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A REVISION OF THE *LAMPORNIS VIRIDIPALLENS*
COMPLEX (AVES: TROCHILIDAE)

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THE *Lampornis viridipallens* complex consists of a group of forms currently considered races of a single species. All forms are inhabitants of mountainous regions at altitudes of 2,500 to at least 9,500 feet but are most abundant between 4,500 and 8,500 feet. The habitat occupied is always forested, varying in type from cloud forest to a pine-oak association. Geographically the complex is found from Chiapas southward through the highlands of Central America to north-central Nicaragua.

During the course of examination of *Lampornis* specimens from Honduras, I became interested in the close geographic approach of the well-marked southern form (*sybillae*) to the nominate race in central Honduras. Subsequent examination of 386 specimens of the complex (including the types of *connectens* and *nubivagus*, as well as topotypes of all other described forms) has shown the necessity of a revision of the complex and has indicated the specific distinctness of *sybillae* from *viridipallens*.

HISTORICAL BACKGROUND

Prior to a revision of the species by Dickey and van Rossem (1929), only *sybillae* and typical *viridipallens* were recognized, the former from Nicaragua and the latter from Chiapas and Guatemala. Both forms were regarded as specific in rank and were placed in the genus *Oreopyra* (Ridgway, 1911; Cory, 1918).

Dickey and van Rossem (1929), with a series of twenty-three specimens at their disposal (none from Honduras), revised the group by describing two new races and lumping *sybillae* with *viridipallens*. The race *nubivagus*

was based on an isolated population from Volcán de Santa Ana, El Salvador, and adjacent peaks; *connectens* was described from a single specimen from Los Esesmiles, El Salvador, and supposedly bridged the gap between *viridipallens* and *sybillae*. I have examined the type and only specimen of *connectens* and find it fits perfectly within the individual variation of the nominate race and in no way bridges the morphological gap between the two species.

These revisers placed the group in the genus *Lampornis*. This procedure seems sound, for *Oreopyra* is poorly characterized and is best suppressed in view of present-day generic concepts.

Berlioz (1938) was the first author to mention Honduran material. He examined a series of *sybillae* from Cantoral and Montaña Vásquez and a single adult male from Meredón, Copán, that is nearly typical *viridipallens*. In addition, he examined three immature males from Santa Bárbara, which he regarded as intermediate between *sybillae* and *viridipallens* on the basis of their dark tail color (a character that is not geographically significant); however, he noted the lack of white in the tails of these three specimens, a character that is definitive for the species *viridipallens*. Despite the fact that he erroneously considered these specimens intermediate between *viridipallens* and *sybillae*, he did remark that both forms retain most of their characters even where their ranges are in close proximity. Berlioz agreed that *Oreopyra* is not recognizable, but he placed the *viridipallens* complex in the subgenus *Leuconympha* of the genus *Coeligena*.

Brodkorb (1939) described an additional race (*ovandensis*) from Mount Ovando, Chiapas, on characters that are primarily individual in nature; however, the northwestern or Chiapan population is taxonomically distinct when re-defined and the name *ovandensis* is available for this race.

Peters (1945) and subsequent authors generally recognize one species with five races. The present paper elevates *sybillae* to specific rank and reduces the remaining four races of *viridipallens* to three, *connectens* being treated as a synonym of nominate *viridipallens*.

THE STATUS OF *L. SYBILLAE*

Males of *L. sybillae* differ from those of *L. viridipallens* in the following features: the breast is green, rather than white, thus the green gorget is not clearly demarked from the remainder of the under parts; the outer rectrices possess white, at least along the shaft and inner web; and the wing and

bill lengths average longer. Therefore, the display patterns of the two species differ considerably, with males of *sybillae* presenting a uniform green pattern below combined with a white tail flash, but with males of *viridipallens* presenting a green gorget, white breast, and lack of tail flash. Since the display patterns of males are thought to be isolating mechanisms among other closely related hummingbird species, they would probably act as such in the *L. viridipallens* complex also if these forms were to come together. However, *sybillae* and *viridipallens* are allopatric, as far as is known.

