

## *Tricorythodes caunapi*: a new species from the rain forest of the colombian pacific (Ephemeroptera: Leptohiphidae)

*Tricorythodes caunapi*: una nueva especie para el bosque tropical húmedo del pacífico colombiano  
(Ephemeroptera: Leptohiphidae)

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**Abstract:** *Tricorythodes caunapi* sp n. is described and illustrated from larvae and adults of both sexes. The name refers to the Caunapí River, located on the Pacific coast of Colombia, where the type-material was collected. This species can be recognized by the following combination of characters of adults: shape of the male genitalia, tibiae and tarsi with blackish bands, abdominal color pattern and small size (approximately 3mm); larvae: maxillary palp absent, tibiae and tarsi with same coloration as adults, tarsal claws with 7-8 marginal and double row of 1-2 + 2-3 submarginal denticles, abdominal color pattern, and triangular operculate gills.

**Key words:** Mayfly. Taxonomy. Neotropics. Biogeographic Chocó.

**Resumen:** Se describe e ilustra la larva y adulto de ambos sexos de *Tricorythodes caunapi* sp n. El nombre de la especie hace alusión al río Cunapí del Pacífico Colombiano, que corresponde al lugar donde el material tipo donde se colectó. Esta especie se reconoce por las siguientes combinaciones de características en el adulto: forma de los genitales del macho, tibia y tarso con bandas oscuras, por el patrón de coloración de abdomen y por su pequeño tamaño (3mm aproximadamente). En la larva: por el palpo maxilar ausente, tibia y tarso con la misma coloración del adulto, clavos tarsales con 7-8 denticulos marginales y una doble hilera de 1-2 + 2-3 de denticulos marginales, por el patrón de coloración abdominal y por las branquias operculares triangulares.

**Palabras clave:** Efímera. Taxonomía. Neotrópico. Chocó biogeográfico.

### Introduction

*Tricorythodes* Ulmer is a specious genus within the Leptohiphidae. The genus was described by Ulmer (1920), and is widely distributed in the Neotropical region. The genus is represented by twenty-one species in South America (Dias and Salles 2006; Dias et al. 2009a,b; Emmerich 2007; Gonçalves et al. 2010; Molineri 2002; Molineri and Zúñiga 2006). In Colombia four species are known: *T. zunigae* Molineri, 2002 from Chocó Department; *T. trifasciatus* Molineri and Zúñiga, 2006 from Valle del Cauca Department; *T. capuccinorum* Emmerich, 2007 and *T. uniandinus* Emmerich, 2007, these last from Cundinamarca Department (Molineri 2002; Domínguez et al. 2006; Emmerich 2007; Molineri and Zúñiga 2006). All Colombian *Tricorythodes* species have been described based on nymphs and adults.

The municipality of Tumaco is located in the Pacific coastal region of Colombia. Tumaco belongs to the Chocó Biogeographical Region, which exhibits high levels of diversity and endemism (García-Kirkbride 1986; Gentry 1986). Collecting and conducting biodiversity studies in this area is difficult due to armed conflicts, illegal crops and extensive oil palm plantations. Sampling of aquatic insects in this region resulted in the finding of a new species of *Tricorythodes*. In this paper, the authors describe and illustrate *Tricorythodes caunapi* sp. n. based on larvae and adults of both sexes.

### Material and Methods

Both larvae and adults were preserved in 90% ethanol. Mouthparts and legs of larvae as well as male genitalia and

wings of the adults were mounted on microscope slides using Euparal. Illustrations were drawn using a camera lucida attached to a stereo microscope. Specimens are deposited in the following Institutions: Colección Entomológica del Programa de Biología de la Universidad de Caldas, Caldas, Colombia (CEBUC); Colección Zoológica de la Universidad de Nariño, Nariño, Colombia (PSO-CZ); Instituto-Fundación Miguel Lillo, Tucumán, Argentina (IFML). Adults were obtained and associated by rearing larvae in the Caunapí River. All measurements are in millimetres; numbers correspond to the minimum and maximum values.

