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STUDIES FROM THE DWIGHT COLLECTION OF GUATEMALA BIRDS. I

BY LUDLOW GRISCOM

Just one week before his death, Dr. Jonathan Dwight asked me to study and report upon the unrivalled collection of Guatemalan birds made by A. W. Anthony during the past five years, totalling nearly 8000 specimens from every section of the country, except Peten. Originally we had planned to do this jointly, but long illness prevented him from ever making a start. His collection has now passed to The American Museum of Natural History, the authorities of which have authorized me to carry out his wishes and prepare the extensive report involved. Long interested in Central American birds, I greatly appreciate the privilege of studying so valuable a collection, but I cannot refrain from regretting the loss of Dr. Dwight's companionship in this undertaking and the value of the experienced and conservative judgment of one who was friend and mentor ever since my boyhood.

Guatemala is an exceedingly diversified country, but almost no adequately labelled modern material existed, until the present collection was formed. Eighty years ago thousands of trade-skins were shipped to Europe, and about 1870, after Salvin's exploring trips, more was known about the bird-life of Guatemala than any other portion of Central America. Most of these specimens have no locality labels, though we know that the majority came from Alta Vera Paz, and the city of Coban was the distributing center. Salvin's personal collection was thoroughly labelled, but he was never interested in racial variations, nor has his material in the British Museum ever been restudied. Certainly the great majority of Guatemala specimens in American museums are old trade-skins of characteristic make, and they prove to be quite useless for subspecific comparison.

It is no wonder, then, that large and uniform series from many sections of the country not only alter in many cases our concepts of long-established species and races, but also show the existence of hitherto unrecognized forms either in Guatemala itself, or in adjoining areas, when the typical form is found in Guatemala. It seems ad-

visible to present some of these conclusions at once in a series of preliminary studies, so that they can have the benefit of criticism prior to the appearance of the final report. Whenever possible, types have been selected from the Dwight Collection. All measurements are in millimeters, and technical color-terms follow Ridgway's nomenclature.

THE STATUS OF *Colinus hypoleucus* (Gould)

The more quails from Mexico and Central America that are secured, the more remarkable and difficult to interpret become their variations. In Mexico, melanism and erythrism of the underparts occur in almost every conceivable pattern and combination, and apparently are constant in relatively small areas. With this group we are not here concerned. Farther south, in Central America proper, another group of species occurs, with slightly crested heads, a structural character affording a transition to the well-crested species *leucopogon* and its races of Panama and northern South America. I am not, therefore, impressed with the value of maintaining the genus *Eupsychortyx*.

These three Central American species are *nigrogularis*, *hypoleucus* and *leylandi*. At first sight the males are strikingly distinct, but the great similarity of the females may perhaps indicate a closer genetic relationship than the outward differences of the males. Two of these species are well represented in museums and well known, but *C. hypoleucus* is a rare and little-known bird, and I doubt if a good series has ever been brought together in this country.

The most casual glance at an adult male of *hypoleucus* shows that it is *C. leylandi* with the forehead, superciliaries and most of the underparts white. A glance at the four adult males before me shows that no two are alike. One has practically no white superciliary stripe, a second has brown feathers appearing here and there over the entire underparts, a third has a narrow vinaceous breast-band, and the fourth has underparts like *leylandi* with a white throat, and white feathers appearing here and there elsewhere. It is obvious, therefore, that the white on the underparts of *hypoleucus* is nothing but partial albinism, so far as we know always present, but varying greatly in extent.

The females, however, prove this point even more satisfactorily. Two of them are exactly like *leylandi*, but average a grayer brown throughout, as indeed do the males, and the throat is less streaked. One has a scattering of white feathers on the chest, but a particularly buffy

throat and superciliaries. The fourth has white superciliaries and a white throat.

To complete this review, I call attention to the fact that in *C. leucopogon* of Panama the white forehead and superciliaries reappear as a definite and fixed character in males, and a white throat as a "phase" in females. In general color, however, the female of *C. hypoleucus* is practically indistinguishable from the female of *C. leucopogon leucotis*.