Adult females of the two forms are also distinct, with *sybillae* possessing a buff throat in contrast to the white throat of *viridipallens*. However, a few specimens of typical *viridipallens* show a trace of buff wash on the throat, and immature females of *sybillae* have white throats. Female *sybillae* exhibit white in the outer tail feathers, in contrast to gray in *viridipallens*. The presence or absence of white in the outer rectrices distinguishes the two species, regardless of sex or age.

I have mentioned that *sybillae* and *viridipallens* are allopatric as far as is known. A single female specimen (CNHM 27489), labelled "Las Peñitas/Jan. 18, 1934" and collected by C. F. Underwood, would seem to establish sympatry since the alleged locality "Las Peñitas" has yielded an extensive series of typical *viridipallens* and the female in question is typical of *sybillae*. However, the date of Underwood's specimen indicates that it was taken near Tegucigalpa, within the range of *sybillae*, where Underwood was collecting at that time. It appears that Underwood was referring to another "Las Peñitas" or else that the locality is in error.

The Comayagua-Ulúa river valley separates the ranges of *sybillae* and *viridipallens* in central Honduras. In two areas along the valley the ranges of *sybillae* and *viridipallens* approach to within distances of 35 and 60 miles, respectively.

VARIATION WITHIN *L. VIRIDIPALLENS*

The entire upper parts of both sexes of *L. viridipallens* are basically iridescent green or bronze-green, from pileum to rump. Males of the more southerly populations tend to have the rump feathers edged with violet, thus contrasting noticeably with the green of the back. This variation seems to be the only one pertaining to the upper parts that is of a geographic nature. Brodkorb (1939: 5), in comparing his race *ovandensis* with the nominate

form, stated: ". . . back and pileum purer green (less brassy), and in males extending farther toward rump . . ." The series of 14 specimens examined from Mount Ovando in the present study contains both the greenest and the bronziest of the entire series of *viridipallens*. The possibility exists that this variation in color may be caused by some secondary factor; at least, it is individual in nature and hence of no value in defining *ovandensis*.

The character of the pileum contrasting with the back has been mentioned in earlier diagnoses of *nubivagus*. Occasional individuals from throughout the range of the species show darker, less metallic crowns in relation to the back, but this variation is certainly individual. Variation in the darkness of the subocular streak is similarly nongeographic.

Freshly molted birds of all races are darker and more bluish on the dorsal surface of both remiges and rectrices, the latter sometimes being greenish blue dorsally. All variation with respect to this feature is apparently due to individual variation, to wear, or possibly to post-mortem change; it is certainly not geographic.

Variation in color of the under parts is primarily geographic in nature, both in the extent of green on the under parts and the amount of buffy tinge on the abdominal region.

In all races the green coloring of the upper parts extends onto the sides of the breast and flanks. In *ovandensis* and *nubivagus* this green is restricted to the sides of the breast and flanks, leaving the broad central portion of the under parts white; the green seems to be more restricted in females than in males. In typical *viridipallens* the green of the flanks encroaches on the white central area, sometimes meeting centrally on the upper abdomen; in all cases, however, the central area of the breast remains white, sharply demarking the green gorget.

There is a wide zone of intermediacy between *ovandensis* and *viridipallens*, mainly with respect to the character just discussed. However, this variation is not clinal. In the series of skins from Laguna Ocotal, Chiapas, and from San Marcos, Guatemala, there are single specimens from each locality that match typical *viridipallens* quite well in this respect, while all others are much nearer *ovandensis*. Specimens from the western Guatemalan localities of Finca El Cipres, San Lucas, and El Quiché are not typical *viridipallens* but seem to be nearer that race.

In addition, the feathers of the posterior abdominal region exhibit buffy tipping in *viridipallens* and *nubivagus* and lack this color in *ovandensis*.

This character is difficult to see unless the specimen has been carefully prepared and is not in worn plumage.

The El Salvador race *nubivagus* is very much like *ovandensis* and probably would not be considered worthy of recognition were it not for its isolation from the latter (some 100 miles of typical *viridipallens* occur between) and the single character of increased buffness on the posterior abdomen, both of which indicate the probable independent derivation of *nubivagus* from *viridipallens*.

