

## A new species of hummingbird (*Thalurania*; Trochilidae, Trochilinae) from the western Colombian Andes

Armando Valdés-Velásquez and Karl-L. Schuchmann

Eine neue Kolibriart (*Thalurania*; Trochilidae, Trochilinae) aus den westkolumbianischen Anden

Die Kolibrigattung *Thalurania* umfasst sechs Arten, die von Mexiko bis ins südliche Brasilien verbreitet sind. Alle Taxa dieses Genus sind mittelgroß (ca. 5 g) und bewohnen tropische bis subtropische Wälder einschließlich halboffener Sekundärvegetationen vom Meeresspiegel bis 2000 m NN. Charakteristisch ist der Geschlechtsdimorphismus. Männchen sind meist irisierend grün an Kehle und/oder Oberkopf. Darüber hinaus fallen sie durch ein grünes bzw. blaugrünes Ventral- und Dorsalgefieder auf. Demgegenüber sind Weibchen gering kontrastiert, mit meist grauer bis grauweißlicher Unterseite. Hier beschreiben wir eine neue *Thalurania*-Art aus den Westanden Kolumbiens, bei der sich die Männchen deutlich durch ihren nicht irisierenden Oberkopf von allen bisher bekannten Arten der Gattung unterscheiden.

**Key words:** New hummingbird species; *Thalurania nigricapilla*, sp. nov.; Black-capped Woodnymph; Lake Calima, Valle del Cauca, Colombia.

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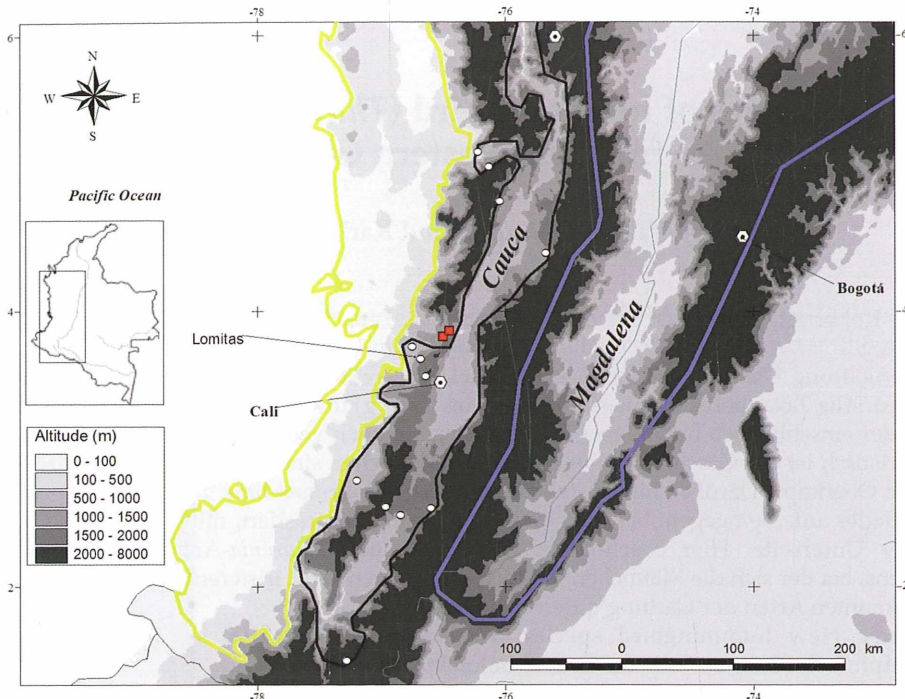
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### Introduction

The hummingbird genus *Thalurania* Gould, 1848 comprises six species, distributed from Mexico to southeastern Brazil (Escalante-Pliengo & Peterson 1992, Schuchmann 1999, Valdés-Velásquez 2003). These medium-sized hummingbirds (4.2 – 6.0 g; Dunning 1993) inhabit tropical to subtropical forests, woodlands, and adjacent clearings, as well as semi-open areas. They are found from sea level to altitudes of around 2,000 m. Members of the genus have a slightly decurved black bill a little longer than the head, short wings, long black-blue tails more or less deeply forked, and feathered tarsi (Elliot 1878, Hartert 1900, Schuchmann 1999).

