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A NEW DRAGON FLY OF THE GENUS RHODOPYGIA

by

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In the course of my researches in Surinam a species of *Rhodopygia* was often collected, the specimens of which answered fairly closely to Dr. F. RIS's description of *Rhodopygia hollandi* in the Libellulinae of the DE SELYS collection.

However, after studying PH. P. CALVERT's original description of the species in the Biologia Centrali-Americana (1911, Odonata, p. 318–319, tab. 9, fig. 54) I found my species to be manifestly different in kind from *Rhodopygia hollandi*, and hence the determination with the aid of RIS's Libellulinae was incorrect.

According to Professor CALVERT, the species *Rhodopygia hollandi* is characterized by the following combination of features: There are two rows of cells between Rs and Rspl, and the pterostigma is long (4.25–4.5 mm); the adult male has a bright-red, slender, long abdomen (33.5–37 mm) and a brownish-yellow basal spot on the hind wing. The type specimen is a male from Cuyaba, Mato Grosso, Brazil (see B.C.-A., Introduction to the Odonata: footnote on page xxviii). My species differs from it in being smaller (length of abdomen 28–33 mm), in having one row of cells between Rs and Rspl (by way of exception, two rows) and in having a shorter pterostigma (3.3–4 mm). The adult male is very dark brown at the base of the hind wing and the dorsal side of the abdomen is not bright red but obscured with dark brown. I believe these characters place beyond all doubt its specific distinctness from *Rhodopygia hollandi* as proposed by CALVERT.

I have named the new species after Dr. D. C. GEIJSKES, Director of the Surinam Museum (Paramaribo), who introduced me to the study of the Surinam Odonata. It is described in the following pages.

During my stay in Europe (1961) I took the opportunity of investigating the material in EDM. DE SELYS's collection (Brussels Museum) that served Dr. F. RIS for his description of the species *Rhodopygia hollandi* in the Libellulinae. The material in question, which I found under the heading "Hollandi Calvert", consists of three well preserved specimens:

1) a male with the pin labels "Venezuela", "Rhodopygia spec. no 2" and "Collection Selys Revision Ris 1906 Rhodopygia Hollandi Calv.".

2) a female with the pin labels "Obidos Amaz.", "Rhodopygia no 2" and "Collection Selys Revision Ris 1906 Rhodopygia Hollandi Calvert".

3) a male with the pin labels "Bres.", "Rhodopygia spec. no 2", "Collection Selys Revision Ris 1906 Rhodopygia Hollandi Calv." and a badly written label which seems to read "157 L. Vaptos B, s.g. protophysa".

I consider them to be conspecific with my species *Rhodopygia geijskesi* from Surinam. The male from "Venezuela" and the female from "Obidos Amaz." are somewhat immature and less pigmented. The male from "Bres." (doubtless Brazil) is a fully mature specimen, which differs from my species in having a longer pterostigma (4.5 mm) and the lateral process of the hamule somewhat more produced caudad. Furthermore, there are three rows of cells in the distal part of the anal field of the front wing of this male.

Apparently Dr. F. RIS is alluding to the specimens listed above when he says (1911, Coll. Selys Lonchamps, Libellulines 5, p. 610–611, fig. 357): "Alle unsere Exemplare haben nur 1 Zellreihe Rs-Rspl, 3 Zellreihen zwischen A3 und dem Rand im Hinterflügel, höchstens 1 mal 3 Zellen im Analfeld der Vorderflügel. Calvert's Exemplare haben 2 Zellreihen Rs-Rspl, sind auch nach seinen Massen nicht unbedeutend grösser als die unsrigen. Doch ist, insbesondere auch nach der Form des Hamulus, nicht zu zweifelen an

der spezifischen Identität der surinamisch-amazonischen Serie mit der Serie von Matto Grosso.".