### Systematic account

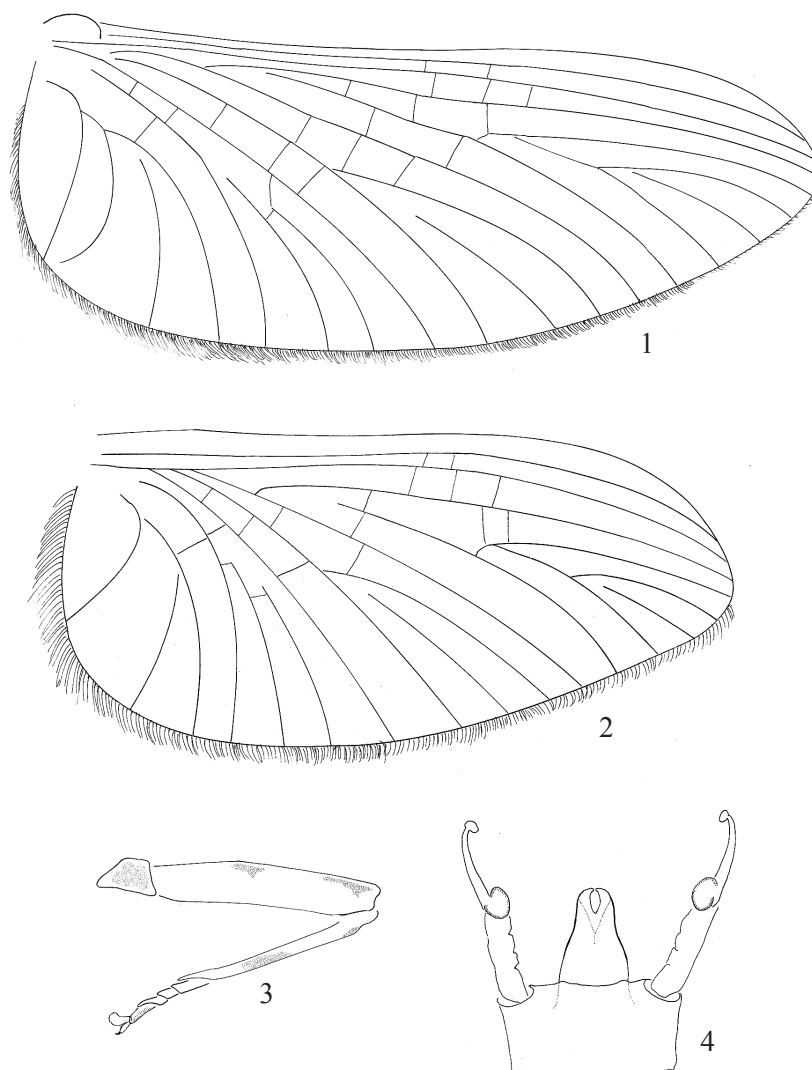
*Tricorythodes caunapi* sp. n. (Figs. 1-22)

**Type Material:** Holotype male imago, from Colombia, Tumaco, Tangareal, Río Caunapí. 13m. 1° 32' 78.1" N 78° 40' 59.5" W LAS COORDENADAS NO ESTÁN CLARAS 06-nov-2007, Dias L. G., Bacca. T., Angulo. D., Estacio. J. (IFML). Paratypes: 5 larvae, same data as holotype, except, 05-XI-07 (CEBUC). One male, 1 female imago, same data as holotype (CEBUC). Five larvae, same data as holotype, except, 05-XI-07 (IFML). Other Material: 5 larvae, same data as paratypes (PSO-CZ). One male, 1 female imago, same data as paratypes (PSO-CZ).

**Male imago** (measurements taken from 5 specimens): Length: body, 2.5 - 2.8mm; forewing, 2.8 - 3.0mm. General colouration yellowish with black and brown marks.

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**Figures 1-4.** *Tricorythodes caunapi* sp. n.: 1. female fore wing; 2. male fore wing; 3. male mesothoracic leg; 4. male genitalia.

**Head:** Yellowish with small black marks on posterior margin of eyes and median region of occiput; antennae yellow.

**Thorax:** Pronotum uniformly shaded with black, except two small yellowish marks on anterior region; mesonotum yellowish, shaded with black; mesoscutellum brownish with black marks, lateral regions yellowish, plumidium absent; metanotum yellowish shaded with black; pleural and sternal sclerites whitish. **Legs** (Fig. 3): coxae and trochanters whitish shaded with black; femora whitish with dark marks on dorsal and subapical regions; tibiae yellowish, shaded with subapical dark band, and a small, basal dark mark; tarsi whitish, except fourth segment blackish. **Forewings** (Fig. 2): grey at base, membrane hyaline; longitudinal veins blackish; cross veins translucent, darkening toward costal margin; costa and subcosta pigmented grey margin; CuP absent.

