

STUDIES ON THE FAUNA OF SURINAME
AND OTHER GUYANAS: No. 24.

**THE FEMALE SEX OF CACUS MUNGO, GOMPHOIDES
UNDULATUS, PLANIPLAX PHOENICURA, PLANIPLAX
ARACHNE AND DYTHEMIS WILLIAMSONI**

Notes on Odonata of Suriname IX ¹⁾

by

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(Paramaribo)

Single female specimens of dragon flies are often difficult to identify owing to the fact that, when they are known at all, the descriptions are incomplete and mostly lack the essential figure of the genitalia. The following are descriptions of the unknown females of five species, the males of which have been known for the last eighteen to fifty years. They are all complete with figures of the genitalia.

The material from which the descriptions have been made has been accumulated during many years of collecting. I am indebted to Mr. J. BELLE, Paramaribo, who was kind enough to place at my disposal, for description, some of the unknown females collected by himself.

¹⁾ I. *Rimanella arcana* Needham and its nymph. *Rev. ent. Brasil* 2, 1940, p. 173-179, 8 figs.

II. Six mostly new Zygopterous nymphs from the coastland waters. *Ann. Ent. Soc. Am.* 34, 1941, p. 719-734, 6 figs.

III. The genus *Coryphaeschna*, with descriptions of a new species and of the nymph of *C. virens*. *Ent. news* 54, 1943, p. 61-72, 2 figs.

IV. Nine new or little known Zygopterous nymphs from the inland waters. *Ann. Ent. Soc. Amer.* 36, 1943, p. 165-184, 7 figs.

V. A new species of *Misagria* with a redescription of the genus. *Ent. news* 62, 1951, p. 70-76, fig.

VI. The nymph of *Neoneura joana* Will. *Ent. news* 65, p. 1954, 141-144, fig.

VII. The Aeschnine genus *Staurophlebia*. *Studies fauna Suriname* 3, 1959, p. 147-172, 5 figs., 2 pls.

VIII. Three new species of *Micrathyria* with a note on *M. romani* Sjöstedt. *Studies fauna Suriname* 5, 1963, p. 76-90, 4 figs.

Cacus mungo Needham

Figs. 15-16

NEEDHAM, 1940, *Transact. Amer. Ent. Soc.* 65, p. 390-391, pl. xxxii, figs. 37-38, 45-48.

Description of FEMALE (hitherto unknown), adult specimen. - Colours described from the living condition.

Allotype. - Stoutly built, black and yellow-green spotted, wing base with brown basal spot in both wing pairs, abdomen segment 7, 8 and 9 with orange-brown spots, segment 8 expanded at the sides.

Head mostly yellow-green, labium yellow, middle part green; outer margin of side lobes of maxillae yellow; labrum yellow green, bordered all round by black, in the middle from the basal suture line the black extended forward nearly to the front margin and dividing the yellow more or less into two halves. Genae yellow green at base, otherwise black. Anteclypeus olive-green, postclypeus green, side margin and basal suture black.

Frons black, each side with two yellow-green spots, one in the lower half to near the base of genae and a larger one over the upper ridge. These spots widely separated in the middle of frons by the basal frontal black line before the ocelli. Vertex and occipital triangle black, a fine pale yellow ring at the first antennal segment. Vertex with two hairy horns just behind the lateral ocelli.

Compound eyes yellow-green in the lower half and dark olive-green in the upper half. Rear of head black for the most part, a yellow spot along the lower eye margin, and a very minute yellow spot in the black area opposite the sinus in the lateral eye margin.

Prothorax black, end tip of supracoxal plate and coxae of fore legs yellow green. Synthorax mostly black; collar ring divided by black at the beginning of the middorsal carina, forming two green triangular stripes on each side. Antehumeral stripes short, diverging to halfway along the mesepisternum. Sides of synthorax with two yellow stripes and a yellow spot between them, the first stripe over the middle of mesepimeron, a yellow spot at the upper end of the metepisternum against the second spine of the subalar carina, and a stripe over the middle of the metepimeron. Supracoxal plates of middle and hind legs yellow. Ventrums black.

Legs short and black, except the underside of trochanter and femur of first leg, coxa I entirely yellow and coxae II and III with side margins yellow; underside of femora and trochanters very spiny. Hind femur with 7 larger spines along the under-outer side and 10 smaller ones in the basal half. Claws with a dent at $\frac{3}{4}$ length.

