



## A new species of *Neotriplectides* Holzenthal, 1997 (Insecta: Trichoptera: Atriplectididae), from Brazil, including description of the pupa of the genus

LEANDRO LOURENÇO DUMAS<sup>1</sup> & JORGE LUIZ NESSIMIAN<sup>2</sup>

Departamento de Zoologia, Instituto de Biologia, Universidade Federal do Rio de Janeiro, Caixa Postal 68044, Cidade Universitária, 21944-970, Rio de Janeiro, RJ, Brazil. E-mail: <sup>1</sup>dumas\_bioufrj@yahoo.com.br; <sup>2</sup>nessimia@acd.ufrj.br

### Abstract

The adult male and pupa of a new species of the genus *Neotriplectides* Holzenthal, 1997, are described and figured based on specimens collected in the Mantiqueira Mountain Range, southeastern Brazil. A male of *Neotriplectides desiderata*, **sp. nov.**, was associated with the unidentified larva described by Holzenthal, 1997. The new species is differentiated from *N. froehlichii* Holzenthal, 1997, mainly by the division of abdominal segment X into 2 triangular projections, absent in *N. froehlichii*. The pupal description is the first for this genus.

**Key words:** *Neotriplectides desiderata*; Atlantic Forest, Itatiaia, Neotropical Region

### Resumo

O macho e a pupa de uma nova espécie do gênero *Neotriplectides* Holzenthal, 1997, são descritos e figurados baseados em espécimes coletados na Serra da Mantiqueira, Sudeste do Brasil. *Neotriplectides desiderata* **sp. nov.** é associada a larva descrita por Holzenthal, 1997. A nova espécie pode ser diferenciada de *N. froehlichii* Holzenthal, 1997 principalmente pela estrutura do segmento abdominal X dividido em 2 projeções triangulares, ausentes na última. A descrição da pupa é a primeira para o gênero.

**Palavras-chave:** *Neotriplectides desiderata*; Mata Atlântica, Itatiaia, Região Neotropical

### Introduction

The family Atriplectididae is represented by four species included in three genera: *Atriplectides* Mosely, 1936, with two Australian species; *Hughscottiella* Ulmer, 1910, with one species in Seychelles; and *Neotriplectides* Holzenthal, 1997, with one described species from Andean South America (Bolivia, Ecuador, and Peru), thus, showing a disjunct Gondwanian distribution pattern (Holzenthal *et al.*, 2007).

*Atriplectides dubius* (Mosely, 1936) was originally described in the subfamily Triplectidinae (Leptoceridae). Mosely (1936), in the original description, indicated that this species might not be a leptocerid. Subsequently, Mosely & Kimmins (1953) transferred *A. dubius* to the family Odontoceridae. *Hughscottiella auricapilla* (Ulmer, 1910) was originally described in Odontoceridae. After the description of their unusual immature stages (Neboiss, 1978; Marlier, 1978) and observations of similarities between these species, Neboiss (1978) erected the family Atriplectididae to accommodate these two monotypic genera. Later, Neboiss described the second Australian species, *A. ikmaleus* Neboiss, 1999.

Holzenthal (1997) described *Neotriplectides froehlichii* Holzenthal, a new genus and species of Atriplectididae from the Neotropical region. Adults of this species were associated with a larva collected in Peru and

described by Roback (1966), but not placed in any family due to its unusual form (Holzenthal, 1997). Furthermore in his 1997 work, Holzenthal described, but did not name, another larva of the same genus, from the Mantiqueira Mountain Range, São Paulo State, Southeastern Brazil. This larva differed in the number of abdominal gills and in its thoracic setal pattern when compared with that of *N. froehlichii*, causing Holzenthal (1997) to conclude that it belonged to a second species.

In the present work, we describe and illustrate adult males and a pupa associated with the larval specimen described by Holzenthal (1997), recently collected in Itatiaia, Mantiqueira mountain range, between Minas Gerais and Rio de Janeiro states, Brazil.

## Material and methods

The pupa was collected manually, with a hand sieve in the sand bed of a second order stream, with moderate flow. The terminology used in the pupal description follows that of Wiggins (1996, 2004); terminology used in the adult description follows that of Schmid (1998). The association with the adult form was possible by rearing the pupa in an aquarium until the adult stage. The imagines were collected with Pennsylvania light traps and conserved in 80% ethanol. The illustrations were made under a stereomicroscope equipped with a camera lucida. The type specimens have been deposited in the following collections: DZRJ—Coleção Entomológica do Departamento de Zoologia (Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil); MNRJ—Museu Nacional (Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil); MZSP—Museu de Zoologia (Universidade de São Paulo, São Paulo, Brazil).

