



***Erythrodiplax leticia*: Description of the female and updated geographic distribution (Odonata: Libellulidae)**

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The female of *Erythrodiplax leticia* Machado is described and illustrated. The geographic distribution of the species is updated, and notes on its natural history are provided.

Key words: Brazilian semi-arid; Caatinga; dragonfly; *E. fervida*; *E. ochracea*; Libellulinae

A fêmea de *Erythrodiplax leticia* Machado é descrita e ilustrada. A distribuição geográfica da espécie é atualizada e são fornecidas informações sobre sua história natural.

Erythrodiplax leticia Machado, 1995, was described based on males collected from two localities in Northeastern Brazil, where it was believed to be regionally endemic (Machado 1995). The species was later recorded from Itatira, Ceará (Nobre & Carvalho 2014), and Morro do Chapéu and Iaçú, Bahia (Carvalho & Bravo 2014). Males of *E. leticia* are easily recognizable by broad ochre-yellow basal patches with white veins on both pairs of wings (Machado 1995), but the female remains undescribed.

Therefore, the purpose of this study was to describe and illustrate the morphology of the female of *E. leticia* and update the geographic distribution of the species.

Material and methods

Inventories for adults of *E. leticia* were conducted along intermittent rivers and related puddles in 24 sampling sites situated in the Caatinga, a semi-arid biome endemic to Brazil, characterized by a xerophytic deciduous vegetation, with irregular inter- and intra-annual rain regimes and long periods of severe drought (Nimer 1972; Prado 2003; Reis 1976). The regional hydrographic bay is composed mainly of seasonal, intermittent rivers with exorheic drainage (Prado 2003). Additional information about the sampling sites may be found in Brasil (2012).

A distribution map was created with the geographical coordinates of the sites where *E. leticia* adults were recorded, together with data available in literature.

The prothorax and genitalia were photographed with a built-in digital camera of a Leica® EZ4D stereomicroscope.

In order to differentiate the females of *E. leticia* from those of *E. fervida* (Erichson, 1848), a closely related species (Machado 1995), measurements were compared to those available in Borror (1942).

The specimens are deposited at the Museu de Fauna do CEMFAUNA-CAATINGA, Universidade Federal do Vale do São Francisco (UNIVASF), Petrolina, Pernambuco; Museu Nacional, Universidade Federal do Rio de Janeiro (MNRJ), Rio de Janeiro and at the Florida State Collection of Arthropods, Gainesville, FL, USA.

Terminology: FW—fore wing; HW—hind wing; Sx—abdominal segment x. Venational terminology follows Riek & Kukalová-Peck (1984).

Results

Description of the female of *Erythrodiplax leticia* (n = 5, Figures 1–4)

Head: labium and labrum cream yellow; anteclypeus and postclypeus greenish brown to cream; frons greenish brown at base and cream to light yellow medially; postfrons smoothly rounded; vertex dark greenish brown basally and cream medially, with two small tubercles, less pronounced than in males. Occipital triangle amber.

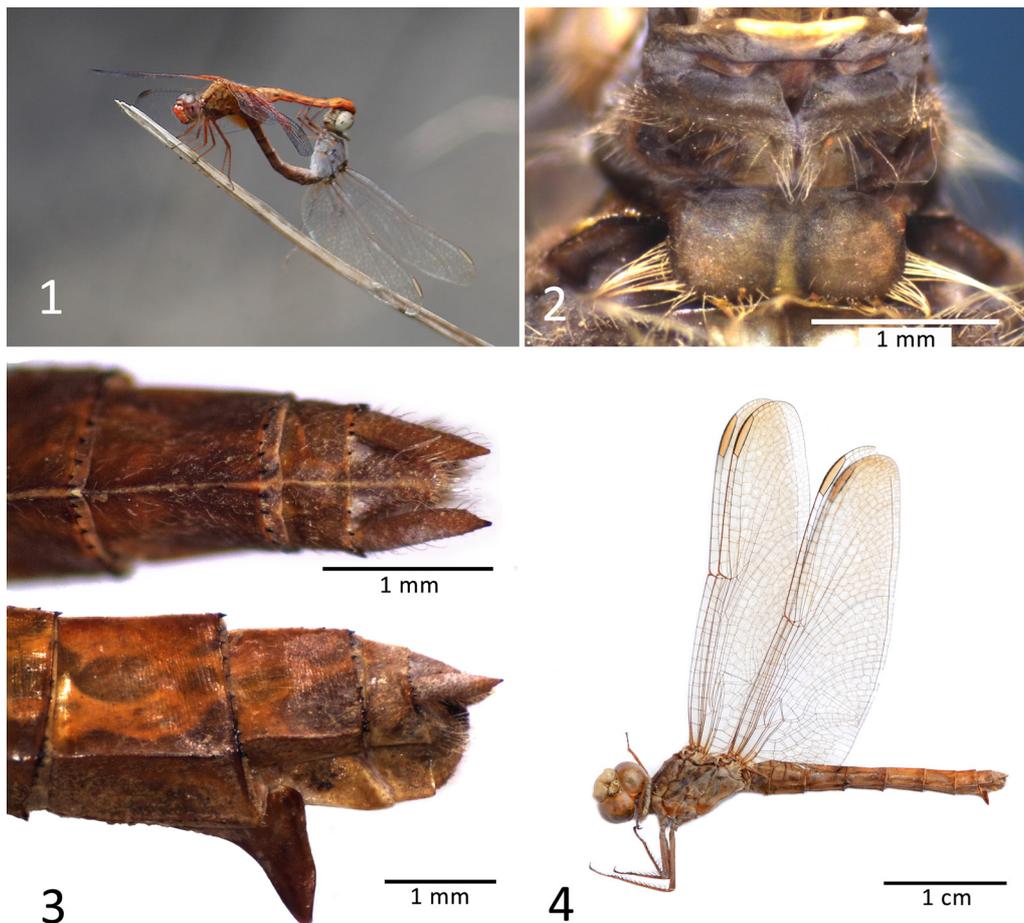
Thorax: Prothorax and pterothorax dark greenish brown and pruinose; lower third amber. Posterior lobe of prothorax bent caudally, approximately quadrate, faintly constricted at base, with distal angles rounded (Figure 2). Legs light brown. Hind femur with 12–14 spines, gradually increasing in length distally, last one twice length of penultimate spine.