How, then, are we to interpret these facts in nomenclature? Is *hypoleucus* a distinct species, a race of *leylandi*, or a mere case of albinism, deserving no nomenclatural recognition? Of these alternatives I prefer the middle course. The third course would be tenable only if typical *leylandi* should turn up in Guatemala and albinistic specimens be found from Honduras southward. Even if they did, and this point were finally disposed of, the Guatemalan bird would be a distinct subspecies, as a paler, grayer brown bird, and the female with greatly reduced streaking on the throat. This race would have to be called *hypoleucus*, though the characters were quite different from those originally ascribed. The name *hypoleucus* can never disappear, therefore, no matter what we may find out about albinism in these quail in the future.

I admit that I can advance no sound biological reason for not regarding *hypoleucus* as a distinct species. I am influenced probably solely by my systematic training. As I look at the male with almost no albinism and the two females with none, I cannot regard them as specifically distinct. A similar step has already been taken by Bangs and Peters (1928, Bull. Mus. Comp. Zool., LXVIII, No. 8, p. 386) who regard the majority at least of the Mexican quail as races of *C. virginianus*, and I thoroughly agree that this change in nomenclatural treatment more nearly approximates the underlying biological facts. A further extreme could be urged, and the specific distinctness of even *leucopogon* could be questioned. But here the great development of the crest is a definite structural character, regardless of the parallelism of certain color patterns, and this fact can best be recognized in nomenclature by treating *leucopogon* as a distinct species.

So far as known, this quail is found only in the drier parts of the interior at moderate altitudes, and seems to be uncommon or rare, in marked contrast to the abundance of *leylandi* farther south.

***Chæmepelia minuta interrupta*, new subspecies**

SUBSPECIFIC CHARACTERS.—Nearest to *Chæmepelia m. elæodes* Todd of southwestern Costa Rica and Panama, but both sexes grayer, less brown above; strikingly distinct below, the adult male grayer, less vinaceous, the female even more distinct than the male, hair-brown rather than warm drab, both sexes with the chin whiter, and the white area more extensive.

TYPE.—No. 62,270, Dwight Collection; ♀ ad.; Secanquim, Guatemala; March 15, 1926; A. W. Anthony.

SPECIMENS EXAMINED

Chæmepelia minuta elæodes.—S. W. Costa Rica, 6 ♂, 10 ♀, 3 immature. Pearl Islands, 4 ♂, 1 ♀.

Chæmepelia minuta interrupta.—Guatemala: Secanquim, 1 ♂, 1 ♀; Chimoxan, 2 ♂, 1 ♀; Finca Chama, 1 ♂; Chipoc, 1 ♀. British Honduras: Belize, 1 ♂; Toledo District, 1 ♀; Manatee District, 1 ♀.

There is no longer the slightest question that this ground dove has an interrupted distribution in Central America, and is absent, from most of the country at least, between Guatemala and southwestern Costa Rica. In Guatemala it seems to be a rare and local bird, and the series listed above is probably the first of its kind to become available. When Todd wrote his monograph of *Chæmepelia* he had only two specimens from Guatemala, and one only that was recently prepared. With a series available, we have a strongly marked form, which needs no further comment. The disposition of the three British Honduras specimens is uncertain. The single male is old and of no comparative value, though nearer the Guatemalan males. The two females are, however, quite different from both the Guatemalan and Costa Rican series and, in fact, are intermediate, though slightly nearer the former. As these birds are apparently disconnected from the range of the Guatemala race by wide stretches of tropical rain-forest, in which this dove does not occur, I hazard the guess that an adequate series will show them to be separable also.

***Oreopeleia albifacies anthonyi*, new subspecies**

SUBSPECIFIC CHARACTERS.—Similar to typical *O. albifacies* of Vera Cruz, but occiput and nape brownish instead of gull-gray; forehead more buffy, less white; foreneck and chest obviously browner, lacking the suffusion of buffy gray, so characteristic of *albifacies*.

TYPE.—Dwight Coll., Amer. Mus. Nat. Hist.; ♀ ad.; San Lucas (=Toliman), Guatemala; January 8, 1928; A. W. Anthony.