### *Neotriplectides desiderata* sp. nov.

Figs. 1–13

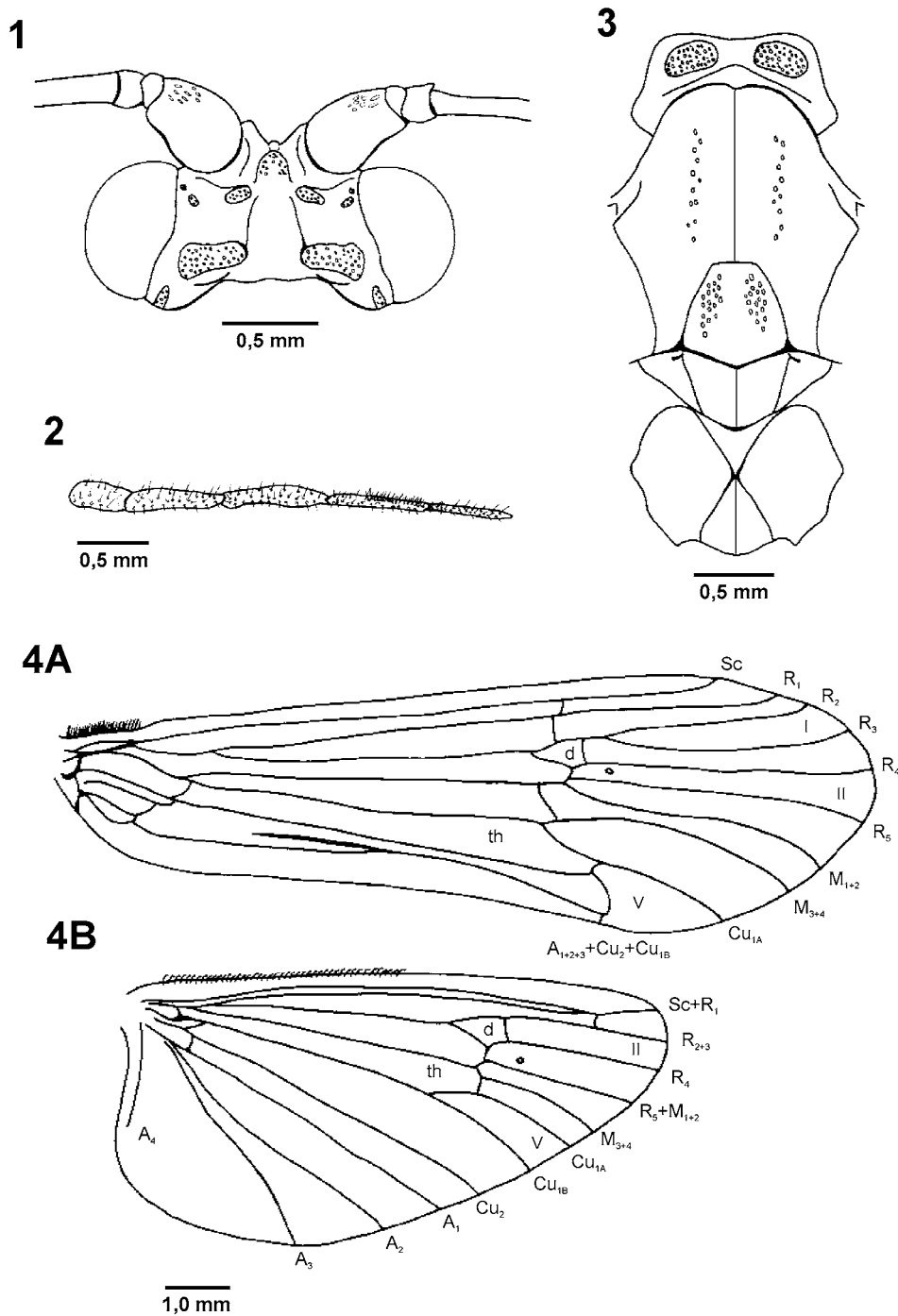
**Diagnosis.** *Neotriplectides desiderata* fits the generic description by Holzenthal (1997), except that in this species the segment IV of maxillary palp is densely setose on its distal half, setae on the mesonotum and scutellum are more numerous and more evidently grouped, there is a spurious vein in the unstricted forewing cell *cu*, and there is a short, but conspicuous discoidal cell in the hind wing, while this cell seems to be at least sometimes absent in males of *N. froehlichii* (absent in male holotype, present in female paratype). Other differences occur in the male genitalia. The newly described species has a more pronounced bifurcation of the abdominal segment X, with acute apices bearing small lateral spines and no lobes, while *N. froehlichii* has a slight bifurcation without such pronounced projections and with apical spinulate lobes. Inferior appendages are broader and relatively shorter in lateral view. Furthermore, *N. desiderata* has a robust phallus with an inconspicuous phallothremal sclerite like *N. froehlichii*, but in the latter there is an anterior digitiform projection. A row of hooked spines, or hamuli, on the base of each hind wing anterior margin, not illustrated for *N. froehlichii*, is involved in wing coupling, engaging the forewing in such a way to form a single airfoil in flight.