The color of the under tail coverts has been used in defining *connectens*, and was stated to be one of the factors indicating intermediacy towards *sybillae*. In the original description of *connectens*, Dickey and van Rossem (1929: 210) state ". . . under tail coverts edged with clear gray as in *sybillae* . . ." The under tail coverts are normally edged with light gray (being dark gray otherwise) throughout the entire series of both species. A few specimens in worn condition have this edging reduced, as would be expected. A few others, scattered individuals from eastern Guatemala and western Honduras and from the El Salvador *nubivagus* series, have buffy tips to the coverts. Because of the amount of individual variation, the color of the under tail coverts is of little value in the definition of races.

In the original description of *connectens* mention was also made of the long wing that exceeded that of any other specimen that Dickey and van Rossem measured. I remeasured the type with the following results: wing, 69.0 mm; tail, 41.4; exposed culmen, 19.3. These figures agree well with the original measurements (69.0, 41.0, and 20.0, respectively). Comparison with the data in Table 1 shows that this specimen is within the extremes of typical *viridipallens*, although the wing length is near the maximum extreme. In fact, the longer wing is the only variation by which *connectens* differs from topotypical material of the nominate race.

One of the characters attributed to *ovandensis* was the slightly longer bill. Table 1 shows that *ovandensis* exhibits very little variation in bill length when compared with the nominate race, the only difference being a slightly higher mean in the female series. Because of the possibility that the Mount Ovando birds were separable on this character alone (as opposed to my broad concept of the race), I measured a series of ten males and four females with the following results: males, wing 63.8-66.2 (65.0), tail 35.8-43.0 (40.0), and exposed culmen 20.0-22.3 (21.1); females, wing 58.3-61.0 (59.8), tail 36.1-39.2 (37.3), and exposed culmen 22.0-23.0 (22.6). Comparison with *viridipallens* in Table 1 shows that the bills of

these birds average about 1 mm longer in both sexes, but the overlap is considerable. It would be extremely difficult to differentiate Mount Ovando specimens on this basis alone.

SYNOPSIS OF THE GROUP

LAMPORNIS VIRIDIPALLENS OVANDENSIS (Brodkorb)

Oreopyra viridipallens ovandensis Brodkorb, Occas. Papers Mus. Zool. Univ. Michigan, no. 401, 1939: 5 (Mount Ovando, 2,100 meters, Chiapas; type no. 13696 in Brodkorb Collection, 25 August 1937, collected by Pierce Brodkorb).

Diagnosis.—Similar to the nominate race but differing by having the green areas of the sides of the breast and flanks reduced and by lacking buff in the abdominal region; the green of the flanks is usually restricted laterally so that there is a wide medial strip of white connecting the white breast to the posterior abdomen. Differs from *L. v. nubivagus* only in the absence of buff on the abdomen.

Range.—Highland forests of Chiapas and extreme northwestern Guatemala (San Marcos); specimens from the latter locality and from Laguna Ocotal, Chiapas, show a tendency towards *viridipallens*.

Specimens examined.—CHIAPAS, 93: El Phenix, 2; Cerro Brujo, 27; Tuxtla Gutiérrez, 2; Pueblo Nuevo, 1; Simojovel, 1; Tumbalá, 6; Nuevo Amatenango, 2; Socoltenango, 4; Santa Rosa, 8; Cerro Saxchanal, 2; Siltepec, 1; Mount Ovando, 14; Volcán Tacaná, 16; Laguna Ocotal, 7. GUATEMALA, 10: San Marcos, 10.

LAMPORNIS VIRIDIPALLENS VIRIDIPALLENS (Bourcier and Mulsant)

T[rochilus]. *Viridi-Pallens* Bourcier and Mulsant, Ann. Sci. Phys. Nat. d'Agric. d'Ind., Soc. Roy. etc., Lyon, 9, 1846: 321 (Cobán, Vera Paz, Guatemala).

Lampornis viridipallens connectens Dickey and van Rossem, Proc. Biol. Soc. Washington, 42, 1929: 209 (Los Esesmiles, Dept. Chalatenango, 8,000 feet, El Salvador; type no. 18546 in Dickey Collection, 5 March 1927, collected by A. J. van Rossem).