SPECIMENS EXAMINED

Oreopeleia a. albifacies.—Vera Cruz, 5.

Oreopeleia a. anthonyi.—Guatemala, 2.

Oreopeleia a. silvestris.—Nicaragua, 2.

Salvadori, Salvin and Godman, and Ridgway have all commented on the variation in this species, and the last mentioned the probable

expediency of further subdivision. One difficulty has always been that the obvious differences between Guatemalan and Mexican birds, as regards the occiput, were apparently bridged by the Nicaraguan. Mr. Ridgway was also, perhaps, misled in thinking that the sexes were alike. This is not quite the case, the female tending to be a little more dully colored, the occiput more extensively brown, and the foreneck and chest browner, less gray. Thus, the female of *silvestris* Dickey and Van Rossem is very close indeed to the highly plumaged male from Mexico; so much so, that the late Waldron deW. Miller and I, some years ago, when comparing twelve birds from Nicaragua with some old Mexican specimens, without having any Guatemalan birds available, completely overlooked the differences between them.

It by no means follows that all Guatemalan records are *anthonyi*. Most of the specimens are in Europe, and I have seen none from the highlands of Vera Paz and Coban, from which source come some of the old trade-skins in American museums. It is possible that these may well belong to typical *albifacies*. This ground dove is exclusively a cloud-forest species, and is almost never found below 3500 feet.

***Podilymbus gigas*, new species**

SPECIFIC CHARACTERS.—Nearly twice as large a bird as the North American *Podilymbus podiceps*, with a very deep culmen; heavy, powerful legs and feet, and a remarkably short wing; coloration generally darker; no buffy in breeding plumage; head, neck and throat black except for dark grayish auriculars and a narrow half-collar of grayish brown on foreneck; no whitish border to black throat patch; nape and sides of neck with a dark bottle-green gloss; chest blackish, flecked with silvery white; underparts much darker, the black spotting much heavier, especially on sides, flanks, belly and under tail-coverts; underparts a darker blackish brown. The three specimens show the usual variation in respect to the lighter edgings to feathers of the throat and head.

TYPE.—No. 62,904, Dwight Collection; ♀ ad.; Panajachel, 5300 ft., north shore of Lake Atitlan, Guatemala; October 2, 1926; A. W. Anthony.

MEASUREMENTS

	<i>gigas</i>	<i>podiceps</i>
Wing	123-131	116-126.5 mm.
Culmen	22- 23.5	19- 20
Depth of bill	15- 16	11- 11.5
Middle toe	62- 65.5	50- 53

This curious pied-billed grebe is confined to Lake Atitlan, where it was first collected by Salvin, who commented on some of its peculiarities. It so happened that Ogilvie-Grant wrote up the grebes for the 'British Museum Catalogue' before Salvin and Godman got around

to studying this family for the 'Biologia.' Grant concluded that the differences of the Atitlan bird were due to age (!), and Godman followed him, Salvin having died in the meantime.

***Pionus senilis decoloratus*, new subspecies**

SUBSPECIFIC CHARACTERS.—Similar to typical *Pionus senilis* (Spix), but throat and chest noticeably more dusky purplish, less blue; abdomen and sides of vent oil-green, less bright green; primaries averaging more extensively bright blue, especially on the inner webs, passing less rapidly to green terminally, often tinged with blue throughout, whereas in typical *senilis* the terminal inch of the wing is always markedly green even in highly plumaged males, and the inner webs of the outer primaries have a green strip between the blue and the dusky.

TYPE.—No. 116,545, Mus. Comp. Zoöl.; ♂ ad.; Pozo Azul de Pirris, southwestern Costa Rica; June 12, 1903; C. F. Underwood.

SPECIMENS EXAMINED

Pionus s. senilis.—Guatemala: Finca La Primavera, 1 ♂, 1 ♀; La Montañita, 2 ♀; Chipoc, 1 ♀; near Quirigua, 1 ♂.

Pionus s. decoloratus.—Large series from southern Quintana Roo, British Honduras and Honduras to western Panama.