Wings: hyaline to light amber, with apex more strongly colored. Basal spot present (60%) or absent (40%) but not extending beyond first half of first antenodal. Pterostigma amber.

Abdomen: brownish red; anal appendices brownish red to brown. Cercus cylindrical (Figure 3). Vulvar lamina scoop-shaped and ventrally directed, with approximately the same length as S9 (Figure 3).

Veins: Arculus located between first and second antenodals on both wings. FW antenodals 11-1/2 (80%) or 10-1/2 (20%); HW antenodals 9 (100%). FW postnodals 8 (90%) or 7 (10%); HW postnodals 10 (10%), 9 (50%) or 8 (40%). FW triangle crossed (100%); HW triangle free (100%). FW Subtriangle with three cells (100%). FW discoidal field base with 3 rows of cells for 2–8 cells widening to 5–6 cells at margin; HW discoidal field base with 2 rows of cells for 3–4 cells, widening to 10–11 cells at margin. FW Rspl five (70%) or six (30%) cells. HW Rspl five (90%) or six (10%) cells. Mspl on FW indistinct (80%) or with 3 cells (20%) and indistinct on HW. Cubitoanal space with 1 crossvein in FW and HW (100%). CuP in HW originating at anal angle of triangle (100%). Anal loop with sole elongated; 18 (10%), 19 (20%), 20 (20%), 22 (30%), 23 (10%) or 24 (10%) cells; base with 4 (50%) or 5 (50%) cells.

Measurements (mm): FW length 27.4–31.9, width 6.4–7.4; HW length 25.9–30.6, width 8.2–9.2; Abdomen 19.7–23.6; Pterostigma 3.0–3.7.



FIGURES 1–4. Female *Erythrodiplax leticia*: 1, On the right, in copula; 2, Dorsal view of prothorax; 3, Distal abdomen segments and genitalia: above dorsal view, below lateral view; 4, dried specimen.

Material examined. BRASIL: Ceará: Jati (7°42'52"S; 39°00'01"W; 462 m), 17.01.2013, C.E.B. Nobre *leg.*, 1 ♀; *ibid* 25.01.2015, C.E.B. Nobre *leg.*, 3 ♀; Pernambuco: Salgueiro (8°00'51"S; 39°07'33"W; 457 m), 22.04.2015, C.E.B. Nobre *leg.*, 1 ♀.

Distribution. Adults of *E. leticia* were recorded at ten localities in the following municipalities: Parnamirim, Salgueiro, Tupanaci and Cabrobó in Pernambuco State; Jati, Brejo Santo and Mauriti in Ceará State; Cajazeiras in Paraíba State; Apodi in Rio Grande do Norte State and Cristino Castro, in the Serra das Confusões National Park, Piauí State. Together with available literature recordings, the known distribution of the species covers almost all of the Caatinga extension (Figure 5).

