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Massartella devani, a New Mayfly Species from Venezuela's Highlands (Ephemeroptera: Leptophlebiidae: Atalophlebiinae)

Tomáš Derka

Comenius University, Bratislava, Slovakia

Abstract

Description and figures of the nymph and egg of *Massartella devanii* sp. nov. (Ephemeroptera: Leptophlebiidae) are presented. The genus *Massartella* Lestage revised by Pescador and Peters (1990) contains three species, two of whom are known from eastern Brazil while the third was collected in the northern part of the Guayana region of Venezuela. Nymphs of an undescribed species of *Massartella* have been collected in the SE of this region in a stream originating on the Mt. Roraima plateau. Nymphs are available of three species, distinctive diagnostic characters are presented. Some diagnostic characters of the genus are discussed.

Keywords: mayflies, nymph, egg, new species, *Massartella devani*, Neotropical region, South America, Venezuela.

Introduction

The family Leptophlebiidae (Ephemeroptera) is the most diverse South American mayfly family with 37 known genera. The genus *Massartella* established by Lestage (1930) contains only 3 species disjunctly distributed in southeastern Brazil–northeastern Argentina and the Guyana Shield along the Venezuela-Brazil border (Pescador & Peters, 1990). Peters and Edmunds (1972) redescribed *Massartella* and Pescador and Peters (1990) redefined the genus and described a new species from the Guyana region of Venezuela. *Massartella alegrettae* Ulmer is known only from a male imago and subimago. *Massartella brieni* (Lestage) is more common with all stages described, presently known from the high mountainous rivers and streams of southeastern Brazil. Two immature nymphs unassociated with adults and unassigned to any particular species were collected in northeastern Argentina (Pescador & Peters, 1990). A female subimago and mature nymphs of *Massartella venezuelensis* Pescador et

Address correspondence to: Tomáš Derka, Department of Ecology, Faculty of Natural Sciences, Comenius University, Mlynská dolina B1, SK-842 15 Bratislava, Slovakia. E-mail: derka@fns.uniba.sk

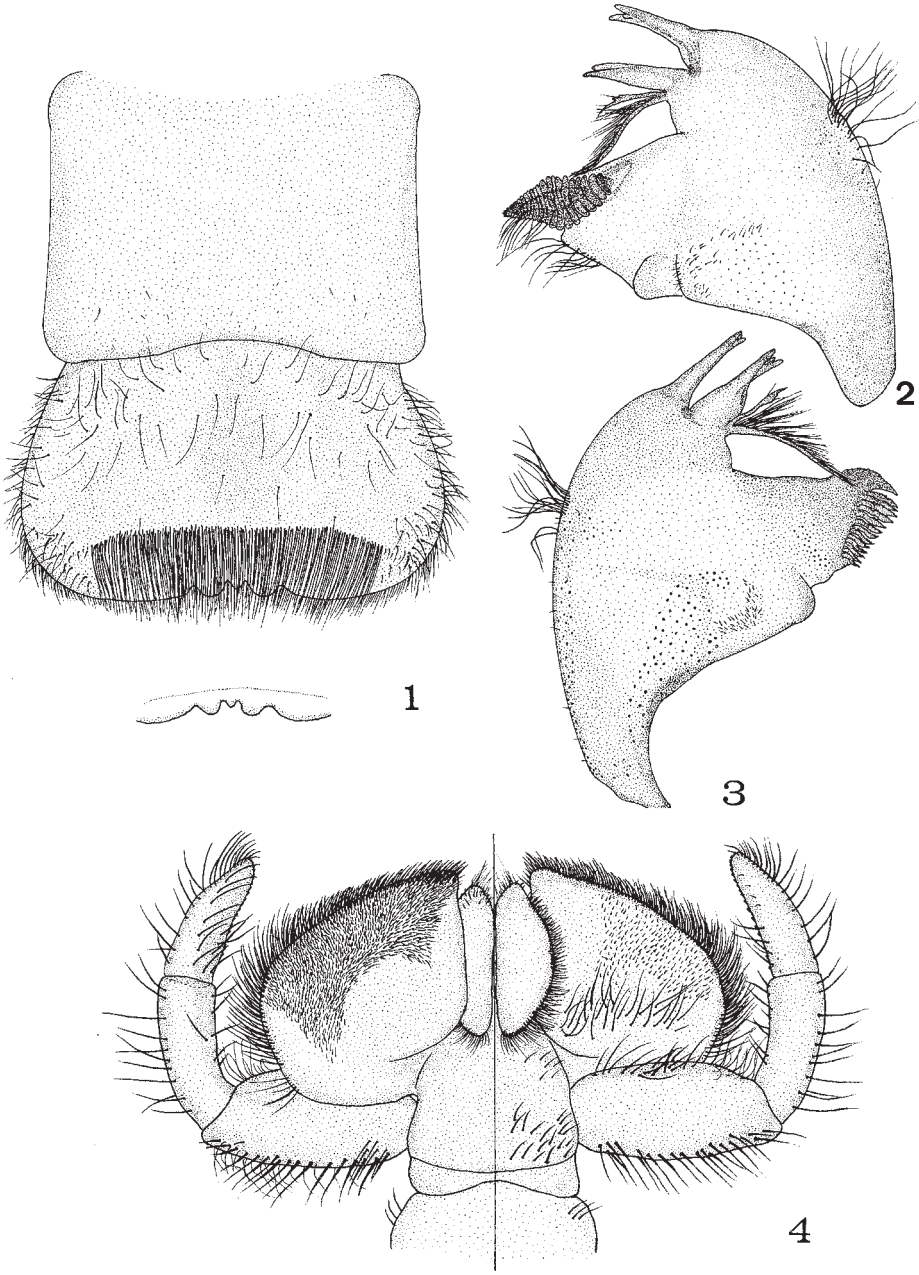
Peters were collected in the northern part of the Guyana region of Venezuela. According to Savage (1987) *Massartella* occupies the most northern geographic limits among the cold-adapted leptophlebiid genera of the Neotropics. Nymphs of an undescribed *Massartella* species have been collected during a trip to the Mt. Roraima, a famous 2772 meter high sandstone plateau-mountain located on the eastern part of the crystalline Guayana Shield at the conjunction of Venezuela, Guyana and Brazil borders.