Specimens from the northern part of the range of this species have been extremely rare in American collections, and the present series shows that there are marked color differences between the geographic extremes. Spix gave no locality, but his description and plate apply better to the northern bird, and in his day Mexico or Guatemala was a far more probable source of origin for his specimen than any part of the southern range of this species. Moreover, Hellmayr states that the type is identical with specimens from Mexico and Guatemala. I, therefore, designate Vera Cruz, Mexico, as the type-locality of true *senilis* and describe the southern extreme.

In the large series of the southern form examined from every part of its range, specimens from southeastern Nicaragua, Costa Rica, and Almirante, Panama, are typical. Specimens from southern Quintana Roo, British Honduras, Honduras, and northern Nicaragua are intermediate but nearer the southern form. The characters given are, of course, best marked in adult males. They are much less marked in adult females and younger males, and I am quite unable to distinguish the immature.

Nyctidromus Albicollis IN MEXICO AND CENTRAL AMERICA

The races of the parauque in Mexico and Central America have been in some confusion for years, due to the absence of adequate series

of true *albicollis* from Guiana, and the minute responses of this plastic bird to various differences in its environment. Having examined over 500 specimens from north of Panama, including 200 from Guatemala northward, it may be helpful to give some general comments on this material. In southern Texas and northeast Mexico we have a pale and very large bird (wing 175-187), *merrilli* Sennett. As we proceed southward, the bird gets smaller and darker. The darkest birds are found in southern Vera Cruz and Tabasco, and a large series from Alta Vera Paz, Guatemala, are absolutely identical. Only about 40 per cent of the specimens, however, show this darker coloration. Similar color and size-variations exist in five specimens from British Honduras and three from the Caribbean lowlands of Guatemala. All these birds in group two would be called *sumichrasti* Ridgway. Large series from tropical Tamaulipas are intermediate and might be called either. Proceeding out to the tip of the Yucatan Peninsula, another good series shows no size difference but a minutely paler coloration on the average than typical *sumichrasti*. These birds are called *yucatanensis*, but they cannot be distinguished from the Tamaulipas intermediates by either color or size, nor can they be separated from the paler specimens of *sumichrasti*. Turning now to western Mexico, large series from Sinaloa to Oaxaca show another slightly paler bird (called *nelsoni*) but similar in size to *sumichrasti*. These birds also get darker and smaller as we proceed southward along the Pacific slope, so that Oaxaca specimens are practically indistinguishable from *yucatanensis*. I have seen no material from Chiapas, but the bird of the Pacific lowlands of Guatemala is dark and so small that it exactly resembles large series from farther south in Central America. One specimen from western Vera Cruz is intermediate between typical *sumichrasti* and Oaxaca specimens of *nelsoni*, and it follows that these are inseparable from series from Yucatan and tropical Tamaulipas.

It is obvious that no nomenclature can be devised to reconcile every one of the facts brought forward above. If the discussion has been followed on the map, however, it will be apparent that the darker specimens (as regards northern Central America) are restricted to the most humid areas, where the annual rainfall exceeds 100 inches. These birds are surrounded on three sides by paler birds in less humid and less heavily forested country, which northward pass to one extreme, *merrilli*, and northwestward to another, *nelsoni*. It follows, therefore, that the greater part of Mexico is occupied by one form, for which the

earliest name is unfortunately *yucatanensis* Nelson. A well-marked, large and pale extreme, *merrilli*, is found in southern Texas and north-eastern Tamaulipas, and a less-marked paler race occurs in Sinaloa, Jalisco, and Colima. The suppression of the latter race would certainly not do violence to any obvious facts. The so-called dark race, *sumichrasti*, has, however, no claims to existence whatever, as the alleged darkness affects only 40 per cent of the large series available. The variation in forty specimens taken within a few miles of each other in Alta Vera Paz includes most of the color characters claimed for the majority of the races of this bird.

