

## **NEONEURA LUCAS SPEC. NOV. FROM BRAZILIAN PANTANAL (ZYGOPTERA: PROTONEURIDAE)\***

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The new sp. is described and illustrated from 15 ♂ and 2 ♀, collected in the Pantanal Region of Brazil. Holotype ♂, allotype ♀: Poconé, Rio Cuiabá, Mato Grosso, Feb. 1986; deposited in the author's collection, Belo Horizonte. In view of the arrangement of the decumbent process of the dorsal branch of the superior appendage, the new sp. belongs to the *fulvicollis*-group R.W. GARRISON (1999, *Odonatologica* 28: 343-375), differing from the other spp. of this group mainly by the presence of a small ventral hook on the apex of the upper branch of the superior appendage.

### **INTRODUCTION**

First proposed by SELYS (1860) as a sub-genus in his *Protonevra*, the genus *Neoneura* has now 23 species (GARRISON, 1999), a number that will certainly increase. There are 15 species known from Brazil, described or recorded by SELYS (1860, 1886), WILLIAMSON (1917), MACHADO (1964, 1975, 1989) and GARRISON (1999). To these we add now *N. lucas* sp. n. collected in rivers of Pantanal Matogrossense, a huge wetland region in central-western Brazil.

### **NEONEURA LUCAS SP. NOV.**

Figures 1-5

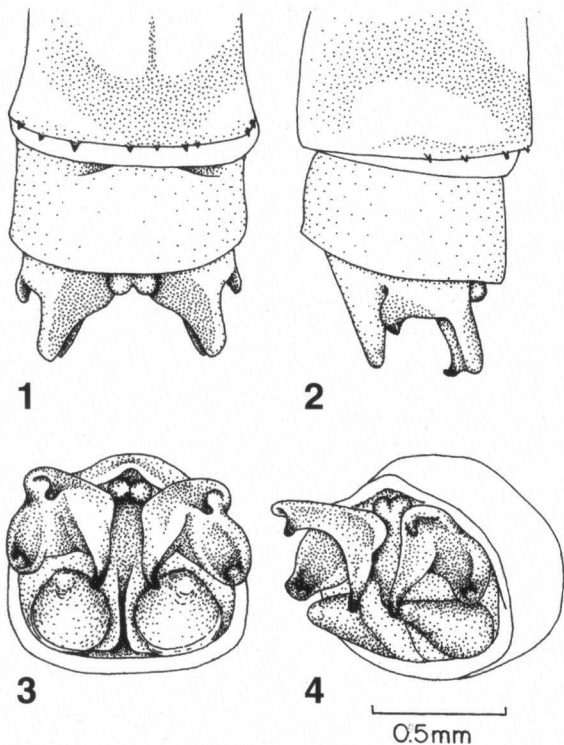
**Material.** — **Holotype** ♂: BRAZIL, Mato Grosso, Poconé, Pantanal region (Cuiabá River at the point where it is reached by the Transpantaneira Hwy), II-1986, A. Machado leg. — **Allotype** ♀: same data. — **Paratypes**: 9 ♂, same data; — 5 ♂, 1 ♀, Cáceres (Taiaimã Ecol. Stn on the Paraguai R.), 13-XII-1981, C. Mascarenhas leg. Holotype, allotype and 14 paratypes deposited in the author's collection; 1 ♂ paratype in Department of Zoology, UFMG, Belo Horizonte.

\* Studies on neotropical Protoneuridae, 12

**Etymology.** — The new species is dedicated to my grandson, Lucas Machado Tomellin.

**MALE** [Colour descriptions based on KORNERUP & WANSCHER, 1967]: — **Head.** — Labium pale yellow. Remaining parts light green with the following black areas: a median basal spot on the labrum; a small spot on either side of the postclypeus; an elongated spot running inwards from the antenna base to the frontal crest; a transverse bar in front of the median ocellus forming a trident whose branches do not reach the frontal crest; a comma-shaped spot on either side of the median ocellus and another behind it; an inverted T spot whose vertical branch borders each lateral ocellus medially; a large postocular spot in front and behind which there is a transverse stripe the latter continuous with a narrow bar which borders the eye posteriorly; a transverse line behind the occipital crest. Antennae brown with the scape black. Rear of the head black, except for a pale area near the eye. The pattern of black markings is uniform in most specimens, but the size of the postocular black spot varies from rather large, as in the holotype, to very small as in some paratypes. In the holotype and in three paratypes the trident in front of the median ocellus is broken into three dots. The background colour of the head, which is light green in 8 paratypes, becomes brown in the holotype and in 7 paratypes, presumably by aging.