*Thalurania* species exhibit a pronounced sexual dimorphism: males are generally characterized by iridescent green throats, and green to bluish-green or purple crowns; breast, lower abdomen, and back are either contrasting blue or glittering green. Females are ventrally gray or whitish, dorsally green, sometimes with a bronze tinge (Schuchmann 1999).

At species level the taxonomy of this genus is widely accepted (Peters 1945, Escalante-Pliengo & Peterson 1992, Schuchmann 1999) due to similar plumage coloration patterns on crown, abdominal region, and under tail-coverts. During a biogeographical study of the genus *Thalurania*, our attention was drawn to two unusually colored specimens collected by



**Fig. 1.** Localities of *T. nigricapilla* (red circles) and adjacent ranges of congeners. Blue line indicates the distribution of *T. c. colombica* along the Magdalena Valley; black line and open circles indicate the distribution of *T. f. subtropicalis* along the Cauca Valley; yellow line indicates the distribution of *T. f. fannyi* along the Pacific slopes of the Western Cordillera. In addition, the closest confirmed locality is indicated for *T. f. subtropicalis* by the town of Lomitas about 35 km south of the range of *T. nigricapilla*. Circles with an insluded dot indicate major cities. – *Nachweise von T. nigricapilla* (rote Punkte) und Verbreitungsgebiete der Thalurani-Taxa im Magdalena Tal (*T. c. colombica*), blaue Linie; im Cauca Tal (*T. f. subtropicalis*), schwarze Linie und weiße Punkte, sowie im Bereich der kolumbianischen Westanden (Pazifikseite, *T. f. fannyi*), gelbe Linie. In Lomitas liegen die Verbreitungsgebiete von *T. f. subtropicalis* und *T. nigricapilla* nur 35 km auseinander. Weiße Kreise mit schwarzem Punkt verweisen auf größere Städte.

one of us (KLS) in 1978 in the vicinity of Lake Calima, 50 km north of Cali, Valle del Cauca, in the western Andes of Colombia (Fig. 1). Both skins exhibit a unique combination of plumage patterns, clearly identifying them as representatives of *Thalurania* but sufficiently different to consider them a new taxon, herein named as *Thalurania nigricapilla*, sp. nov.

*Thalurania nigricapilla*, sp. nov.

English: Black-capped Woodnymph

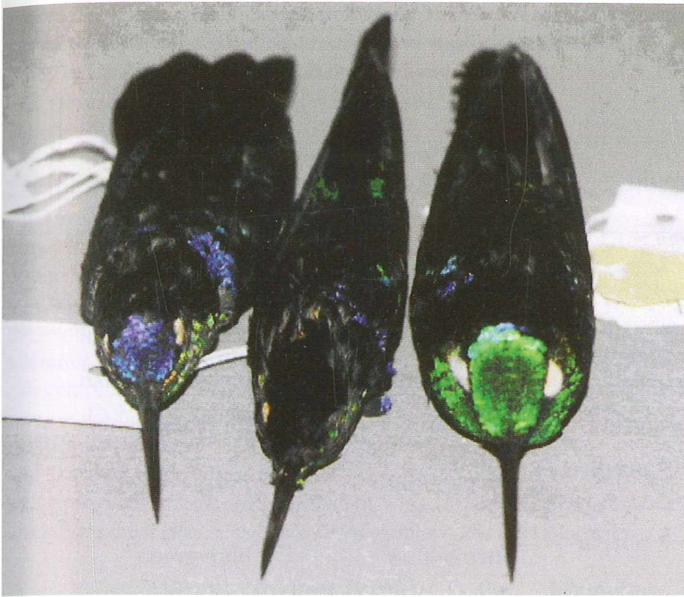
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German: Schwarzkopfnymfpe

**Holotype.** Alexander Koenig Research Institute and Museum of Zoology (ZFMK) No. 81.384, adult male, Lake Calima, also known as Laguna de Calima or Embalse de Calima (03°50'N,

76°30'W), 50 km north of Cali, Valle del Cauca, Colombia, elevation 1,300 m; coll. KLS, 16 April 1978.