**Description.** Adult Male (Figs. 1–9): Length of forewing: 13–15 mm. Mostly brown; forewings yellowish-brown, with several small light maculae along basal region of costal margin.

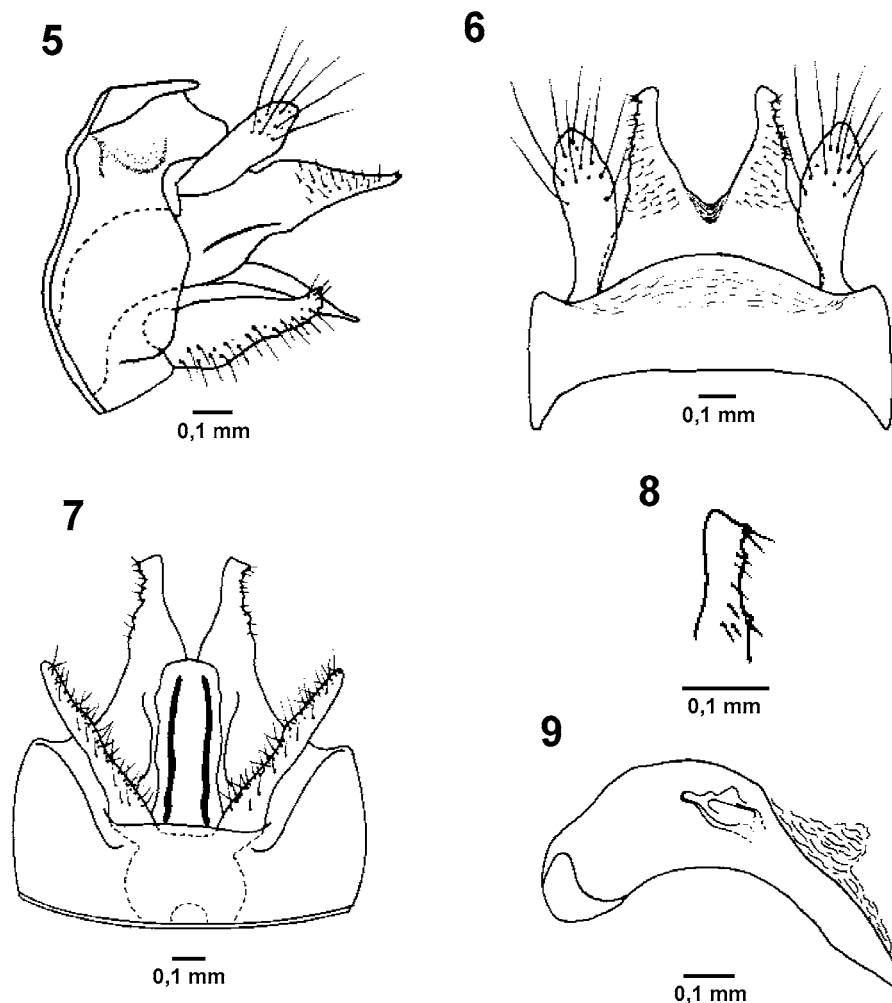
Head (Figs. 1–2): Eyes lateral, ocelli absent. Antenna long, about 2.5 times length of forewing; scape broad, bearing lateral tufts of setae. Frontal setal wart oval; two pairs of antennal setal warts, with internal larger than external; one pair of posterior setal warts large, oval; one pair of setal warts on postgenal area long and slender (Fig. 1). Maxillary palp 5-segmented, segments subequal, slender (Fig. 2). Labial palp 3-segmented, slender.