Diagnosis.—The nominate race differs from *ovandensis* and *nubivagus* in the much more extensive green of the under parts that restricts the white

medial area of the abdomen to a narrow strip; it further differs from *ovandensis* in the presence of buff on the lower abdomen.

Range.—Highland forests of Guatemala (west at least to Finca El Cipres, San Lucas, and Dept. of El Quiché), extreme northern El Salvador (Los Esesmiles), and western Honduras (east to the Comayagua-Ulúa river valley). Specimens from the three western Guatemalan localities mentioned above tend towards *ovandensis*; typical *viridipallens* ranges west to Mixco, Guatemala City, and Cobán.

Specimens examined.—GUATEMALA, 27: Finca El Cipres, 1; San Lucas, 2; El Quiché (Dept.), 2; Mixco, 1; Guatemala City, 3; Finca Chichén, 1; Cobán, Vera Paz, 4; Finca Sepacuite, 1; Usulután, 2; "Guatemala" = probably Cobán, 9; "Mexico" = probably Cobán, Guatemala (cf. Brodkorb, 1939: 5), 1. EL SALVADOR, 1: Los Esesmiles, 1. HONDURAS, 81: El Sillón, 1; Montaña La Cruz, 1; Monte Verde, 3; Belén Gualcho, 3; Merendón, Copán, 8; Mount Puca, 22; Santa Bárbara, 7; Cerro Nieve, 1; San José de Santa Bárbara, 2; Lake Yojoa, 3; San Pedro Sula, 2; Las Peñitas, 23; Muye, 5.

LAMPORNIS VIRIDIPALLENS NUBIVAGUS Dickey and van Rossem

Lampornis viridipallens nubivagus Dickey and van Rossem, Proc. Biol. Soc. Washington, 42, 1929: 210 (Volcán Santa Ana, Dept. Santa Ana, 7,000 feet, El Salvador; type no. 19184 in Dickey Collection, 17 May 1927, collected by A. J. van Rossem).

Diagnosis.—Similar to *L. v. ovandensis*, but with buffy tinge present on posterior abdomen; differs from the nominate race by the reduction of the green areas of sides of the breast and flanks.

Range.—Confined to cloud forest, above 4,500 feet, in Department of Santa Ana, western El Salvador (Volcán de Santa Ana, Cerro Los Naranjos, Cerro del Aguila).

Specimens examined.—EL SALVADOR, 8: Volcán de Santa Ana, 2; Cerro Los Naranjos, 5; Cerro del Aguila, 1.

LAMPORNIS SYBILLAE (Salvin and Godman)

Delattria sybillae Salvin and Godman, Ibis, 1892: 327 (Matagalpa, Nicaragua; type in Salvin and Godman Collection).