**Diagnosis.** This taxon is assignable to the genus *Thalurania* based on the combination of features consisting of a slightly decurved black bill, an iridescent green throat patch, a purple chest, purple abdominal regions, the presence of a dorsal purple band, and a purple-blue forked tail. It is separable from other trans-Andean congeners, namely the members of *Thalurania fannyi* and *T. colombica*, as well as monotypic *T. ridgwayi*, by the combination of two plumage characters: (1) the lack of an iridescent crown patch and (2) a black forehead and crown when viewed frontally (Fig. 2).



**Fig. 2.** Crowns of adult male specimens. Note coloration of crown and forehead: black in holotype of *T. nigricapilla* sp. nov. (center), bluish-purple in *T. colombica* (left), and green in *T. fannyi* (right). – Vergleich der Oberkopffärbung (Krone) von adulten *Thalurania*-Männchen der kolumbianischen Anden. Schwarzer Oberkopf (Mitte) Holotyp von *T. nigricapilla* sp. nov., blau-violetter Oberkopf (links) *T. colombica*, grüner Oberkopf (rechts) von *T. fannyi*.

Photograph by F. Kouett.

**Description of holotype.** Adult male has green-bronze forehead and crown, with bronze tinge at the edge of forehead, these parts showing a black sheen when viewed frontally; rear crown and nape dark bronze-green; upper back and wing coverts separated by purple-bluish band. The lower back, rump, and upper tail-coverts green-bronze mingled with some green-bluish feathers; innermost tail feather (rectrix 1) centrally rich purple with purple-blue edges; rest of the tail dark purple-blue; chin, throat, and throat sides iridescent green; chest, chest sides, abdomen, and flanks iridescent purple; lower abdomen gray with some feathers purple-bluish towards the edge; under tail-coverts centrally mostly gray, white at base, some with distally restricted green patch (Table 1).

Colors used for comparison and standardization were extracted from NCS-Index, page 129, colors: S1060-B, S1555-B100, S1565-B NCS (2001).

**Measurements of holotype.** Bill length (tip to posterior base of nasal operculum) 20.9 mm, wing chord 53.0 mm, innermost tail feather (rectrix 1) 22.3 mm, outermost tail feather (rectrix 5) 43.9 mm, tail fork depth 21.6 mm. The iridescent green throat patch measured 22.1 mm from tip of feathered lower mandible to border between green throat and purple chest.

**Paratype.** Adult male, ZFMK No. 81.383, collected in the forest northwest of Yotoco on road to Puente Tierra at Lake Calima, vicinity of Alto de los Toros, 03°53'N, 76°27'W, Valle del Cauca, Colombia, elevation c. 1,500 m, leg. KLS, 21 April 1978.

In contrast to the holotype, the specimen exhibits a bronze-greenish forehead and bronze-colored crown and nape. The lower back and rump are bluish-green with purplish-blue feathers along the midline. Ventrally, this specimen does not differ from the holotype. Its measurements are included in the data for *T. nigricapilla* in Table 2. The specimen was lacking rectrix 5; measurements could not be taken.

**Distribution.** The Black-capped Woodnymph is probably restricted to the region surrounding Lake Calima, perhaps even extending over the whole plateau surrounding the lake. As a generalist capable of using human-made and altered vegetation types, it is most probable that this species profits from the gardens and small park-like areas used for tourism.