According to Pescador and Peters (1990) the nymphs of *Massartella* can easily be distinguished from all the other genera of Leptophlebiidae by the following combination of characters: (1) clypeus is as wide as the labrum; (2) length of labrum is approximately 1/2 maximum width, and lateral margins are slightly expanded apically; (3) mandibles have slightly curved outer margin, and median hair turf; (4) glossae are ventrally curved, and submentum has several long lateral spines; (5) claws have denticles which are progressively larger apically except apical denticle is much larger; (6) abdominal terga have series of short lateral spines, and broad posterior spines and long feather-like setae; and (7) abdominal gills occur on segments 1–6, and are alike, plate-like and have well developed dorsal and ventral lamellae with the dorsal lamella apically terminated in a slender process. The egg chorion covered with fibrous filaments, and adorned with hexagonal ridges.

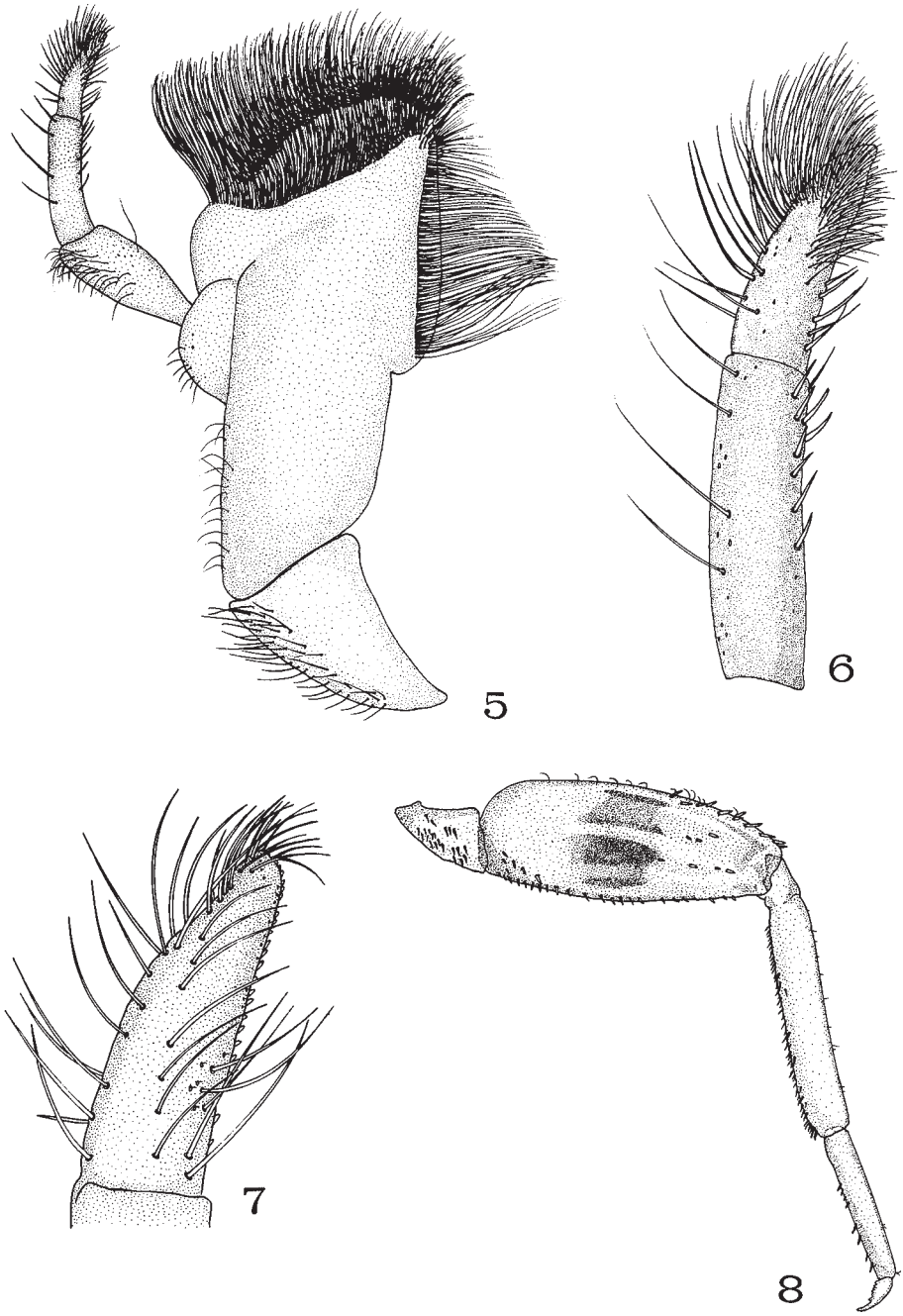
Massartella devani sp. nov. (Figs. 1–14)

Male and female imagines and subimagines. Unknown.

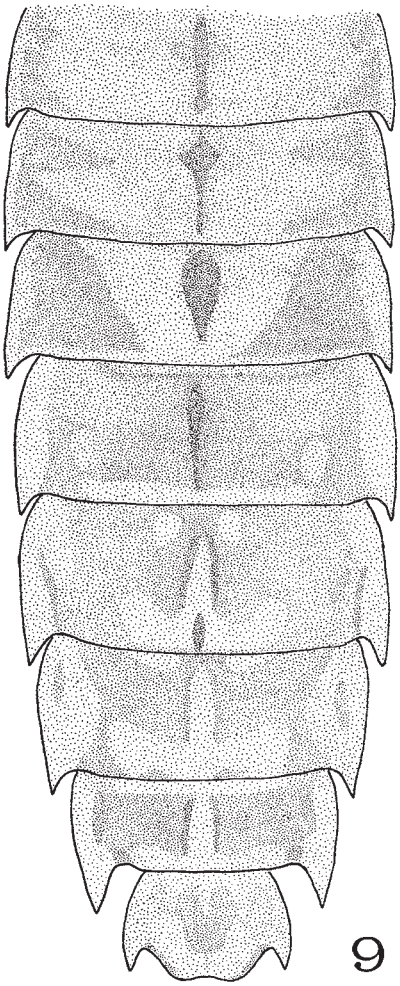
Mature nymph (in alcohol). Body length 12 mm. Dorsum of head brown, venter brownish-yellow; a pale yellow spot between eyes with a narrow longitudinal brown band in the centre; a broad pale yellow spot between anterior base of eyes, ocelli and antennae; area surrounding median ocellus pale yellow. Antennae pale yellow. Ocelli black. Female