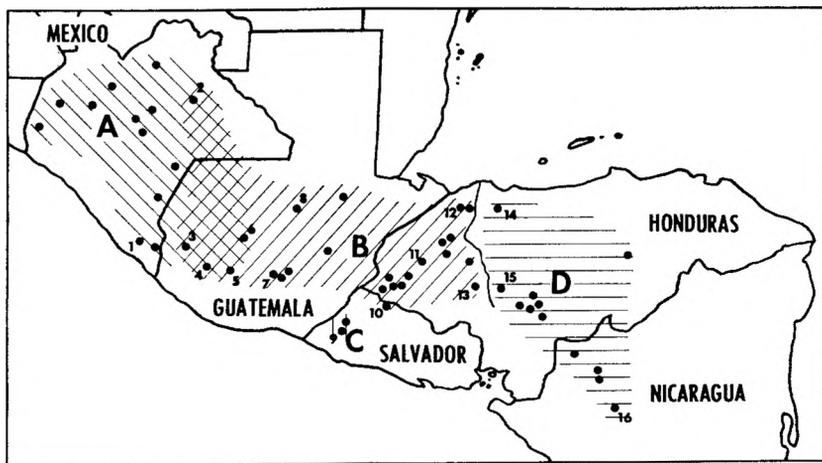


FIGURE 1. Distribution of the forms of the *Lampornis viridipallens* complex: (A) *L. v. ovandensis*; (B) *L. v. viridipallens*; (C) *L. v. nubivagus*; (D) *L. sybillae*. Each dot represents a locality from which specimens have been examined. Numbered localities are as follows: (1) Mount Ovando, Chiapas; (2) Laguna Ocotol, Chiapas; (3) San Marcos, Guatemala; (4) Finca El Cipres, Guat.; (5) San Lucas, Guat.; (6) El Quiché (Department), Guat.; (7) Mixco, Guat.; Guatemala City is adjacent dot to east; (8) Cobán, Vera Paz, Guat.; (9) Volcán de Santa Ana and Cerro Los Naranjos, El Salvador; Cerro del Aguila is adjacent dot to north; (10) Los Esesmiles, Sal.; (11) Mount Puca, Honduras; (12) San Pedro Sula, Hond.; Las Peñitas is adjacent dot to east and Santa Bárbara is nearest dot to south; (13) Muye, Hond.; (14) Portillo Grande, Hond.; (15) Montaña Vásquez, Hond.; Cantoral is nearest dot to southeast; (16) Matagalpa, Nicaragua.

Diagnosis.—Differs from *L. viridipallens* in having the breast entirely green in males (lacking white), the gorget not clearly demarked; in having white in the outer rectrices of both sexes; in having the throat of the females buff (at least in adults); and in having slightly longer bill and wings in males.

Range.—Highland forests of central Honduras (west to the Comayagua-Ulúa river valley) and northwestern Nicaragua (south at least to Matagalpa).

Specimens examined.—HONDURAS, 147: Portillo Grande, 17; Catacamas, 1; Montaña Vásquez, 69; Rancho Quemado, 3; Cantoral, 4; Alto Cantoral, 1; Cerro Cantoral, 36; El Derrumbo, 2; La Flor, Archaga, 1; El Hatillo, 1; "Las Peñitas"—probably near Tegucigalpa, 1; San Juancito, 9; Mount Uyuca, 2. NICARAGUA, 19: "northern Nicaragua," 1; Ocotol, 4; Yali, 1; San Rafael del Norte, 12; Matagalpa, 1.

TABLE 1. MEASUREMENTS IN MILLIMETERS OF SPECIMENS EXAMINED

	No.	Wing	Tail	Exposed Culmen
MALES				
<i>L. v. ovandensis</i>	37	59.8-68.1 (65.3)	35.8-43.8 (40.7)	18.5-22.4 (20.3)
<i>L. v. viridipallens</i>	35	59.0-69.3 (65.9)	36.0-41.9 (38.9)	19.0-22.5 (20.4)
<i>L. v. nubivagus</i>	7	64.1-67.4 (65.5)	40.0-42.2 (40.6)	19.3-21.2 (20.4)
<i>L. sybillae</i>	47	63.9-70.3 (66.6)	36.3-41.5 (39.3)	20.1-22.9 (21.4)
FEMALES				
<i>L. v. ovandensis</i>	27	56.4-62.6 (59.4)	33.8-39.2 (36.6)	19.1-23.2 (21.7)
<i>L. v. viridipallens</i>	29	55.6-60.8 (58.8)	32.1-37.8 (34.9)	19.3-23.0 (20.9)
<i>L. v. nubivagus</i>	1	62.0	37.6	20.4
<i>L. sybillae</i>	33	57.0-62.1 (59.4)	32.3-37.2 (34.5)	20.2-22.9 (21.7)

SUMMARY

A study of a series of 386 specimens of the *Lampornis viridipallens* complex indicates that there are two species in the group, *L. viridipallens* (Chiapas to western Honduras) and *L. sybillae* (eastren Honduras and northwestern Nicaragua). Differences in the display patterns of the males constitute evidence of specific rank of the two forms; differences in adult female morphology also support this view.

L. sybillae is monotypic, but *L. viridipallens* is polytypic with three races, *ovandensis*, *viridipallens*, and *nubivagus*. *L. v. connectens* is considered a synonym of the nominate race.

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