Abdomen black, segm. 1,2 and 3 swollen, 4-6 slender, 7-10 widened. A yellow side stripe over segm. 1 and 2 from ventral hind margin to dorsum in basal half of the segment; there is also a small yellow spot along the ventral hind margin of segm. 2. Segm. 3 at the basal suture with two small yellow dorsal spots and two larger lateral spots, which are bluish grey in the lower part. Segm. 4-6 with a small yellow basal ring in the middle, more or less divided by the middorsal black carina. Segm. 7 with the basal orange-yellow side spots much larger, reaching halfway down the length of the segment, at dorsum diffusely separated by the black carina; segm. 8, the orange side spots widely separated by the dorsal black, the ventral side margins leaf-like dilated and denticulate along the rounded hind margin. Segm. 9 with a small latero-basal, orange-brown spot, at the ventro-lateral margin no dilated parts present; segm. 10 black, appendices short, as long as segm. 10, black and pointed.

Subgenital plate on segm. 9 black, very strongly built, deeply divided on top into two triangular dents, reaching to the end margin of the segment.

Wings hyaline, slightly tinged, a small brown basal spot in both wing pairs; stigma black and very long. The basal spots in fore wing covering costal and especially subcostal space to second and third cross veins respectively, edging the vein of median and cubital space. In hind wing the spot is enlarged to the third and the fourth cross vein in costal and subcostal space, and to the arculus and the cubito-anal cross vein in median and cubital space. At the nodus there is a very small brown spot in the costal space. Antenodals in front wings 18-20, the first and the sixth thickened; postnodals 10.10. In hind wing antenodals 13-13, first and fifth thickened; postnodals 13.12. In fore and hind wings one subcostal cross vein.

Fore wing triangle and subtriangle with three or two cells,

supratriangle with two cross veins; in hind wing triangle with three cells, ti free, supratriangle with two cross veins. Anal loop with two and three cells. Membrane blackish. Stigma in front wing covering 8-9 cells, in hind wing 8 cells.

Total length 63 mm, abdomen 46 mm, hd.w. 37 mm, stigma 6.5 mm.

Described from one female (adult) collected in the upper course of the Coropina creek near Zanderij I (Airport), January 20, 1957 (GEIJSKES). The specimen was

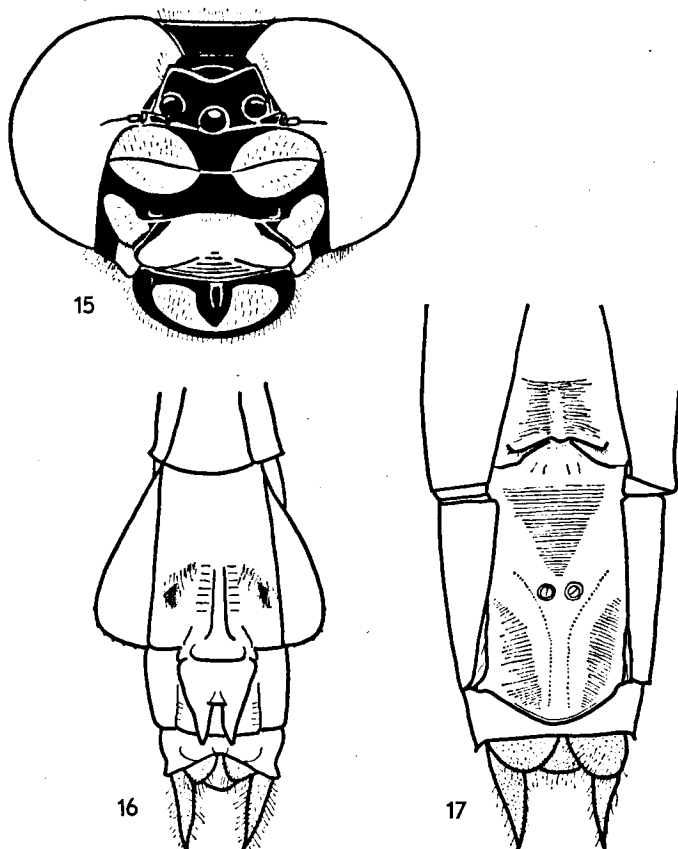


Fig. 15-16. *Cacus mungo* Needh. from Suriname. Allotype female: design of face and ventrum with genitalia of last abdominal segments.