eyes black; upper portion of male eyes reddish-brown, lower portion black. Mouthparts (Figs. 1–7): labrum with a broad anteromedian emargination with 3 denticles, the middle denticle is almost 1/3 the size of the other denticles (Fig. 1); mandibles with thin median hair tuft (Figs. 2, 3); maxillary palpi pale yellow, segment 2 with spinous setae (Figs. 5, 6); labial palpi pale yellow, segment 1 of labial palpi with long, fine hair and long, thick setae, segment 2 with long, thick setae, segment 3 with 1 row of peg-like setae (Figs. 4, 7). Thoracic nota brown with large pale yellow spots. Sterna brownish-yellow with dark margins. Legs (Figs. 8, 11): yellow; trochanter with pointed setae, brown spot except fore leg; femora with broad transverse median brown band, apical brown band continuing to tibial articulation, dorsum of the 2nd and 3rd pair with numerous lanceolate setae; tibiae and tarsi yellow without spots (Fig. 8); tarsal claws with 8–11 denticles, the basal denticles are greatly reduced (Fig. 11). Abdomen (Figs. 9, 10): terga yellow with dark brown maculae (Fig. 9); sterna glabrous, yellow with brown markings along margins and longitudinal brown band in the centre; posterolateral spines of segments short, ca 1/6 maximum median length of segment. Gills (Fig. 10): present on abdominal segments 1–6, membrane grey, tracheae dark grey; dorsal portion of gill lamellae without apical process. Caudal filaments yellow, brown at the base, brown annulation on every 4th joint.