By the courtesy of Dr. GEORGE E. WALLACE, Curator of Insects, Carnegie Museum, Pittsburgh, U.S.A., I was able to compare one of the male specimens of *Rhodopygia hollandi* from Cuyaba, Mato Grosso, with my species from Surinam. The dragon fly received (Paramaribo, March 7, 1963) was labelled "Cuyaba. Matto Grosso Jan 1886 (Latres)" and "Rhodopygia hollandi Calv. [doubtless in Professor CALVERT's handwriting] P. P. Calvert, det. 1907 B. C. A. Neur., p. 319". The dimensions of this (type) specimen were: Total length 50 mm; length of abdomen 34.5 mm (caudal appendages included); length of hind wing 37 mm; width of hind wing at arculus 10.2 mm; costal edge of pterostigma of front wing 4.25 mm. The wing membrane was slightly brown-tinged; the costa was yellow and the cross veins pale brown, distinctly paler in costal and subcostal interspaces. There were two rows of cells between Rs and Rspl, four cells long in the front wings, five (right) and six (left) cells long in the hind wings. The outer margin of the second femur was provided with nine denticles on its basal two-fifths, followed by four long spines.

Two fully mature males, doubtless conspecific with this one from Cuyaba, were collected by myself (June 24, 1962) at a seasonal pond near the airport of Zanderij. In life, the colours were: compound eyes green, darker on upper parts; face bright red; synthorax bright red but thoracic dorsum tinged with green; legs brownish; abdomen handsome bright red. The pterostigma is shorter than that of the male from Cuyaba; the costal edge of the pterostigma of the front wing is 4 mm long.

Regarding *Rhodopygia hollandi* Professor CALVERT (loc. cit.) says: "This species, especially in the adult male, bears a very considerable resemblance to *Erythemis haematogastra* (Burmeister), but it differs from it in having the labium unmarked with black, the abdomen less swollen at base in profile view, the colour at the base of the hind wing paler, the pterostigma longer, & c., as well as by the generic characters given on p.p. 203–4, anteà".

Erythemis haematogastra is abundantly represented in my Surinam Odonata collection, and so I was able to compare the adult

males of the three species *Erythemis haematogastra, Rhodopygia hollandi* and *Rhodopygia geijskesi*. The last-mentioned species resembles *Erythemis haematogastra* more closely than it resembles CALVERT's *Rhodopygia hollandi*, because of the darker basal spot on the hind wings. This positive resemblance (as well as the locality Guiana stated in the B.C.-A for the species *Rhodopygia hollandi*) probably misled Dr. F. RIS when he wrongly classified my new species in the collection of Baron EDM. DE SELYS LONGCHAMPS, for he says (loc. cit.): "Calvert hebt mit recht die frappante Habitusähnlichkeit dieser Art mit *Erythemis haematogastra;* . . .". In the

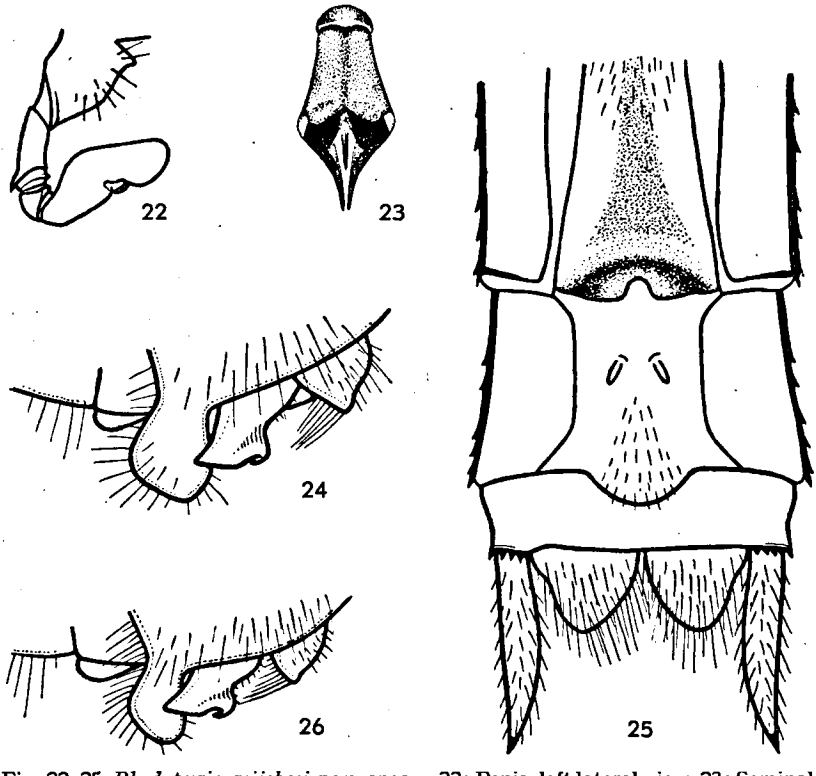

Fig. 22–25. *Rhodopygia geijskesi* nov. spec. – 22: Penis, left lateral view. 23: Seminal vesicle, ventral view. 24: Genitalia of holotype male, right lateral view. 25: Apical segments of allotype female abdomen, ventral view, showing vulvar scale (drawn when freshly killed).
Fig. 26. *Rhodopygia hollandi* Calvert. – Genitalia of male from Cuyaba, Mato Grosso, right lateral view.