Thorax (Figs. 3–4): Pronotum short, with setal warts transverse, long, bearing long setae; mesonotum long, mesoscutum with two longitudinal bands of setal punctures delimiting central lighter rectangular area, scutel-

lum trapezoidal, bearing pair of large and dense setal areas (Fig. 3). Legs long, each tarsus slender, longer than tibia, with row of spiniform setae; tibial spur formula 2-4-4, apparently 1-4-4, with external spur of each foretibia very reduced. Wings with complex pattern of venation; forewings each with forks I, II and V present, discoidal cell small, about 1/6 length of thyridial cell; crossveins *r* and *s* not aligned;  $R_5$  apparently originating from *r-m*; M with two branches; thick spurious vein terminating in middle of  $A_{1+2+3}$ ;  $Cu_2$  and  $A_{1+2+3}$  fused next to wing margin, forming arculus (Fig. 4A); hind wings each with forks II and V present, discoidal cell small; Sc fused with  $R_1$ ;  $R_5$  and  $M_{1+2}$  fused near their bases and most of their length, *m-cu* crossvein between  $M_{3+4}$  and  $Cu_{1a}$ ;  $A_1$ ,  $A_2$  and  $A_3$  reaching wing margin,  $A_4$  reduced (Fig. 4B).



**FIGURES 1–4.** *Neotriplectides desiderata*, sp. nov. 1. Head, dorsal view; 2. Maxillary palp, lateral view; 3. Thorax, dorsal view; 4A. Male forewing; 4B. Male hind wing.



**FIGURES 5–9.** *Neotriplectides desiderata*, **sp. nov.** 5. Male genitalia, lateral view; 6. Male genitalia, dorsal view; 7. Male genitalia, ventral; 8. Apex of segment X, dorsal view; 9. Phallus, lateral.

Abdomen: Simple; exocrine glands of sternum V not apparent.

Male genitalia (Figs. 5–9): Abdominal segment IX with posterolateral margins sinuous, anteromesally concave and posteromesally convex both dorsally and ventrally, posteromesodorsal edge protruding slightly above base of tergum X (Figs. 5–7). Preanal appendices short, oblong, depressed, with long setae, dark on apical half (Figs. 5–6). Segment X large, produced at posterior half into two triangular projections, with narrow and truncated extremities bearing spines directed laterad. Inferior appendices unsegmented, compressed, each wide at base and narrowing apically in lateral view to blunt apex; ventral margin with long setae, dorsal surface with setae scarce; mesal surface bearing small spines and setae (Figs. 5 and 7). Phallus long, robust, curved medially, directed ventrad, apex narrowed and depressed; phallothremal sclerite indistinct (Fig. 9).

Female unknown.

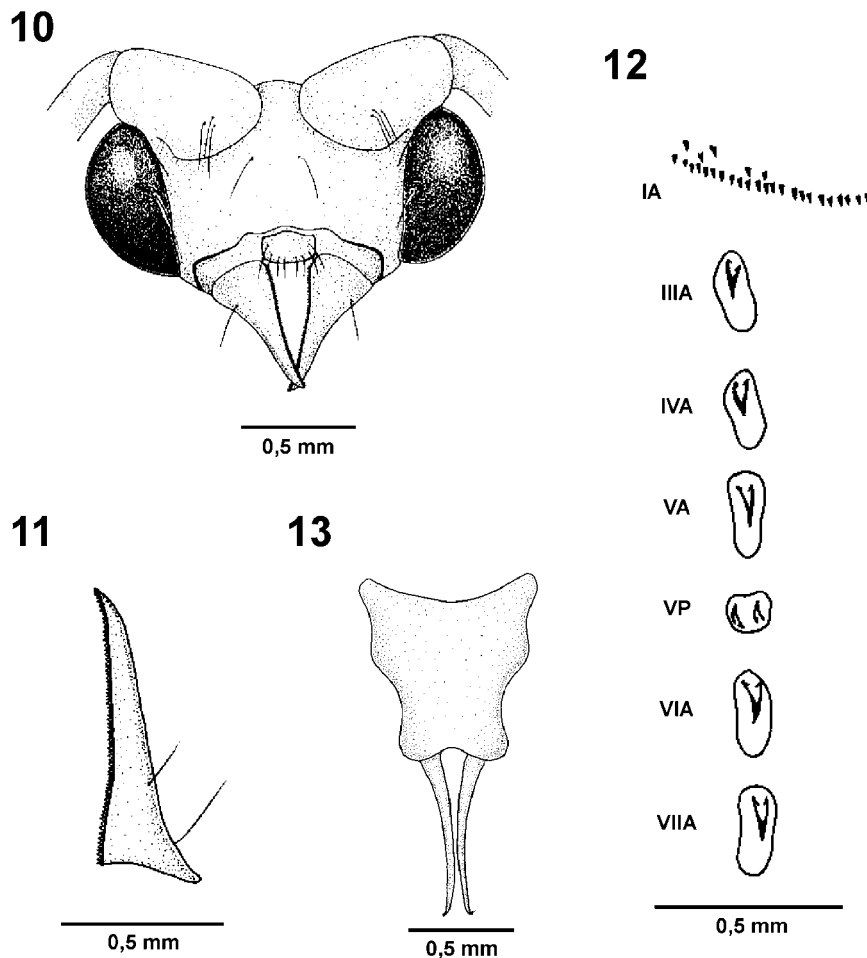
**Holotype male: BRAZIL: Minas Gerais:** Itamonte, Rio Aiuruoca, 22°20'56.9"S 44°41'37.9"W, 1860 m., 20.xi.2004, L.L. Dumas & J.L. Nessimian (DZRJ 1200)