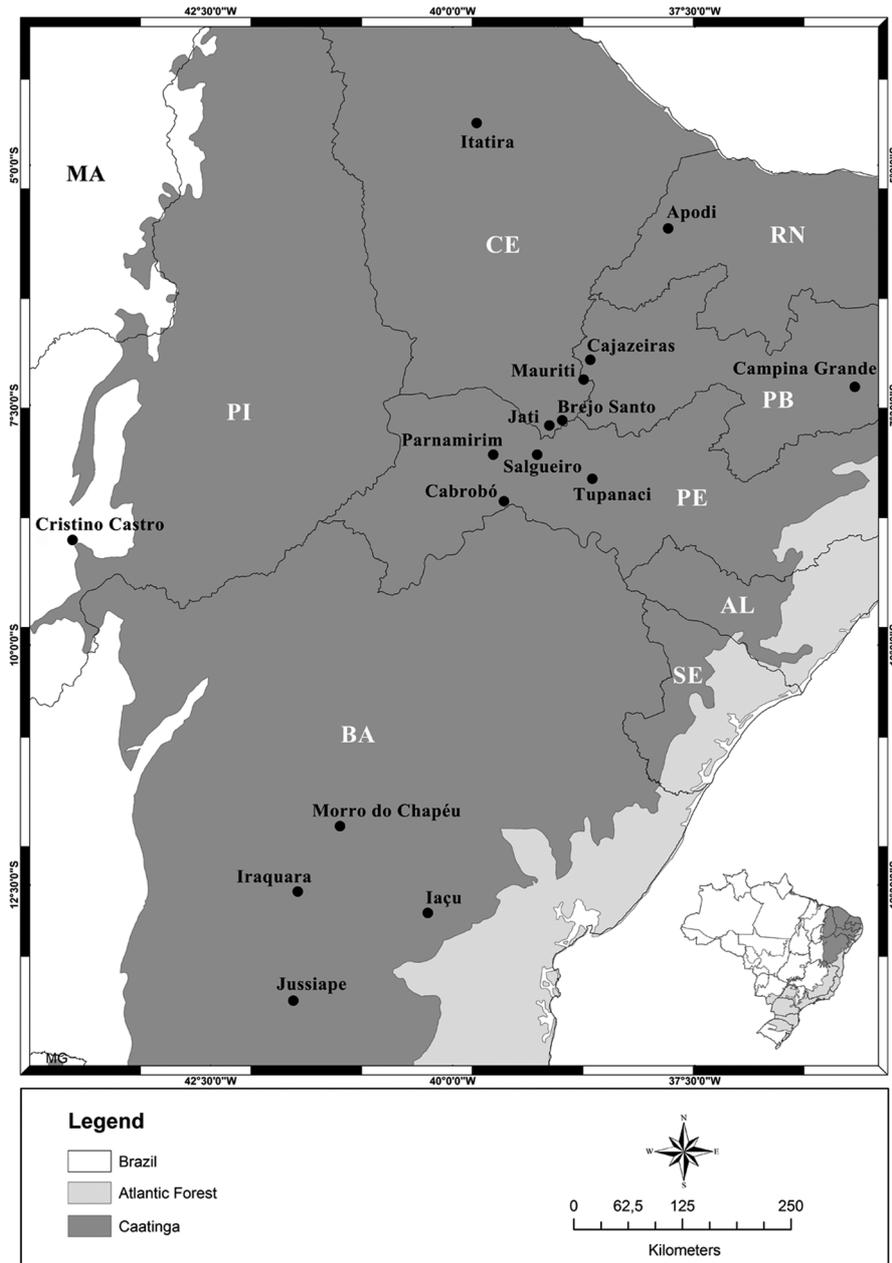


FIGURE 5. Distribution map of *Erythrodiplax leticia*. Brazilian States: MA—Maranhão, PI—Piauí, CE—Ceará, RN—Rio Grande do Norte, PB—Paraíba, PE—Pernambuco, AL—Alagoas, SE—Sergipe, BA—Bahia.

Discussion

Based on male genitalic structures, Machado (1995) placed *E. leticia* in the *unimaculata* group and subgroup, joining it to *E. fervida*. Females of the first differ from those of the latter by the absence of extensive basal spots on wings, greenish

brown body color pattern and amber pterostigma (vs blackish in *E. fervida*). Measurements are similar between the females of both species, which are geographically isolated by the Amazonic region (Borror 1942; Machado 1995). *Erythrodiplax leticia* is widespread in the Brazilian semi-arid, and previous records are from the Chapada Diamantina—Bahia, to Itatira—Ceará. The known geographic range of the species is augmented now, reaching the Serra das Confusões National Park in Piauí, in a Caatinga-Cerrado transition zone.

The species is frequently present when water is available in sites of Caatinga *sensu strictu* of Pernambuco, Paraíba and Ceará States. Individuals fly over remaining puddles of intermittent rivers during the local wet season. The type locality and others cited in the literature (Carvalho & Bravo 2014; Machado 1995) are sites of Caatinga *sensu lato*, with moister climates, including areas with elements of the Atlantic Forest. Nevertheless, the boundaries of the distribution of *E. leticia* are still unknown; only new inventories will reveal whether it occurs in the coastal Atlantic Forest of Northeast Brazil or in the Maranhão ecotone areas, where almost no odonate records are available (DeMarco & Vianna 2005).

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