**Abdomen:** Terga uniformly shaded with black, except submedian region of terga I-IV, and along lateral margins; sterna whitish shaded with pale gray. **Genitalia** (Fig. 4) whitish, except lateral margins of penis brownish; penis pyramidal

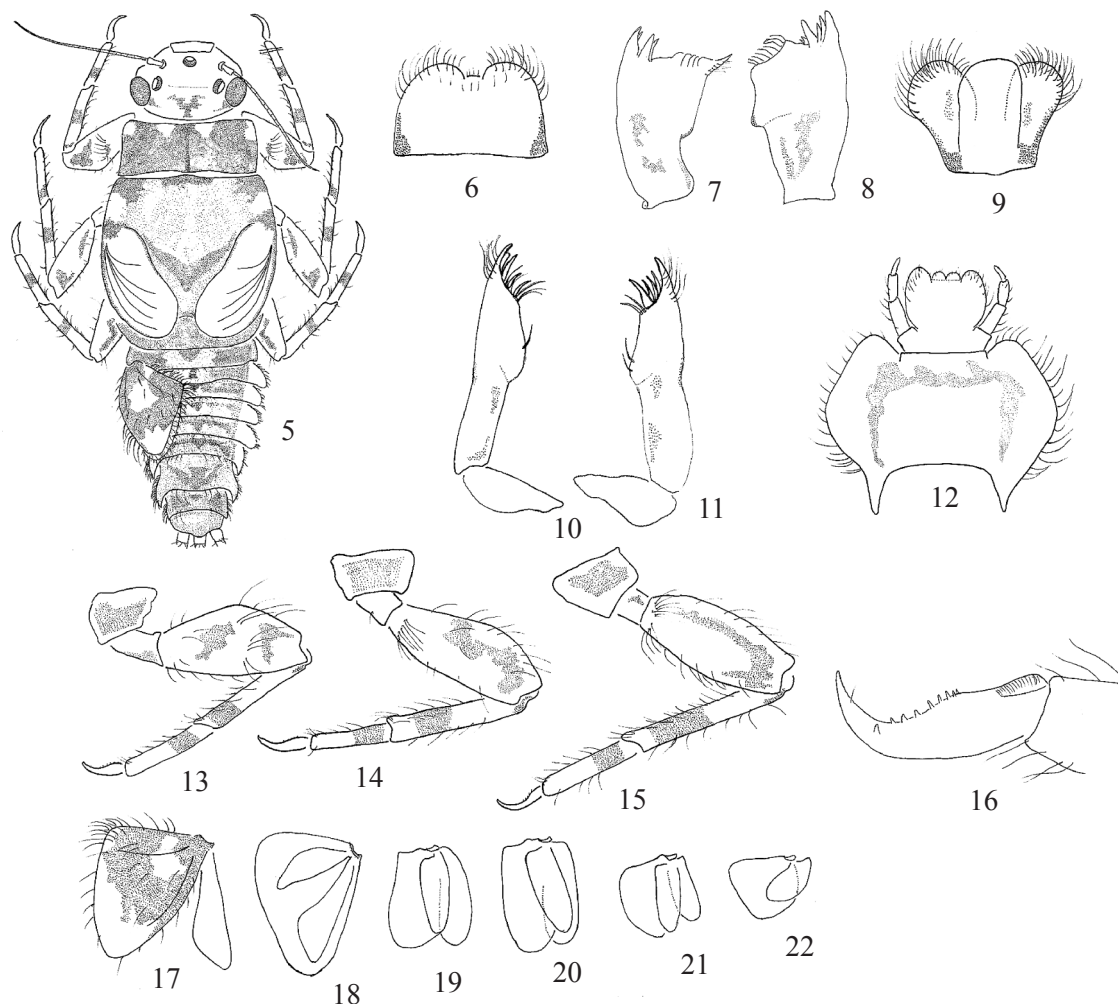
and fused for greater than 75% of their length; segment I of forceps subequal segment II; caudal filaments whitish, translucent.

**Female imago.** (measurements taken from 2 specimens) Length: body, 2.8-3.0 mm; forewings, 3.0mm.

Female similar to male in morphology and color pattern, except length of wings, longer than male and CuP vein curved, weak and sometimes incomplete (Fig. 1). Abdomen yellowish, shaded black (similar Fig. 5).