Fig. 17. *Dythemis williamsoni* Ris from Suriname. Allotype female: last abdominal segments with genitalia ventral side.

taken at about midday while sitting on a palm leaf hanging over the savannah creek. — Allotype in author's collection.

NEEDHAM (1940) has described the male sex of this species from two teneral males, collected in Suriname, on the Cottica River near Moengo, at light, on May 26, 1927 by Dr. W. T. M. FORBE and Dr. P. P. BABIY. So far as comparable, the female agrees well with the details given for the male, and I am sure that it belongs to *Cacus mungo*. It does not belong to *Cacus latro*, the female of which I also know from this country.

Gomphoides undulatus Needham Figs. 18–19

NEEDHAM, 1944, *Transact. Amer. Ent. Soc.* 69, p. 199–201, pl. xv, figs. 9–9a (♂ appendages and genitalia).

Since the description of the male by NEEDHAM in 1944, the female of this common species has not been described. I now have 8 females in my collection.

Allotype. — Labium and side lobes pale yellow, end margin black. Labrum black with two yellow side spots. Genae yellow at base, darker at the end, epistome yellow.

Frons lower part brown, a yellow spot each side near the eye margin and a dark brown line over the suture; upper part of frons yellow, darkened at the suture between the antennae. Antennae black, a pale ring at base and at the end of the first segment. Vertex dark brown with two hairy notches behind the lateral ocelli. Occipital triangle brown, a yellow spot in the middle part, otherwise rear of head uniform brown.

Prothorax brown, in the median before the hind margin two small yellow spots. Synthorax as in male, chocolate brown, the middorsal carina in front and the sides of collar yellow striped. The antehumeral stripe not reaching the collar, the humeral stripe along the first suture line enlarged at top but not connected with the antehumeral stripe. The three side stripes, respectively over the mesepimeron, the metepisternum including the side stigma, and the middle of the metepimeron, increase in width and are not connected with one another. Underside of synthorax pale greenish-brown. Dorsum between the wing bases bears a dotted yellow stripe.

Legs yellow and black; underside of first and upper $\frac{3}{4}$ of last femora are yellow, while the other parts are black or brownish as are the femora of the middle legs.

Wings hyaline, diffusely brown-tinged; a small golden-brown basal spot in both wing pairs to halfway along first costal and cubital cross vein. Membrane grey, stigma dark brown.

Abdomen dark brown to black in the last segments. Segm. 1 and 2 with a middorsal yellow stripe and a large yellow side spot. Segm. 3-7 with a basal yellow spot which, in segm. 7, reaches to one fourth of the segment length. Dilated side parts at segm. 8 and 9 not prominent, and developed as a small band along the side margins. Subgenital plate divided by a V-shaped notch into two triangular lobes. Ventrums of segm. 9 wider than long, ventrums of segm. 8-10 black.

Total length: 56 mm, abd. + app. 42 mm, hind wing 33 mm.

Suriname, Coropina creek, upper part near Zanderij, April 30, 1951 (GEIJSKES). - Allotype in author's collection.

The other female specimens do not show much variation from the allotype. The upper part of the frons is sometimes a duller brown, nearly interrupting the yellow end margin in the middle part.

In living examples (from the same locality as the allotype) the eyes are bluish green in the upper half and yellowish green in the lower half. Ventrums of abd. segm. 2 yellowish green and in the following segments, including segm. 7, grey-white. The dilated side margins at abd. segm. 8 and 9 more prominent than in the allotype, and a yellow spot at the sides of segm. 8 and 9.

Total length (from 8 females) 56-58 mm; abdomen + app. 42-45 mm; hind wing 33-34 mm.

Planiplax phoenicura (Ris)

Fig. 20

Ris, 1912, *Libellulinen* 6, Coll. Zool. de Selys-Longchamps, Fasc. 14, p. 731-732, fig. 412 (♂ wings), fig. 413 (♂ genitalia).

Female (hitherto unknown), described when still alive.