**Paratypes: Minas Gerais:** 5 males, same date and locality of holotype (DZRJ 1201-1205); 2 males, same date and locality of holotype (MNRJ); 2 males, same date and locality of holotype (MZSP).

**Pupa** (Figs. 10–13):

**Diagnosis.** This is the first description of a pupa of this genus. The pupa of *N. desiderata*, n. sp., differs from that of *Atriplectrides dubius* Mosely, described by Neboiss (1978), in that the 2 setae at the base of each

mandible are much farther apart and the apical processes of the abdomen have their bases much closer together, they are more tapered, and they are without dorsal bristles in *N. desiderata*, n. sp. As in *A. dubius* the last abdominal tergum is covered with short, chitinous spicules.



**FIGURES 10–13.** *Neotriplectides desiderata*, sp. nov., pupa. 10. Head, frontal view; 11. Right mandible, dorsal view; 12. Abdominal hook plates on terga I and III–VII, dorsal view; 13. Apical processes of abdomen, dorsal view.

**Description.** Body length: 20 mm.

Head (Figs. 10–11): About 2.0 times as wide as long. Eyes well developed. Antennae long; scape broad, with 3 long dorsal setae and 5 ventrolateral ones. Vertex bearing central pair of long setae. Labrum rounded, short, with 8 setae (Fig. 10). Maxillary palps long, each 5-segmented, extending beyond bases of forecoxae; labial palps short, each 3-segmented. Mandibles very long, triangular, tapered to apex, mesal margins serrate, each with 2 thick, dark, dorsolateral setae on basal third (Fig. 11).

Thorax: setal pattern indistinct. Wing pads reaching abdominal segment IV. Legs long, row of long, thin setae on tarsomeres I and II of median legs.

Abdomen (Figs. 12–13): Lateral fringe of setae absent. abdominal tergum I bearing transverse strip of small spines posteriorly, spines wider on lateral edges; tergum II without hook plates; terga III–VII with pair of anterior hook plates, oval, each bearing one stout spine, directed backward; tergum V with posterior pair of hook plates, smaller, rounded, each bearing 2 spines directed forward (Fig. 12); segment IX with tergum covered with short, minute, chitinous spicules, directed forward; posterior margin slightly bilobed; apical processes long, slender, narrowing to apex, bearing 3 apical microsetae (Fig. 13).

**Material examined: BRAZIL: Rio de Janeiro:** Itatiaia, Maromba, Tributário do Rio Preto, 22°19'67.9"S 44°36'56.8"W, 1509 m., 24.xi.2003, litter deposits and sand, A.A.Huamantincó & J.L.Nessimian, 1 male pupa (DZRJ 1206).

**Distribution:** Southeastern Brazil (Minas Gerais, Rio de Janeiro, and São Paulo states).

**Etymology:** The Latin word *desiderata* means "desired," as we have spent several years looking for mature specimens of the species following the first record of the immature forms in 1997.

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