**Thorax.** — Prothorax with pronotum light green. Medium lobe with a middorsal black band connected anteriorly and posteriorly with a transverse black stripe at its limit with the anterior and posterior lobes, respectively. Propleuron pale green, surrounded by a dark band (except at its lower border) which, in some paratypes, becomes very large. Pterothorax with the mesepisternum light green, a black line along the humeral suture enlarged on its upper fourth and a black band on each side of the greenish middorsal carina occupying about one third



Figs 1-4. *Neoneura lucas* sp. n., holotype ♂, anal appendages: (1) dorsal view; — (2) lateral view; — (3) posterior view; — (4) oblique posterior view.

of sclerite width, slightly narrower below, with an irregular outer margin. Mesepimeron and metapleuron yellowish green with the following black markings: a stripe occupying the anterior part of the mesepimeron fused below with the humeral dark line and extending into the mesinfrepisternum; a dot on the upper third of the posterior part of the mesepimeron; a metepisternal stripe adjacent to the 2nd lateral suture continuous with a metepimeral spot; a dark brown marking on the metinfraepisternum. Pectus with an elongated brown spot on either side and a dark mid anterior one. In 25% of the paratypes the mesepimeral stripe is not fused with the humeral dark line below and in 25% the dark band on each side of the middorsal carina is laterally broken into dots and transverse streaks. In one paratype the pterothorax is brownish.

Legs: femora greenish yellow with the outer part brown. Tibiae and tarsi yellow.

Wings hyaline, pterostigma brownish-yellow, occupying slightly less than one cell.

– Venation: postnodals in forewing 8 (66.7%), 9 (33.3%); in hindwing 7 (58.3%), 6 (25%), 8 (8.3%), 9 (8.3%). R3 in forewing originating at the level of the 4th (83.4%) or 3rd (15.6%) postnodal; in hindwing at the level of the 3rd (83.4%) or 4th (16.6%). IR2 in forewing originating at the level of the 7th (75%) or 6th (25%) postnodal; in hindwing at the level of the 6th (75%) or 7th (25%) postnodal. CUP in forewing wings terminating at about half (58.4%) or slightly proximal (41.6%) to the distance between the crossvein descending from the subnodus and that descending from the first postnodal; in hindwing about half (75%) this distance or slightly proximal (25%) to it. Arculus in both wings distinctly distal to the second antenodal.

**A b d o m e n.** – Dorsum of segments 1-6 greenish blue (46.7%), bluish green (33.3%, holotype), or greenish white (20.0%), being almost completely discoloured in one of the bluish green paratypes. Dorsum of 7-10 brownish orange, apparently due to post-mortem discoloration. In one paratype however, the colour was best preserved: the dorsum of segment 7 being greenish grey and that of 8 and anterior half of 9 greyish yellow. Basal half of segment 1 with a dorsal black band. Segments 2-8 with a narrow longitudinal lateral black stripe not reaching the base of each segment, subapically produced dorsally in a triangular spur which almost meets the one of the opposite side, distally reaching a very narrow scarcely discernible black ring. Distal half of 9 with a black quadrate spot continuous posterolaterally with another large black spot. Segment 10 dorsally black turning into darkbrown laterally. Tergal areas below the lateral black stripes light green on segments 2-6, greyish yellow on 7-8. Sternites black. Superior appendages black with the apices brown and a lateral yellowish spot. Inferior appendages yellowish.

**Structural characters** (Figs 1-4). – Posterior lobe of prothorax with the hind margin smoothly rounded, slightly more elevated in the middle. Superior appendages (Figs 1-2) shorter than segment 10, dorsal branch, in lateral view (Fig. 2), about twice as long as the ventral one, provided with a small subapical ventral black hook, in dorsal view divaricated (Fig. 1). Ventral branch triangular with the tip produced into an upturned tooth (Fig. 2). Decumbent process of the superior anal appendage (decumbent tooth of cercus of GARRISON, 1999) well-developed; in posterior view

perpendicular to the transverse axis (Fig. 3), occupying about the basal half of the ventral margin of the dorsal branch of the appendages, tapering into a fingerlike structure (Fig. 4), not visible in lateral view (Fig. 2). Inferior appendages conical (Fig. 2) about as long as the superiors.

**Measurements** (in mm). — Abdomen 23.5-26.5 (mean 25.1); — superior appendages, 0.3-0.4 (mean 0.35); — inferior appendages, 0.3-0.4 (mean 0.35); — hindwing 14.8-16.7 (mean 15.8); — forewing pterostigma 0.6-0.8 (mean 0.7).

**FEMALE.** — **Head.** — Yellowish grey with a paler postocular area and the following brown spots: a dot on either side of the postclypeus; three small oval spots on the upper part of frons and in front of the median ocellus corresponding to the trident observed in the male; a small spot medially to each lateral ocellus and on either side of the occipital crest. A dark brown line running obliquely between the lateral ocellus and the eye and a brownish transverse stripe on the postocellar area. Rear of the head yellowish.

**Thorax.** — Prothorax yellowish grey with a brown area between the pronotum and the pleura, a dark spot at the outer limit between the anterior and the median lobes and a dark brown shining rounded spot on either side of the anterior part of the posterior lobe. Pterothorax yellowish grey with the following dark areas: a short line on each side of the middorsal carina occupying its upper fourth followed by a scarcely visible one immediately below; two elongated spots on the upper and lower parts of the humeral suture; a dot on the upper third of the posterior part of the mesepimeron and an elongated spot on the upper part of the 2nd lateral suture.