**Habitat.** At the time of discovery *T. nigricapilla* was abundant throughout the valleys and slopes around Lake Calima. Lake Calima is situated on a plateau north of Cali surrounded by steep hills, which, along with narrow ravines, isolate the plateau from the neighboring valleys. To the east, the Western Cordillera (Cordillera

**Table 1.** Summary of plumage features on adult male specimens of *Thalurania nigricapilla* (holotype), *T. fannyi subtropicalis* (n = 11), and *T. colombica* (n = 37). Arrows indicate color variations. – Übersicht Gefiederfärbung adulter Männchen von *Thalurania nigricapilla*, *T. fannyi subtropicalis* und *T. colombica*. Pfeile beziehen sich auf Farbvariationen.

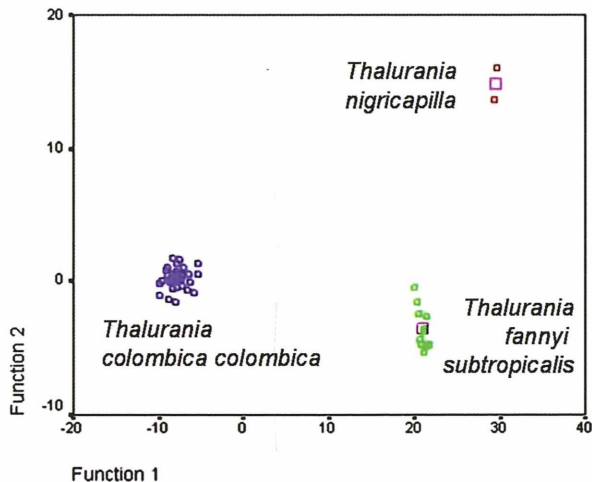
Plumage coloration variables	<i>T. nigricapilla</i>	<i>T. f. subtropicalis</i>	<i>T. c. colombica</i>
forehead	green-bronze	green	purple
crown	green-bronze	green	purple
hindcrown	bronze-greenish	purple	bronze-greenish
back of head	bronze-greenish	green-bronze	bronze-greenish
nape	bronze-greenish	green-bronze	bronze-greenish
shoulder	purple ↔ purple-bluish	purple-bluish	purple
back band	purple ↔ purple-bluish	purple-blue	blue-green
upper back	purple ↔ purple-bluish	green-bronzy	blue-green
lower back	green-bronze + green-bluish	green-bronzy	green-bronzy
rump	green-bronze + green-bluish	green-bronzy	green-bronzy
upper tail-coverts	green-bronze + green-bluish	green-bluish + green	green-bronze + blue-purplish
tail	purple-blue	blue-purplish	purple-blue
chin	green	green	green
upper throat	green	green	green
lower throat	green	green	green
throat sides	green	green	green
chest	purple	purple-blue	purple
chest sides	purple	purple-blue	purple
belly	purple	purple-blue	purple
flanks	purple	purple-blue	purple
under tail-coverts	gray + green	blue + white	white

Occidental) is lower (c. 2,000 m) and connects via the Alto de los Toros (c. 1,500 m) to the town of Yotoco in the Cauca Valley.

The vegetation around Lake Calima is typical for a heavily anthropogenic environment,

with semi-open to rather bushy vegetation structures. The most common plant species belong to the Ericaceae (e.g., *Cavendishia*, *Psammisia*, and *Macleania* spp.). During the flowering season (November to early June) the territorial

