexicana</i>)	62-65	47.4-50	11	-11.8
Six males; Guatemala (<i>superciliosa</i>)	60-67	45 -50.4	10.8-11	
One male; Nicaragua (<i>parva</i>)	56	39.2	11	

A STUDY OF *PEUCEDRAMUS OLIVACEUS*

We know of no later critique of the olive warbler than that of Mr. Ridgway (1902, 'Birds of North and Mid. Amer.', II, p. 495), who pointed out appreciable differences in color and size between Arizona, southern Mexico and Guatemala specimens, but lacked the necessary material to determine the constancy of the differences noted. With nearly four times as much material before us as he had available, this species proves to be a very variable one, easily divisible into five subspecies with definite geographic ranges, along the same lines as those of variable species in other groups.

Giraud described the olive warbler from "Texas," along with other species, none of which came from there. The authorities of the U. S. National Museum have kindly loaned us the type. We identify it as belonging to the subspecies of the east slope of the mountains of Vera Cruz, a highly probable source at that time (about 1840). Its great age has caused it to become somewhat discolored below, and distinctly browner, less gray above, but when due allowance for this has been made, both in color and size, there can be no question of its proper disposition. We might add that a specimen from Guatemala taken in 1873 is appreciably browner above and more discolored below than a series recently collected by A. W. Anthony. Similarly faded specimens may have caused Mr. Ridgway to reduce to synonymy his own *P. o. aurantiacus*, which in our opinion is a well-marked form. The application of the name *taeniata* Du Bus from "Mexique" we regard as indeterminable. The description is a generalized one, and no measurement other than the total length (for subspecies quite worthless) is given. The upperparts are described as "*cinereis*," which would be most applicable to the race from extreme northwest Mexico. But the writer was not aware that the presence or absence of a slight olive tinge was of the slightest importance, and such a source of origin is highly improbable so early in the last century. Should the type exist, it might, of course, prove upon comparison and measurement not to be typical *olivaceus*. We present below our suggested synopsis of the races. A list of specimens examined and a table of measurements will be found at the end of the article.

***Peucedramus olivaceus olivaceus* (Giraud)**

SUBSPECIFIC CHARACTERS.—Upperparts mouse-gray distinctly tinged with olivaceous, giving it a slightly darker and browner effect than other races, often almost pure olive on rump and upper tail-coverts; secondaries and primaries distinctly bordered with olive-green in spring plumage; yellowish olive-green collar on hind neck complete, not invading occiput; head and throat rich tawny ochraceous; underparts strongly tinged with olive-gray; size relatively large. Adult females and immature have the same olivaceous tinge both above and below; the sides of neck and throat of adult females distinctly gamboge-yellow.

TYPE.—No. 47,699, U. S. Nat. Mus., *ex* Giraud Collection; "Mexico"; we suggest Las Vigas, Vera Cruz.

RANGE.—Probably the boreal region in the mountains of Vera Cruz.

***Peucedramus olivaceus jaliscensis*, new subspecies**

SUBSPECIFIC CHARACTERS.—Resembling typical *olivaceus* in color, but smaller; wing 72–76 mm. instead of 76–80 mm.

TYPE.—No. 36,826, Amer. Mus. Nat. Hist.; ♂ ad.; Zapotlan, Jalisco; December 23, 1889; A. Buller.

RANGE.—We have seen specimens only from various localities in Jalisco and Chimalpa in the Department of Mexico; perhaps found in the mountains throughout central and southwestern Mexico. All of our birds are either in very worn or very fresh plumage and we cannot be sure that this race is exactly like *olivaceus* in color.

***Peucedramus olivaceus arizonæ*, new subspecies**

SUBSPECIFIC CHARACTERS.—Very different in coloration from the two preceding subspecies; upperparts plain mouse-gray, in spring plumage almost never tinged with olivaceous, even on the upper tail-coverts, appearing lighter and grayer than typical *olivaceus*; collar on hind neck not so complete, usually invading the occiput; primaries rarely if ever edged with olive-green in spring plumage; head and throat plain ochraceous, duller than in typical *olivaceus*; underparts lighter, the center of the belly purer white, more contrasted with the flanks, which are less olivaceous, more grayish brown; size as in typical *olivaceus*. Throat and side of neck of adult female and immature pale lemon-yellow.