Allotype. - Head and thorax dull olive-brown, abdomen lighter. Head: labium with black mentum and brown side lobes, the

lower part of which is darker. Labium brown, the end margin black. Clypeus and basal half of frons olive; upper part of frons and vertex bluish metallic shining. Antennae black. Occipital triangle brown. Rear of head uniform brown. Compound eyes in the upper part brown, in the lower part grey.

Prothorax dull brown. Synthorax golden brown at dorsum, sides olive coloured; a black line along the antecular crest and partly along the subalar carina as far as mesepimeron area extends. Collar cleft in front of dorsum darker in the middle part, except for two golden spots at each side of the median line. Underside of thorax dull brown.

Legs black, trochanters, inner side of first femur and base of second and third femur brown.

Wings hyaline, the wing veins black; a golden basal spot in hind wing, reaching to halfway down the first costal cross vein, to just over the cubital cross vein and to the first cell of the anal loop, descending downward in the anal field to once more the length of the membrane. Membrane blackish. Pterostigma yellow, surrounded by black margins. Front wing with 8 antenodal and 7 postnodal cross veins; hind wing with 6 antenodal and 7 postnodal cross veins.

Abdomen depressed, tapering to the end from segment 5, uniform dull brown, lighter in colour than head and thorax, with no dark markings, except for a double black spot at dorsum of segment 1. Appendices short and simply pointed, blackish brown, darker to the end. Underside of abdomen light greenish-brown. Genitalia: hind margin segm. 8 with a short vulvar lamina, containing two swollen processes each side. End margin of segm. 9 reaching half way down segm. 10.

Total length 33 mm; abdomen 21 mm, hind wing 27 mm.

This female was found near Paramaribo, at a small pond on the shell ridge of Charlesburg, where it was flying in the sunshine at 11 o'clock on June 6, 1957 when it was attacked by a male for copulation (J. BELLE). No other females were seen, but some males were hunting along the shore of the pond at the same time. - Allotype in author's collection.

Planiplax arachne (Ris)

Fig. 21

Ris, 1912, *Libellulinen* 6, Coll. Zool. de Selys-Longchamps, Fasc. 14, p. 732-733 fig. 414 (♂ wings), fig. 415 (♂ genitalia).

Description of female (hitherto unknown), when still alive.

Allotype. — In general dull brown, wings with no basal spots. Face (labrum, clypeus and lower part of frons) ivory white, labium light brown, genae yellowish, frons on top metallic blue, the sides brownish. Vertex swollen, two small points on top, metallic blue-coloured, a white spot at the inner side of the lateral ocellus. Antennae black.

Occipital triangle dark brown, rear of head reddish brown with a lighter greyish green stripe along the eye margin at the lower end. A fringe of long blond hairs on the upper side lobes of rear of head and

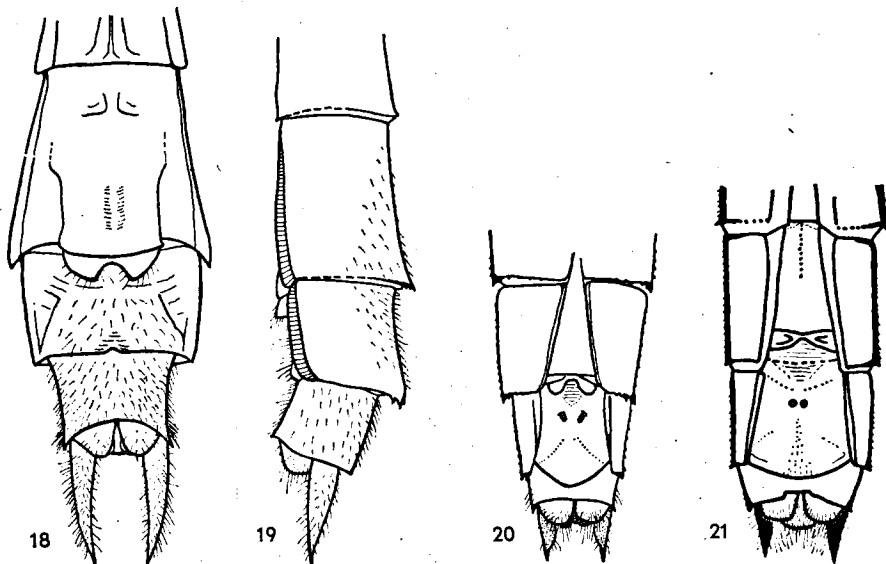


Fig. 18-19. *Gomphoides undulatus* Needh. from Suriname. Allotype female: last abdominal segments with genitalia ventral and left side.