***Nyctidromus albicollis intercedens*, new subspecies**

SUBSPECIFIC CHARACTERS.—Similar to typical *Nyctidromus albicollis* (Gmelin) of the Guianas, northern Brazil and eastern Venezuela, but underparts averaging paler and much larger, the wing of males averaging about 156 mm. as against 148 mm.; similar also to *N. albicollis yucatanensis* of northern Guatemala and most of Mexico, but averaging darker (the majority of the specimens as dark as the dark extreme of *yucatanensis*) and much smaller, the wing of the latter averaging 170 mm. or even more.

TYPE.—No. 136,601, Mus. Comp. Zool.; ♂ ad.; Tela, Honduras; March 4, 1928; J. L. Peters.

SPECIMENS EXAMINED

N. albicollis intercedens.—Guatemala (Pacific lowlands): Hacienda California, 3 ♂, 1 juv.; Finca El Espino, 2 ♂; Finca El Cipres, 1 ♀. Several hundred specimens from every other part of Central America, the Canal Zone, and the Pearl Islands. The relatively few specimens examined from western Colombia, western Ecuador, and northwestern Peru probably belong here.

N. albicollis albicollis.—Eight specimens from northeast Venezuela, Surinam, and Trinidad.

Several people have known for some time that Central American parauques were not typical *albicollis*, but the description of this form has awaited a study of the Mexican forms, now made necessary in determining the material from Guatemala in the Dwight Collection. Todd, in particular, has an interesting paragraph in his 'Birds of Santa Marta,' page 219. I can see no valid subspecific character in the amount of black streaking on the pileum in the gray phase, but the underparts, particularly the belly, undoubtedly average paler and less rufescent in the Central American bird. The average size difference is much more readily apparent.

Even if the conclusions given above are accepted, the situation is far from satisfactory, and there are large areas from which I have seen no material. What is apparent is that, starting with a small, dark bird in

the Guianas, we have a steady increase in size as we go northward. I do not know where in South America to draw the line between *albicollis* and *intercedens*, just as we are unable at present to fix the boundaries between *albicollis* and the very distinct *derbyanus*. In Guatemala, however, there is a sharp break in size, and Mexican birds are obviously as large again as are Central American birds compared with those from Guiana. Finally, we pass with relative rapidity to the pale giant, *merrilli*, in southern Texas. Disposing of the two sharply contrasted extremes, we find variously intermediate birds occupying an enormous geographic area, and the problem of the systematist is to decide how many intermediate races he will "carve out," and on what basis he will draw the lines between them. It seems to me in this case that two intermediate races are ample: both have average characters of color and size, and both occupy relatively extensive areas.

Returning for a moment to my previous discussion of the Mexican races, we get, I think, further indorsement for suppressing some of them at least, after having considered the variations of the species over the rest of its range. It will be apparent that their claims to recognition are second rate, compared with those of the five races already admitted as distinct. They do not differ from each other as markedly in both color and size, as do the races of major value. As a matter of fact, Mexico does not happen to be alone in possessing a difficult assemblage of minor variations. Thus, birds from the more humid sections of eastern Honduras are minutely darker than birds from the drier parts of western Costa Rica, and specimens from the rain-forests of Panama (both east and west) are similarly darker than birds on the drier Pearl Islands. The same contrast occurs between humid western Colombia and arid western Ecuador, and on the basis of size these last might be referred to either race. When these minor differences in Mexico were named, it merely happened that their describers had available as much material from Mexico as from the rest of the range of the species.

This disposition of the case will not seem satisfactory to the student who is engaged in an intensive study of some local area, and consequently more interested in the minor differences he observes in his particular region. But I submit that the fact of real biological interest in a systematic study of the parauque is the definite proof which now exists that there is an exact correlation between the intensity of its coloration and the amount of rainfall in its habitat, and that it increases markedly in size as it approaches the temperate zone of both hemispheres. Once this is determined, it is obviously a mere matter of form

how many of these progressively local variations are given a subspecific name. The systematist has already given his possible contribution to biology.

***Caprimulgus ridgwayi minor*, new subspecies**

SUBSPECIFIC CHARACTERS.—Not certainly separable in color from the only known male of *ridgwayi* from Sinaloa in The American Museum of Natural History, but very radically smaller; wing, 148 instead of 161; tail, 93 instead of 115; exposed culmen, 11.5 versus 15.5.