**Fig. 3.** Discriminant Analysis plot showing separation between taxa: *T. nigricapilla* (red), *T. f. subtropicalis* (green), *T. c. colombica* (blue). Function 1 explains 93.8 % of the variance and is strongly correlated with forehead, crown, and rump coloration; Function 2 explains 6.2 % of the variance and is correlated with all other variables. The variables upper back and lower back coloration, main upper throat and lower throat coloration, and flank coloration were not included in the analysis (failed tolerance test; minimum tolerance level = 0.001). Larger squares indicate centroids. – Die Diskriminanzanalyse indiziert die deutliche Separation zwischen *T. nigricapilla* (rote Quadrate), *T. f. subtropicalis* (grün) und *T. c. colombica* (blau). Funktion 1 erklärt 93,8 % der Varianz. Diese ist korreliert mit Stirn-, Kronen- und Unterseitenfärbung. Funktion 2 erklärt 6,2 % der Varianz und korreliert mit allen anderen Variablen. Größere Quadrate: Zentroide.



White-tailed Hillstar *Urochroa bougeri* is the most common and dominant hummingbird species around these potential nectar sources, leaving a subdominant status for *Thalurania nigricapilla*.

**Courtship behavior.** Males of the Black-capped Woodnymph were observed attending females perched near the ground, performing a repeated arc-like flight maneuver two to three meters above the females. One male approached a female with a fanned tail and rapid sideward hovering flight. The female followed the movements with her head, afterwards lowering her upright sitting position and triggering the male to alight on her back.

**Etymology.** The scientific name and the English vernacular name are intended to emphasize the prominent diagnostic character shown by this taxon, a black crown patch (*nigri* = black, *capilla* = head or crown).

### Biogeographical, morphological, and taxonomical considerations

The species of the genus *Thalurania* are mostly allopatrically distributed along a geographical continuum from southwestern Mexico to southeastern Brazil. Two situations of sympatry occur along this distribution, (1) *T. glaucopsis* and *T. furcata eriphile* in the Paraná watershed of Brazil

**Table 2.** Body measurements of specimens of *T. nigricapilla* and *T. fannyi subtropicalis*, showing mean values  $\pm$  standard deviation (upper line) with ranges and sample sizes. \* = significant difference (Mann-Whitney U-test;  $P < 0.05$ ) between *T. nigricapilla* and *T. f. subtropicalis*. – Biometrische Daten (Mittelwerte  $\pm$  Standardabweichung sowie Stichprobenumfang) von Schnabel- und Flügellängen, sowie Steuerfedern und Schwanzgabelungstiefen. \* = Signifikanzunterschied (Mann-Whitney U-Test;  $P < 0.05$ ) zwischen *T. nigricapilla* und *T. f. subtropicalis*.

Taxa	bill length (mm)	wing length (mm)*	innermost tail feather length (mm)*	outermost tail feather length (mm)	tail fork depth (mm)
<i>T. nigricapilla</i>	20.45 $\pm$ 0.64	52.50 $\pm$ 0.71	23.15 $\pm$ 1.20	43.90	21.6
	20 – 20.9	52 – 53	22.3 – 24.0		
	n = 2	n = 2	n = 2	n = 1	n = 1
<i>T. f. subtropicalis</i>	22.06 $\pm$ 1.14	56.46 $\pm$ 1.89	25.62 $\pm$ 1.42	42.01 $\pm$ 1.83	16.48 $\pm$ 2.39
	20.4 – 23.8	53.0 – 59.0	24.2 – 29	39.4 – 44.8	12.6 – 20.2
	n = 9	n = 11	n = 10	n = 10	n = 9

and (2) *T. glaucopsis* and *T. watertonii* in Salvador de Bahia, Brazil. In the case of *T. nigricapilla*, sympatry with *T. fannyi subtropicalis* cannot be completely rejected. However the nearest confirmed locality (one adult male) for *T. f. subtropicalis* is in Lomitas (03°39'N, 76°41'W; altitude 1,600 m), department of Valle del Cauca, c. 35 km south of Lake Calima (Fig. 1).