field, *Rhodopygia geijskesi* is hardly distinguishable from this species.

Rhodopygia geijskesi nov. spec.

Male (holotype). – Total length 47 mm; length of abdomen 31 mm (caudal appendages included); length of hind wing 36 mm; width of hind wing at arculus 9.9 mm; costal edge of pterostigma of front wing 3.6 mm.

Compound eyes dark green, lower parts lighter. Face reddish-brown and tinged with green, labrum more reddish. Vertex and crest of occiput dark brown. Rear side of head brown with green spaces along temporae.

Synthorax dull green with darker markings; posterior half of metepimeron red, as well as the slanting ventral side of synthorax. The ventral side of the synthorax and the coxae are slightly pruinose.

Legs dark reddish brown, ventral sides of first pair of femora lighter; spination black; a row of fifteen denticles on the basal half, followed by three long spines, along outer margin of second femur; outer margin of third pair of femora with nine (left) and eleven (right) denticles, followed by seven spines successively increasing in size towards the lower joint.

Abdomen slender, swollen at base (segment two 2.5 mm wide, in profile view 4 mm high), narrow at segment four (length of middorsal carina about 3.3 times as long as left (or right) dorso-posterior carina), thence slightly widening to apex of segment eight, segments nine and ten successively a little narrower. Lateral carina of third segment at apex twice as near to the submedian ventral carina as it is at the level of its conjunction with the submedian vertical carina. Abdomen red, dorsal side overcast with brown, darkened to apex of each segment especially on end segments except segment ten. Carinae on dorsal parts of segments dark brown. Genital pocket of abdominal segment two, red. Inner branch of hamule ending in a dark-brown acute point. Appendages of genital pocket distinctly stouter than those of *Rhodopygia hollandi*. Caudal appendages bright red, scantily covered with brown hair. Superior appendages 2 mm long, longer than segment nine, tapering to acute apex at about

four-fifths of the length. The apical third and fourth portions below, armed with an irregular row of 16–17 minute black denticles. Inferior appendage widest near mid-length, apical end with two upturned black points and reaching to just beyond the denticles on underside of superiors.

Wings hyaline; wing membrane slightly iridescent. Venation dark brown; frontal side of costa somewhat lighter at base; underside of nodus with yellow. Pterostigma brown, darker along frontal border. There are two cross veins behind each of the pterostigmata. Front wing with a trace of brown at extreme base. The same at bases of costal, subcostal and midbasal interspaces of hind wing. Dark-brown basal spot on hind wing reaching to anal crossing, back to one cell beyond membranule. Antenodal and postnodal cross veins of first series 12: 16–15: 12/13: 11–12: 13 in front and hind wings respectively. Two rows of cells in distal part of anal field of front wing. Anal field of hind wing with three rows of cells behind anal loop at the level of the hind angle of the triangle, and with a column of three cells between the second paranal cell and the marginal row (This is the row of cells bordering the proximal side of vein A3 (not A3 of RIS) between the second paranal cell and the marginal row, as very well marked by NEEDHAM & WESTFALL, Dragonflies of North America (Anisoptera), Cal. Press, p. 425, fig. 272, 1955).

Female (allotype). – Total length 45 mm; length of abdomen 29.5 mm (caudal appendages included); length of hind wing 37 mm; width of hind wing at arculus 10 mm; costal edge of pterostigma of front wing 3.75 mm.

Coloration of head, synthorax and legs similar to male but somewhat less dull, and posterior half of metepimeron hardly tinged with red.

Outer margin of second pair of femora provided with ten (left) and eight (right) spines, increasing in size towards the lower joint.