**Legs** pale yellow.

**Wings** hyaline, pterostigma pale yellow, occupying slightly less than one cell. — **Venation:** postnodals in forewing 8 (100%); in hindwing 7 (100%). R3 in forewing originating at the level of the 4th postnodal (50%) or proximal to it (50%); in hindwing proximal the 3rd postnodal (100%). IR2 in forewing originating at the level of the 7th postnodal (100%); in hindwings at the level of 6th (100%). CUP in all wings terminating at about half the distance between the crossvein descending from the subnodus and that descending from the first postnodal. Arculus in both wings distal to the second antenodal.

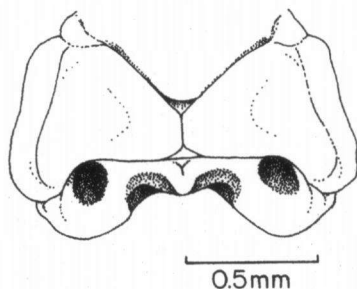


Fig. 5. *Neonera lucas* sp. n. — allotype ♀: posterior lobe of prothorax in dorsal view.

**Abdomen.** — Yellowish grey with sternites black. Segments 2-6 with a very narrow scarcely discernible black distal ring and an oblique brown dorsal band, not confluent with that of the opposite side occupying the distal 6th of the segments, reduced to a dot on 7. Segments 8-9 with lateral, poorly defined brownish area. Appendages yellowish grey.

**Structural characters** (Fig. 5). — Posterior lobe of prothorax with a small triangular median lobe and lateral lobes broadly rounded. At the base of each lateral lobe there is

a rounded slightly elevated shining dark brown area. Inferior appendages conical.

Measurements (in mm). — Abdomen 24.0-24.8; — anal appendages 0.3; — hindwing 16-17; — forewing pterostigma 0.7.

## DISCUSSION

In his excellent review of the genus, GARRISON (1999) systematized the complex structures of the superior appendages, with special emphasis to what he called the “decumbent tooth”. I studied this structure in the 24 *Neoneura* species in my collection (incl. 4 new ones) and I agree with Garrison’s views on its taxonomic importance and on the possibility of using it for identification of groups within the genus. However, in view of the enormous interspecific variability of this structure, which appears like a tooth of different sizes, a narrow fingerlike structure, a broad lobe, inverted triangles of different sizes, a blunt tipped hook or a rectangular plate with no tooth at all, I prefer to use for it the more general term, decumbent process, rather than decumbent tooth.

By the well-developed decumbent process, in posterior view perpendicular to the transverse axis, *N. lucas* is referable to the *fulvicollis*-group, together with *N. cristina* and *N. gaida*. By its bluish green or greenish blue colour, *N. lucas* is closer to these two species but differs from them by the completely different superior appendages. In GARRISON (1999) *N. lucas* will key out to *N. fulvicollis*, differing from it by its much smaller size by its colour (head and thorax orange without dark markings in *N. fulvicollis*) and by the presence of a subapical ventral hook on the dorsal branch of the superior anal appendage. On the other hand, the female of *N. lucas* differs from the other three species of its group, including that of the still undescribed *N. gaida*, by the presence of a small triangular median lobe on the posterior lobe of the prothorax (Fig. 5).

## ECOLOGICAL CONSIDERATIONS

The 17 specimens were collected at two areas in the State of Mato Grosso: the borders of the Island of Taiamã on the Paraguai River, now the Ecological Station of Taiamã and in one of its tributaries, the Cuiabá River at the point where it is reached by the Transpantaneira Highway, near the Municipal District of Poconé. This part of the low course the Cuiabá is locally called the São Lourenço River (CARVALHO, 1986). These two areas are situated within the Pantanal which is the world’s largest wetland, covering ca 110.000 km<sup>2</sup> (MITTERMEIER et al., 1997), mainly of the low-altitude floodplains of the Paraguai River and its tributaries. Much of this region is flooded from December to June, with some large areas permanently flooded. The only study of the Odonata fauna of Pantanal is that of HECKMAN (1998) who listed 19 species from the Pantanal itself, most of them typical of lentic aquatic systems. *N. lucas* is the first known species apparently endemic to the Pantanal riverine system. It is possibly confined to the northern Pantanal as I did not find it in the Aquidauana River, on the southern Pantanal where it seems to be replaced by *N. billinearis*. *N. lucas* was very

abundant in the Cuiabá River when I visited it in February 1986. As I ascended the river in a motor boat, *N. lucas* was frequently seen perched on the marginal vegetation or hovering close to the water surface near the margin or even somewhat far from it, its bright greenish blue colours adding even more beauty to the river landscape.

#### ACKNOWLEDGEMENT

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