TYPE.—No. 58,537, Dwight Collection; ♂ ad.; Progreso, Guatemala; September 20, 1924; A. W. Anthony.

There is little to add by way of comment. The small size and the notable range extension make a formal description thoroughly justifiable. The type of *ridgwayi*, a female, came from Guerrero. The unique female type of *goldmani* Nelson came from Sinaloa near Mazatlan and is at most a race of *ridgwayi*, though the supposed male *ridgwayi* from Sinaloa may really be *goldmani*, with which unfortunately it has not been compared. In the M.C.Z., there is a female in the rufous phase from Patzcuaro, Michoacan.

***Agyrtria candida pacifica*, new subspecies**

SUBSPECIFIC CHARACTERS.—Similar to typical *Agyrtria candida* of the Caribbean slope of Central America but larger; bill heavier and stouter, averaging 0.5 mm. wider at base; sides and flanks averaging more extensively green.

TYPE.—No. 61,339; Dwight Collection; ♂ ad.; Finca Carolina, near Tumbador (Pacific Slope); Guatemala; October 24, 1925; A. W. Anthony.

SPECIMENS EXAMINED

Agyrtria c. candida.—Over 50 specimens from the entire range.

Agyrtria c. pacifica.—Finca Carolina, 11 ♂, 3 ♀, 1 ?

The white-bellied emerald has hitherto been unknown from the Pacific slope of Central America north of Costa Rica, and this colony in western Guatemala, in the small section where there is heavy rain-forest, is an interesting discovery. The bill is the most obvious character in uninjured specimens. I append below some comparative measurements of the wings of males.

<i>A. c. candida</i>	49-52.5
<i>A. c. pacifica</i>	50-56

***Hylocharis leucotis borealis*, new subspecies**

SUBSPECIFIC CHARACTERS.—Similar to typical *Hylocharis leucotis* (Vieillot) of Vera Cruz, Mexico, but larger, the underparts much more extensively white, with less greenish, grayish or bronzy edgings and tips to the feathers in both sexes.

TYPE.—No. 224,208, Mus. Comp. Zool.; ♂ ad.; Pinos Altos, Chihuahua; July 2, 1888; M. Abbott Frazar.

SPECIMENS EXAMINED

Hylocharis leucotis borealis.—Chihuahua, 16 ♂ ad., 10 ♀ imm., 9 ♀; Sonora, 2 ♂, 2 ♀. Arizona birds, not seen in the present connection, belong here also. A series of 5 ♂, 2 ♀ from Tamaulipas (Galindo and Realito) are intermediate, but a trifle nearer *borealis*.

Hylocharis l. leucotis.—San Luis Potosi, 1 ♂; Mexico, 2 ♂, 1 ♀; Jalisco, 4 ♂; Guerrero, 1 ♂, 1 ♀; Vera Cruz, 1 ♂, 1 ♀; Guatemala, a series of 34 ♂, 19 ♀ from fourteen localities in the Pacific and Central highlands. Birds from the more southern parts of the Pacific highlands show a slight approach to *pygmæa*.

With the large series now available from southern Mexico and Guatemala, it is at once apparent that northern birds are quite different. In the whiter underparts they suggest *pygmæa* Simon and Hellmayr, but the latter has the green of the throat much restricted, the outer tail-feathers of adult males broadly tipped with brownish gray, and is a smaller bird even than *leucotis*. It is a third well-characterized form. The *Trochilus leucotis* of Vieillot was erroneously ascribed to Brazil. I designate Orizaba, Vera Cruz, Mexico, as the type-locality.

MEASUREMENTS OF ADULT MALES

	Wing	Culmen
<i>borealis</i>	56-59 (57)	17-19 (18)
<i>leucotis</i>	53-56 (54.5)	15-16.5 (16)
<i>pygmæa</i>	52-54 (53)	14-15 (14.5)

Piculus rubiginosus maximus, new subspecies

SUBSPECIFIC CHARACTERS.—Similar to *Piculus rubiginosus yucatanensis* (Cabot) of Yucatan but much larger; upperparts greener and less golden; underparts much greener, the chest almost without or entirely devoid of the golden brown wash, so characteristic of *yucatanensis*.