**Mature larva** (Figs. 5-22). (measurements taken from 6 specimens) Male length: body, 2.0-2.5mm, mesonotum, 0.50 - 0.70mm; cerci 1.2mm. Female length: body, 2.5-2.8mm; mesonotum, 0.60-0.70mm; cerci 1.0mm. General colouration yellowish with blackish marks. Small specimens with stout body.

**Head** (Fig. 5): Yellowish, with small marks on posterior margin of eyes; median region of occiput black; antennae yellowish



**Figures 5-22.** *Tricorythodes caunapi* sp. n.: 5. nymphal habitus; 6. labrum; 7. left mandible (dorsal view); 8. right mandible (dorsal view); 9. hypopharynx (dorsal view); 10. left maxilla (dorsal view); 11. right maxilla (dorsal view); 12. labium (dorsal view); 13. foreleg; 14. mid leg; 15. hind leg; 16. tarsal claw; 17. operculate gill (dorsal view); 18. operculate gill (ventral view); 19-22. gills III-VI (ventral view).

lowish, mouthparts yellowish with black marks (Figs. 6-12); frontal shelf absent, genal projection slightly developed; maxillae (Figs. 10, 11) with stipes subequal to galea-lacinia length; inner proximal margin of galea-lacinia with 1 or 2 setae; maxillary palp absent.

**Thorax** (Fig. 5): Pronotum uniformly shaded black, except two small, yellowish marks on anterior region and sometimes along anterolateral margins; mesonotum yellowish, shaded with black, darker between wing pads; anterolateral region of mesonotum with whitish mark; wing pads yellowish with dark veins; sterna whitish with grey shading. **Legs** (Figs. 13-15) whitish, with blackish marks on dorsal region of femora; femora bordered with long setae, dorsum of fore femora with a transverse row of setae on submedian region; tibiae with basal and subapical blackish bands, tarsi with subbasal blackish band; tarsal claws with 7-8 marginal and a pair of 1-2 + 1-3 submarginal denticles near apex; distal setae present (Fig. 16).

**Abdomen** (Fig. 5): uniformly shaded black, except submedian region of terga I-IV and lateral expansions of the abdomen (Fig. 5); lateral margins of segments III-VII expanded

with posterolateral spines on segments VII-IX, very short on IX (Fig. 5); posterior margins of abdominal terga with rows of setae; abdominal sterna whitish shaded with grey. Operculate gills (Fig. 17) triangular, shaded black, whitish mark in median and distal regions, with two dorsal ridges and a pair of ventral membranous lamellae (Fig. 18); remaining gills whitish, translucent and shaded with grey (Figs. 19-22); Gill formula 3-3-3-3-2 (Molineri 2003). Caudal filaments yellowish, translucent, shaded with grey, setae present at joints.

**Diagnosis. In adults:** (1) color pattern similar to figure 5; (2) penis pyramidal (Fig. 4); (3) segment 1 of forceps subequal to segment 2 (Fig. 4). **In larvae:** 1) maxillary palp absent (Figs. 10, 11); 2) tarsal claws with 7-8 marginal and double row of 1-2 + 1-3 submarginal denticles (Fig. 16); 3) opercular gills triangular, blackish, except whitish mark in median and distal regions (Fig. 17); 4) legs with dorsal blackish marks on femora, tibiae with basal and subapical blackish bands, tarsi with subbasal blackish band (Figs. 13-15); 5) transverse row of setae on dorsal surface of fore femora in the submedian region (Fig. 13); 6) general coloration yellowish, heavily shaded with black (Fig. 5); 6) small size (3mm).

The *T. caunapi* shows close resemblances with *T. trifasciatus* Molineri and Zúñiga, the nymphs and adults possess small size and the coloration pattern with black marks. In addition, both species are from Chocó Biogeographical Region. However, these species can be easily distinguished by penis form; in nymphs by the number of denticles of the tarsal claws, the maxillary palp absence in *T. caunapi*, besides the marks on tibia of the new species.

**Etymology.** The new species is named after the Caunapi River, where the type specimens were collected.

**Distribution.** Colombia: Nariño Department: Tumaco.

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## Fe de erratas número 37 (2)

Por error involuntario el trabajo de la página 244 a la 248 y los trabajos de las páginas 318 a la 359 tienen como número de revista 37 (1) cuando en realidad es 37 (2).