TYPE.—No. 47,606, Dwight Collection; ♂ ad.; Paradise, Chiricahua Mts., Arizona; April 4, 1917; Austin Paul Smith.

RANGE.—Mountains of southern and central Arizona south at least to Chihuahua and perhaps east to western Tamaulipas (Miquihuana). The single specimen from there is a worn breeding bird (July 19), but is much darker gray above than specimens in similar condition from Arizona. It may represent an unnamed form. Chihuahua specimens are slightly smaller, approaching *jaliscensis*.

***Peucedramus olivaceus aurantiacus* Ridgway**

SUBSPECIFIC CHARACTERS.—Resembling typical *olivaceus* in the head and throat, being rich tawny ochraceous; in other respects decidedly different, a clearer gray above and below than any of the preceding subspecies; upperparts distinctly darker than in *arizonæ*, light slate-gray rather than mouse-gray; underparts also appearing darker, as the flanks and sides are smoke-gray; size even smaller than *jaliscensis*, with a proportionately longer bill. Adult female similar to typical *olivaceus*, but bright gamboge-yellow of side of neck in marked contrast to darker olive-green of crown, and gray both above and below as in adult male.

TYPE.—No. 30,629, U. S. Nat. Mus. (not seen by us); Chilasco, Vera Paz, Guatemala.

RANGE.—Mountains of central and western Guatemala.

***Peucedramus olivaceus micrus*, new subspecies**

SUBSPECIFIC CHARACTERS.—Closest in general coloration to *P. o. aurantiacus*, but crown and occiput more golden tawny, actually lighter than throat; collar on hind neck more yellowish; primaries edged with white, and secondaries faintly edged with yellowish in spring plumage; slightly paler below; even smaller; bill at the base actually, as well as relatively, wider by a millimeter than any individual of any other subspecies.

TYPE.—No. 101,450, Amer. Mus. Nat. Hist.; ♂ ad.; San Rafael del Norte, Nicaragua; April 18, 1907; W. B. Richardson.

RANGE.—Pine forest belt in the mountains of northern Nicaragua, between 3500 and 4500 ft.

SPECIMENS EXAMINED

Peucedramus olivaceus arizonæ.—ARIZONA: 20 ♂ ad., 9 ♀ ad., 14 ♂ imm., 1 ♀ imm. MEXICO: Chihuahua, 3 ♂ ad.; Miquihuana, Tamaulipas, 1 ♂ ad.

Peucedramus olivaceus jaliscensis.—MEXICO: Jalisco, Zapotlan, 1 ♂ ad.; La Pisagua, 3 ♂ ad., 1 ♀ ad.; Volcan de Colima, 2 ♂ ad., 4 ♂ imm.; Chimalpa, Dept. of Mexico, 1 ♂ ad.

Peucedramus olivaceus olivaceus.—MEXICO: no locality, the type; Las Vigas, Vera Cruz, 6 ♂ ad., 5 ♀ ad.; 5 ♂ imm.

Peucedramus olivaceus aurantiacus.—GUATEMALA: Volcan de Fuego, 1 ♂ ad.; Momostenango, 4 ♂ ad., 1 ♀ ad., 1 ♀ imm.; Chichicastenango, 2 ♂ ad., 1 ♀ ad.

Peucedramus olivaceus micrus.—NICARAGUA: San Rafael del Norte, 2 ♂ ad.

MEASUREMENTS OF ADULT MALES

	Wing	Tail	Culmen
Eleven specimens; Arizona (<i>arizonæ</i>)	75.3–80	53.8–58.5	10 –11 mm.
One specimen; Chihuahua (<i>arizonæ</i>)	73.3	51.1	10.6
One specimen; Tamaulipas (<i>arizonæ</i>)	76.8	55.5	10.5
Six specimens; Jalisco (<i>jaliscensis</i>)	72 –76	51.1–53	10 –10.6
Seven specimens; Vera Cruz (<i>olivaceus</i>)	76 –80	53.5–56	10.4–11.1
Six specimens; Guatemala (<i>aurantiacus</i>)	70 –73.6	50 –54.2	10.5–11.5
Two specimens; Nicaragua (<i>micrus</i>)	68 –69.5	47.6–49.6	10.3–10.4