There are clear differences between the involved taxa concerning the coloration of the forehead and crown. In *T. f. subtropicalis*, the crown patch exhibits an iridescent green color contrasting with the black of *T. nigricapilla* (Fig. 2). The taxonomic separation at the species level on the basis of differences in crown coloration of *T. nigricapilla* is supported by the other two cases of sympatry within the genus, where this plumage character is most differentiating: (1) *T. furcata eriphile* (green-bluish semi-iridescent crown) and *T. glaucopsis* (purple iridescent crown); (2) *T. glaucopsis* and *T. watertonii* (green iridescent crown) (Escalante-Pliego & Peterson 1992).

Interestingly, the nearest subspecies (Magdalena Valley, Fig. 1) of the other *Thalurania* taxon found in Colombia, *T. colombica*, has an iridescent purple crown patch, contrasting with both *T. nigricapilla* and *T. fannyi* (Fig. 2).

A discriminant analysis was carried out on these three taxa (*T. nigricapilla*, n = 2; *T. f. subtropicalis*, n = 11; *T. c. colombica*, n = 37) using plumage coloration data (Table 1, Fig. 3). All specimens are clearly separated according to their taxonomic group.

Morphometric differences were found between *T. nigricapilla* and *T. f. subtropicalis* in the length of the wing (unflattened) and the length of the innermost tail feather (rectrix 1), both being shorter in the former taxon (Table 2; Mann-Whitney U-test;  $P < 0.05$ ). There is an indication of differences in the length of the outermost tail feather (rectrix 5) and the tail fork depth, but the small sample size of *T. nigricapilla* allowed no statistical comparison (Table 2).

In conclusion, the Black-capped Woodnymph is a valid biological species, morphologically distinct from the other trans-Andean *Thalurania* taxa. The reproductive isolation of *T. nigricapilla* from *T. f. subtropicalis* is inferred from the current knowledge of male plumage dimorphism contributing to species recognition (Escalante-Pliego & Peterson 1992, Valdés-Velásquez 2003). Further collecting is needed in the area around Lake Calima in order

to obtain female specimens of this taxon for description.

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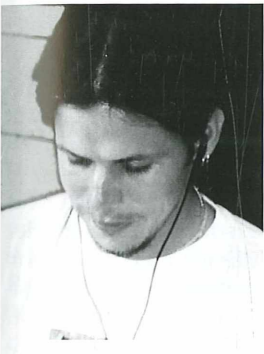
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## Appendix

Localities used in this study for morphological comparison between taxa (Discriminant Analysis and Mann-Whitney U-test). All localities are in Colombia.

*T. fannyi subtropicalis*: La Frijolera (07°07'N, 75°25'W); Santa Cecilia/Caldas (05°19'N, 76°13'W); Pueblorrico (05°12'N, 76°08'W); Quindío (04°30'N, 75°40'W); Lomitas (03°39'N, 76°41'W); Río Mechengue (02°40'N, 77°12'W); El Tambo/alto (02°28'N, 76°58'W); Popayán (02°27'N, 76°36'W); El Tambo/bajo (02°24'N, 76°51'W).

*T. colombica colombica*: Don Amo (11°16'N, 73°58'W); Las Vegas (11°13'N, 73°54'W); Las Nubes (11°12'N, 73°57'W); El Líbano (11°11'N, 74°00'W); Onaca (11°11'N, 74°04'W); Minca (11°09'N, 74°07'W); Cincinnati (11°06'N, 74°04'W); La Concepción (11°03'N, 73°27'W); San Francisco/Guajira (10°59'N, 73°25'W); San José / Cesar (10°45'N, 73°24'W); La Palmita (08°14'N, 73°24'W); Paima (05°22'N, 74°10'W); El Consuelo (05°04'N, 74°36'W); Bogotá (04°36'N, 74°05'W); Ibagué (04°27'N, 75°14'W); Fusagasuga (04°21'N, 74°21'W); Andalucía (01°54'N, 75°40'W); San Agustín (01°53'N, 76°16'W); La Candela (01°50'N, 76°20'W).



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