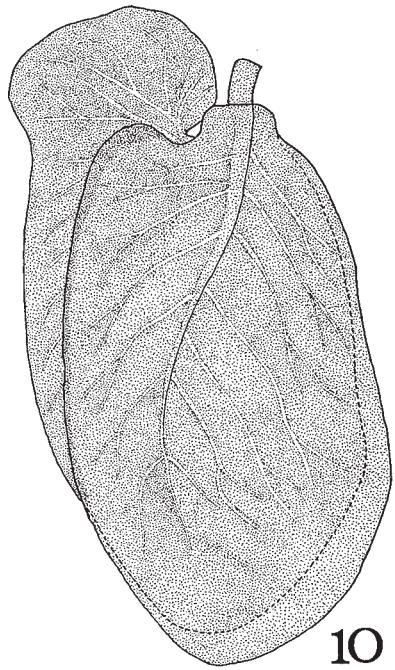


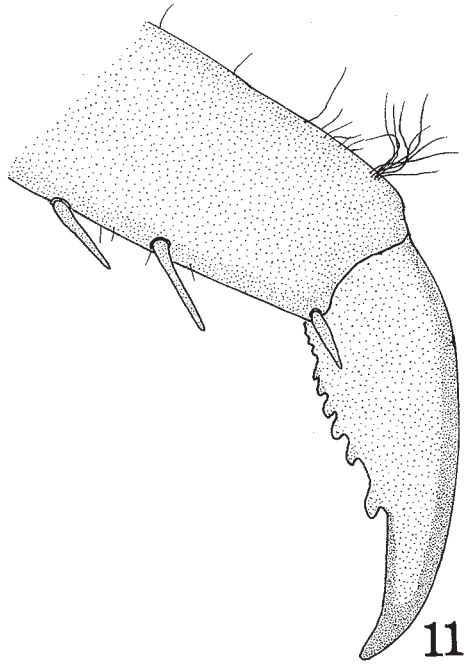
Figures 1–4. Massartella devani mature nymph. (1) Dorsal view of labrum. (2) Right mandible. (3) Left mandible. (4) Labium (left — dorsal, right — ventral).