TYPE.—No. 63,736, Dwight Collection; ♂ ad.; Chanquejelve (5000 ft.) Huehuetenango, Guatemala; January 24, 1927; A. W. Anthony.

RANGE.—Eastern and central portions of the Pacific highlands of Guatemala, from 5000-6500 ft. Perhaps also in adjacent portions of Chiapas and the highlands of Salvador.

Piculus rubiginosus differens, new subspecies

SUBSPECIFIC CHARACTERS.—Intermediate in color between *Piculus rubiginosus yucatanensis* and *maximus*, nearest the former above, nearer the latter on the chest; size as in *yucatanensis*; differing from both in the finer mottling or streaking of chin and throat.

TYPE.—No. 61,383, Dwight Collection; ♂ ad.; Finca Carolina, ten miles south of Tumbador, District of San Marcos, alt. 3000 ft., on the Pacific slope of Guatemala; October 29, 1925; A. W. Anthony.

RANGE.—Pacific slope of Guatemala below 3500 ft. Perhaps also in adjacent portions of Chiapas and Salvador.

SPECIMENS EXAMINED

Piculus rubig. yucatanensis.—Vera Cruz, 2 ♂, 1 ♀; Tehuantepec, 1 ♂; Yucatan, 3 ♂, 1 ♀ (including type); British Honduras, 2 ♂, 1 ♀; Guatemala, series of 23 from five localities in the Caribbean rainforest of Alta Vera Paz (alt. 1200–3500 ft.).

Intermediates between *yucatanensis* and *maximus*.—A series of 10 from Finca Primavera, 30 miles southwest of Coban in Baja Vera Paz (alt. 3500 ft.).

Piculus rubig. maximus.—Guatemala: Chanquejelve, 1 ♂, 1 ♀; Chichicastenango, 2 ♂; Panajachel, 1 ♂, 3 ♀; San Lucas, 3 ♂, 1 ♀.

Piculus rubig. differens.—Guatemala, Pacific slope: Finca Carolina, 2 ♂, 4 ♀; Finca El Cipres, 3 ♂, 2 ♀; Pantaleon, 1 ♂; San Felipe, 2 ♂.

MEASUREMENTS OF WING

	Males	Females
<i>yucatanensis</i>	116–126	116–123
<i>maximus</i>	127–134	126–129
<i>differens</i>	121–129	116–126

The large series of this green woodpecker collected by Anthony almost doubles the number of specimens in the country from northern Central America and brings out definite geographic variation in Guatemala, a highly diversified region. The large, green highland form is very distinct and needs no further characterization. The Pacific slope form is less marked but is not geographically intermediate. The intermediates from Baja Vera Paz listed above are an interesting lot. In size they are much nearer *maximus*, but the majority have more or less orange-brown on the chest like *yucatanensis*. It is highly probable that increased material will result in the description of two more forms in the area formerly assigned to *yucatanensis*. The three specimens from the Yucatan Peninsula differ from all others in being whiter, less bright yellow on the abdomen, belly and under tail-coverts. Three specimens from British Honduras are also distinctly greener on the chest than birds from adjacent areas. It is possible, therefore, that in time *yucatanensis* will be restricted to the Yucatan Peninsula, and its name will finally become appropriate.

In Costa Rica and western Panama we have a distinct form, *uropygialis* (Cabanis), which is strictly subtropical. I have never seen specimens from either Salvador or Honduras, but thirteen specimens from various parts of Nicaragua are, as might be expected, intermediate between *yucatanensis* and *uropygialis*. Curiously enough, however, individuals nearer *yucatanensis* occur near the Costa Rican boundary,

and certain specimens from the northern highlands are distinctly nearer *uropygialis*. This erratic type of variation also occurs in Guatemala, and is perhaps correlated with the tendency in all races of this woodpecker to produce more highly colored individuals. Thus, females sometimes are red in areas normally red only in males, the red in males is occasionally abnormally developed, and one specimen is before me in which the feathers of the back are tipped with red.