Fig. 20. *Planiplax phoenicura* Ris from Suriname. Allotype female: last abdominal segments with genitalia ventral side.

Fig. 21. *Planiplax arachne* Ris from Suriname. Allotype female: last abdominal segments with genitalia ventral side.

on the hind margin of occipital triangle. Eyes dark brown on top, passing from grey into olive green towards the underside.

Prothorax reddish brown, fore margin lighter, hind margin elevated and expanded at the sides, bearing a fringe of long blond hairs.

Synthorax dull brown, with some lighter stripes and spots as follows: antehumeral stripes light yellowish-green, converging from the horizontal basal crest, to $\frac{3}{4}$ the distance to the ante alar sinus; a lighter dull greenish-brown stripe just above the first lateral suture line; the sides of mesepisternum and metepimeron for the most part dull greyish-green, with darker bands along the suture lines; the supracoxal areas red. Ventrums reddish flesh-coloured, pruinose.

Legs very long and black, femora armed with a row of short dents and one long spine at the distal end; tibiae with two rows of moderately long spines and tarsi with a double row of densely placed spines on each joint; claws long and sharp pointed, the underside with a hardly visible notch at $\frac{3}{4}$ of their length.

Wings hyaline, stigma yellow, bordered by black veins. Membrane dark grey, no basal spot present.

Wing venation: antenodals in fore wing 10.9, last one complete; postnodals 8.7; antenodals in hind wing 7.7; postnodals 9.9. Arculus in both wing pairs between antenodal 1 and 2. Triangle in fore wing crossed, in hind wing free; subtriangle in fore wing 3-celled; suptriangle in hind wing free. Discoidal space after triangle starting in fore wing with 3-4 cells, then 2 rows; in hind wing 3 or 4 single cells run through from M_4 to Cu_1 . $Rspl$ and $Mspl$ with one row of cells in both wing pairs; $Rspl$ in fore wing 9 cells long, in hind wing 8 cells; $Mspl$ in fore wing 5 cells long, in hind wing 6 cells. Number of cubital cross veins 1, except in left fore wing, where there are 2.

Abdomen relatively short, the sides more or less parallel, the last segments tapering to the end. Colours are: dull yellowish brown, basal half of segm. 2, 3 and 4 lighter, the upper end of the last three segments reddish brown. Carinae of the sides and hind margins, and also the transverse carinae on segm. 3 and 4, prominent, black. Ventrums yellowish, with no black markings. Appendices short, as long as segm. 10, dark brown, pointed at the end. Genitalia: end margin of segm. 8 thickened and divided into two diverging lobes,

widely cleft. End margin of segm. 9 semicircular and flat, reaching to the basal half of segm. 10, a row of fine hairs over the median, and in the middle of segm. 9 two small dark points.

Total length: 41 mm; abdomen 26 mm; hind wing 31 mm; pterostigma 3 mm.

Described from one female (when still alive), collected in Suriname, Coropina creek at Republiek, March 15, 1959 (J. BELLE). The specimen was found in copulation, male and female hovering in the air for a short time, after which the female immediately started to "dip off" her eggs on the surface of the water, watched by the male one foot above it. — Allotype in collection Belle.

***Dythemis williamsoni* Ris**

Fig. 17

RIS, 1916, Libellulinen 9, Coll. de Selys-Longchamps, Fasc. 16 2e, p. 1208-1209, fig. 682 (♂ genitalia).

The female of this species is not yet known, and is described here from two specimens of different age. The species is recognizable in having but one cubito-anal cross vein in the hind wings. (In the closely related *D. cannaerioides* Calv. there are two cross veins). The female resembles the male in its pruinose synthorax and abdomen and blue metallic reflections in the thorax.

Allotype. — Adult (in freshly killed condition) dark chocolate-brown, thorax and abdomen bluish-grey pruinose. Face and underpart of eyes light cream-coloured, otherwise the eyes bluish and dark brown on top. Wings hyaline, the tips light-brown smoked, pterostigma nearly black. Details of head are: labium with the side lobes white, mentum and the end margins of the lateral lobes along the middle junction darkened. Labrum, genae and postclypeus cream-coloured, anteclypeus more whitish tinged. Frons and vertex brown, occipital triangle and rear of head dark brown, the latter with two yellow spots, followed by a yellow stripe along the lateral hind margin.