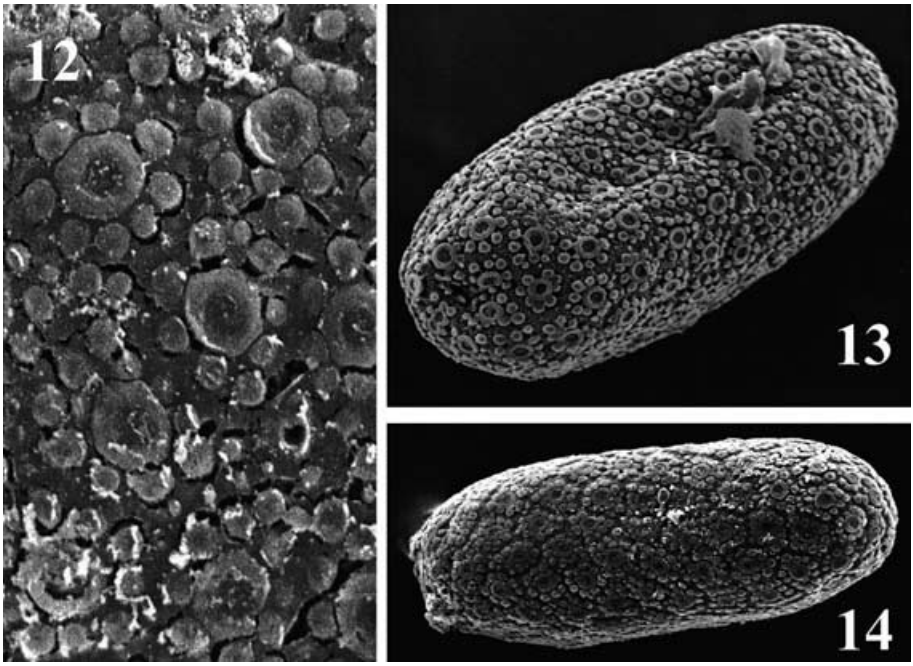
Figures 5–8. *Massartella devani* mature nymph. (5, 6) Maxilla (5, right maxilla, ventral; 6, maxillary palp). (7) Labium (enlarged 3rd segment of labial palpi, dorsal). (8) Foreleg.







Figures 9–11. Massartella devani mature nymph. (9) Abdomen, dorsal. (10) Gill. 4. (11) Foreclaw.



Figures 12–14. Scanning electron micrographs of *Massartella devani* eggs.

Material examined

Holotype mature nymph, SE Venezuela: Bolivar state, a torrential stream below the waterfall on the southwestern face of the Mt. Roraima crossing a tourist pathway to the Mt. Roraima plateau, ca 2000 m a. s. l., 3. Feb. 1999, T. Derka leg.; paratypes, 1 mature nymph and 6 immature nymphs, same data as holotype. Holotype and 5 paratypes are preserved in alcohol, 2 paratypes are mounted on a slide with Swan medium. Holotype and paratypes are deposited in the Museo del Instituto de Zoología Agricola 'Francisco Fernández Yépez' (MIZA), Facultad de Agronomía, Universidad Central de Venezuela, Maracay, edo. Aragua. Venezuela.

Etymology

The species is named after Dr. Pavel Deván, the enthusiastic Slovak ephemeropterologist, who introduced me to the beautiful world of mayflies.

Discussion

The nymphs of *M. devani* differ from Pescador and Peters's (1990) generic description by the lack of an apical process on the dorsal portion of gill lamellae (Fig. 10) and the number of denticles on the anteromedian emargination of the labrum (Fig. 1). Eggs are adorned with circular anchoring structures (Figs. 12–14). However, there are characters (plate-like gills present on abdominal segments 1–6 only, denticles on

claws progressively larger apically, except apical denticle larger) which indicate that the nymphs collected belong to the genus *Massartella* (Peters & Edmunds, 1972).

The nymphs of *Massartella devani* can easily be distinguished from *M. brieni* and *M. venezuelensis* by the lack of an apical process on the dorsal portion of gill lamellae (Fig. 10), short posterolateral spines of abdominal segments ca 1/5–1/6 maximum median length of segment (Fig. 9), tibiae and tarsi without dark brown bands (Fig. 8).

The nymphs of *M. devani* can also be distinguished from *M. brieni* by the following combination of characters: (1) segment 2 of maxillary palpi has spinous setae (Fig. 6); (2) segment 3 of labial palpi has 1 row of short peg-like setae (Fig. 7); (3) abdominal sterna glabrous. It can be distinguished from *M. venezuelensis* also by a thin median hair turf on the mandible (Figs. 2, 3).

Biology

The nymphs were collected in the small cold stream originating from Mt. Roraima plateau at 2700 m a.s.l., from where it falls along a vertical face of Mt. Roraima. The nymphs were found in a shallow, 1.5 m width stream stream with mixture of gravel-stone substratum.

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