A REVIEW OF THE RACES OF *ATTILA BRASILIENSIS* LESSON

The great variation in this species and the lack of adequate material of any one race to show its extent has caused, we believe, the description of races and even species, the validity of which is seriously open to question. The seventy-five specimens before us show conclusively that *brasiliensis* and *citreopygus* intergrade, but they are not a sufficient basis for a definite revision of all the races. The most pertinent critique of *Attila brasiliensis* is that of Hellmayr (1906, Nov. Zool., XIII, pp. 328–330), who correctly describes the immature plumage, and calls attention to the variation in the color of the upperparts as to the preponderance of green or brown. Turning now to our own material, additional types of variation are (1) the ground color of the underparts from white with yellowish flanks to golden yellow tinged with tawny on flanks and breast; (2) the crown and breast may be distinctly gray in contrast to the olive or brownish back; (3) the forehead is usually lighter than the crown, but may be whitish, grayish or bright yellow; sometimes, however, it is not different from the crown; (4) the heaviness and extent of the flammulations below; (5) the yellow of the rump varies in depth and in the extent. Starting with the geographical extreme in eastern Mexico we have a bird with russet-brown upperparts, never becoming olive; in Nicaragua, Costa Rica, and western Panama, all specimens

have a marked olive-green suffusion on the head and nape, and the back, while brown, is usually less russet; in eastern Panama and northern Colombia we have an olive-green bird with a perceptible tinge of brown on the lower back and tail; in western Colombia and west Ecuador we find a uniformly olive-green bird. Proceeding eastward along the north coast, in Santa Marta, a very brown bird reappears, with a shorter bill; on the Paria Peninsula, Venezuela, a series differs from the Santa Marta form just as Costa Rican birds do from eastern Mexican specimens; a single specimen from Trinidad is still greener and larger. We lack Cayenne topotypes of *brasiliensis*, so cannot say definitely whether these Trinidad and Venezuelan specimens are variations of typical *brasiliensis* or represent distinct subspecies, but a specimen from Pará is indistinguishable from the Venezuelan series. We offer the following tentative arrangement of the races of this species.

(1) *Attila brasiliensis brasiliensis* Lesson. Includes *A. uropygialis* (Cabanis) and *A. virescens* Ridgway. See Hellmayr, 1906, Nov. Zool., XIII, pp. 328-330; also 1910, idem, XVII, p. 315. Wing, ♂, 85-87 mm. (*vide* Hellmayr). Range Cayenne, British Guiana, eastern Venezuela, northern Brazil to Rio Madeira.

A series from the Paria Peninsula, Venezuela, perhaps belongs here; the males measure 86-91 mm. The unique specimen described from Trinidad as *A. wighti* is greener above than the Venezuela birds, and the wing measures 92 mm. Its validity even as a subspecies requires confirmation. Both can be distinguished from *A. b. sclateri* only by their larger size; in color they can be perfectly matched by variants of that race, though there would seem to be an average difference.

(2) *Attila brasiliensis uropygiata* (Wied). Stated by Hellmayr to differ only in its larger size; his measurements of Rio and Bahia birds (males) are, wing 90-97 mm. The type, however, which we have examined, measures only 89 mm., and is sexed as a male. Due allowance being made for age and fading, it is indistinguishable in color from the Pará bird or the Venezuelan series mentioned above. As a large series of *citreopygus* from Costa Rica shows a variation in size from 83.5-93.5 (males), the validity of this race would seem doubtful. *Attila neoxenus* Todd from eastern Bolivia is obviously a form of this species. It should be compared with *parambæ* and the green phase of typical *brasiliensis*.

(3) *Attila brasiliensis parambæ* Hartert. A very distinct subspecies, uniformly olive-green above, even the tail with no tinge of brown, and heavily flammulated with olive-green below. Includes *Attila fuscicauda* Chapman (1917, 'Distr. Birds Colombia,' p. 495). Range: west Ecuador and west Colombia.