Prothorax and synthorax dark chocolate-brown. Synthorax with bluish-green metallic reflections at dorsum and over the sides, the whole bluish-grey pruinose, especially on the ventral side. Legs dark

brown (femora) to black (tibiae and tarsus), hind femur with one long spine at the apical end on the inner side. Tibia I shows a row of about 15 close-set short spines in the apical half on the inner side, followed by 4 long spines in the basal third. Tooth on tarsal claw small but distinct, situated $\frac{3}{4}$ down the length of the claw.

Abdomen rather short and broad, segm. 2-3 broadest, the others tapering to the end, dark-brown coloured, darker on segm. 8-10. Segm. 2-4 with a supplementary lateral keel. There is a fine yellow transverse line at base of segments 2 and 3 and over the ventral half of the supplementary carina. Appendices sup. short, as two fine black spines. Ventral plate of segm. 9 rounded at the end, reaching to near the end of segm. 10. Ventral hind margin of segm. 8 (vulvar lamina) thickened and slightly excavated (see Fig. 17).

Wings hyaline, wing tips behind stigma light-brown smoked, no basal spots. Membrane dark grey-brown, pterostigma dark brown to black. Antenodal cross veins in front wings $15\frac{1}{2}$, in hind wings 11; postnodals in front wings 11 and in hind wings 10-11, Rspl. with two cell rows, Mspl in front wings with two cell rows and in hind wings with one double cell. Triangle in front wings crossed, in hind wings free. Subtriangle in front wings with 4 cells.

Three rows of posttrigonal cells in hind wings (two in left wings), followed by two rows of cells for a distance of two or three cells. One cubito-anal cross vein in each wing pair, and three to four rows of post-loop cells. Anal loop with a double cell at triangle and in the "knee".

Total length 42 mm; abdomen 28 mm, hind wing 38 mm, stigma 5 mm.

Collected along the upper Coropina creek near Zanderij, February 1, 1958 (J. BELLE). The specimen was observed in the bush at 2.30 p.m., flying down from higher up between the trees to the creek, where it was attacked by a male. After tumbling over and over in flight, the pair copulated while hanging on a twig no more than four feet from the grounds where they were netted. The captured female extruded a clot of bluish-shining eggs. - Allotype in author's collection.

Another female specimen was reared on December 17, 1953, from an ult nymph, which was collected on November 29, 1953 (GEIJSKES), also from the upper Coropina creek at Zanderij.

Because of its immature stage, it differs from the adult female described by ist

lighter colourings, as follows: Labium and lower part of face light brown, upper part of frons and vertex somewhat metallic-blue shining.

Prothorax dull brown, hind margin large, oval, flat, beset with a few long hairs. Synthorax dark brown with blue metallic reflection, slightly pruinose, dorsal and ventral part covered with long white hairs. Legs dark brown to black, hind femora lighter brown, apical end on the inner side with one or two long spines. Abdomen dull brown, darker in the last three segments; appendices black.

Wings hyaline, wing tips behind the stigma smoked. No basal wing spots. Membranule dark grey, pterostigma blackish grey. Antenodal cross veins in front wings $15\frac{1}{2}$, in hind wings 11-12; postnodal cross veins in front wings 12-14, in hind wings 11-13. Two cell rows between Rs-Rspl in both wing pairs; two cell rows in Mspl of front wings, one cell row in hind wings (one double cell in left hind wing). Triangle in front wings crossed (in left fr.w. with two cross veins), triangle in hind wings free; subtriangle in front wing with four cells (left side) or with three cells (right side). One cubito-anal cross vein in front and in hind wings (two in right front wing). Otherwise as in allotype.

Length abdomen 25 mm; hind wing 38 mm.

RIS (1916) has described the species from nine males from British Guiana collected by WILLIAMSON in 1912 (5 ♂ Paraweeka creek, 16 miles above Rockstone, Feb. 2; and 4 ♂ Tumatumari, Feb. 5-12). To judge from our experience in Suriname the species is confined to savannah creeks with brown water.