(4) *Attila brasiliensis sclateri* Lawrence. In northwestern and northern Colombia and eastern Panama there is a slight revival of brown in the upperparts, particularly on the tail and lower back. A series averages not quite so brown as the Venezuelan series discussed under typical *brasiliensis*, and is intermediate between it and *parambæ* in color. They are much less brown, however, than *citreopygus*, and we fully endorse Ridgway's comment ('Birds N. and Mid. Amer.,' IV, p. 806, footnote). In this respect the Venezuelan series is intermediate between *sclateri* and *citreopygus*. There is an interesting point about the application of the name. The Canal Zone is just the

place where *sclateri* and *citreopygus* intergrade. On the basis of their characters Lawrence's two types, a male and female, would be referred to different races. Fortunately the male is a bird of the green type, so that Lawrence's name is clearly available. This race exhibits the usual variation of the species, and a specimen from Puerto Berrio, Magdalena River, Colombia, agrees minutely with the description of the gray-headed *Attila caniceps* Todd. In this connection we must also consider *Attila idiotes* Todd. The describer's detailed description and comparison with *A. citreopygus* does not indicate any color differences between it and the yellow phase of *citreopygus*. We suspect that it is an intergrade between *A. b. sclateri* and *A. b. parvirostris*.

(5) *Attila brasiliensis parvirostris* Allen. Range: Santa Marta Region, Colombia. The type is a juvenal, a fact apparently overlooked by Todd. This distinct race is a small extreme, and in coloration is also a brown extreme, in this respect intermediate between the Mexican races *flammulatus*, and *cinnamomeus* and, judging by the description, exceedingly close indeed to the Cozumel Island race, which is autoptically unknown to us. It is obviously only subspecifically distinct from brown extremes in the series from Venezuela.

(6) *Attila brasiliensis citreopygus* (Bonaparte). Range: Pacific side of Canal Zone, western Panama, Costa Rica and Nicaragua. Intermediate between *sclateri* and *flammulatus*, but much nearer the latter. Normally the head and nape are olive-green, the back and tail reddish brown. Exceptional specimens are, however, uniformly reddish brown above and scarcely streaked below, and can be distinguished from *flammulatus* or *cinnamomeus* only by their slightly smaller size. These have been described as *Attila citreopygus luteolus* Ridgway, a subspecies which Carriker has already shown to be invalid ('Birds of Costa Rica,' p. 871). Another extreme has a gray pileum and breast and has been described as *Attila tephrocephala* Ridgway. A third extreme phase has the underparts almost uniformly sulphur or lemon-yellow; the forehead, superciliary and sides of the head are also yellow. Specimens showing various combinations of these extremes and various stages of intermediacy are naturally more common than extremes.

(7) *Attila brasiliensis flammulatus* Lafresnaye. Range: from southeastern Mexico to Honduras. For the change of name of this subspecies formerly known as *salvini* Ridgway, see Bangs and Penard, 1922, Proc. Biol. Soc. Wash., XXXV, p. 223. All the Mexican races differ from all other races except *parvirostris* in never showing any olivaceous above, not even on the pileum. This is only an average difference, however, as regards *citreopygus*, occasional specimens of that race being also devoid of any olivaceous tinge, but always averaging smaller.

(8) *Attila brasiliensis cinnamomeus* Lawrence. Range: Pacific slope of Mexico. Close to *A. b. flammulatus*, but noticeably paler above and below.

(9) *Attila brasiliensis mexicanus* Nelson. Known from a single specimen from Tabasco, which we have not seen. The description does not give any differences from *flammulatus* that are not matters of individual variation in other races.

(10) *Attila brasiliensis gaumeri* Salvin and Godman. Yucatan and British Honduras.

(11) *Attila brasiliensis cozumelæ* Ridgway. Cozumel Island. We have not seen these two subspecies.

In addition to the suggestions here made, Dr. Hellmayr has intimated his suspicions that *Attila spadiceus* (Gmelin) is merely a rufous or brown phase of *A. brasiliensis*, in which the entire upperparts are always brown, never green, and even the flammulations on the breast are almost obliterated by a rufescent wash. We would point out that this theory would afford an adequate explanation of the unique *Attila rufipectus* Allen from Santa Marta. As this is about to go to press, we have received a paper just published by Dr. Stresemann (1925, Jour. f. Orn., LXXIII, Heft 2, p. 274) in which he concludes that *spadiceus* and *brasiliensis* are color phases, and he endorses independently several of the suggestions made by us. The specific name *spadiceus* has many years priority over *brasiliensis*.