Abdomen stouter than in male, moderately swollen at the basal segments. Middorsal carina of fourth segment two and a half times as long as left (or right) dorso-posterior carina. Lateral carina of third segment parallel to submedian ventral carina. Abdomen brownish red, paler between lateral and submedian ventral carinae;

proximal segments paler and washed with green; dorsal side of segments eight and nine somewhat dull; the same at apex of segment seven. Carinae nearly black, but submedian ventral carinae pale. Pleural membrane yellow-green. Midventral ridge of sterna dark brown, the posterior prolongations pale. Sternum of segment nine pale brown-red. Anal appendages reddish, acute points black. Vulvar scale brown-red, projecting more or less perpendicularly from the ventral side of the abdomen, its border medianly excised.

Wings with ill-defined brownish basal spots, on hind wing reaching to beyond anal crossing, back to apex of membranule. Antenodal and postnodal cross veins of first series 12: 16–16: 12/13: 12–13: 14 in front and hind wings respectively. Two rows of cells in distal part of anal field of front wing. Anal field of hind wing with three rows of cells at the level of the hind angle of the triangle and with a column of three cells between the second paranal cell and the marginal row.

Holotype male: Surinam, Republiek, 26.XII.1961; allotype female: Surinam, Zanderij (Bos Bivak), 1.XII.1962. The type specimens are in the author's collection.

Paratypes: Republiek, 15.III.1959, 1 ♀; 22.III.1959, 1 ♂, 1 ♀; Vier Kinderen, 31.XII.1957, 1 ♂; 15.III.1959, 1 ♀; 13.XII.1959, 1 ♂; 9.XII.1962, 1 ♂; Paranam (Blauwe Meer), 20.V.1959, 1 ♂; Zanderij (Bos Bivak), 6.III.1958, 1 ♂; 1.XII.1962, 1 ♂; Zanderij (savannah), 18.III.1962, 1 ♂; 21.IV.1963, 2 ♂♂, 2 ♀♀; Zanderij (Pontjibrug), 7.III.1959, 1 ♂; 19.IX.1959, 1 ♀; 27.IV.1962, 2 ♂♂; 30.IV.1962, 1 ♂; 13.IX.1962, 1 ♂; 27.X.1962, 2 ♂♂; Stondansi (Nickerie River), 20.IX.1962, 1 ♂; Overtoom, 16.XII.1957, 1 ♂; 26.IX.1961, 1 ♂; 7.IV.1962, 1 ♂, 1 ♀; 21.X.1962, 1 ♂; 17.XI.1962, 1 ♂; 24.XI.1962, 1 ♂. All in Surinam.

In five wings (4%) of these specimens I have found two rows of cells between Rs and Rspl (one or two cells long only), and in six front wings (9%) three rows of cells in the distal part of the anal field.

Specimens were sent to the Carnegie Museum, Pittsburgh, U.S.A. and to the Museum of Natural History, Leiden, Holland.

Geographical distribution of *Rhodopygia geijskesi:* the Guianas; Venezuela; Brazil, lower and middle valleys.

ADDENDUM

In 1911 Dr. F. Ris described *Rhodopygia chloris* from Para (?) and Surinam, and, as stated in the Libellulinae, four males and three females belong to the collection of Edm. de Selys Longchamps (Coll. Selys, Libell. 5, p. 611–612). On my visit to

the Brussels Museum in 1961, however, I found no specimens under the heading "Chloris Ris" but, when searching through the material placed under "Cardinalis Erichson" (Boîte no: 136), I saw four specimens, two males and two females, which I considered belonged to the ones which Dr. F. Ris had in mind when he referred to *Rhodopygia chloris:* "Bates, wahrscheinlich Para, ohne genauere Bezeichnung, und zu der Ordnungsnummer der Exemplare fehlt eine Angabe in Bates handschriftlichen Notizen". Each of the males carried at the pin the labels "169", "Bates", "Rh. cardinalis ♂ b" and "Collection Selys Libellula Erich. Revision Ris 1906 Rhodopygia cardinalis Erichs". Each of the females had the pin labels "Bates", "Rhod. cardinalis ♀ b" and "Collection Selys Libellula cardinalis Erich. Revision Ris 1906 Rhodopygia cardinalis Erichs."; one female also had the pin label "169".

The descriptions of *Rhodopygia chloris* in the Libellulinae and of *Rhodopygia hollandi* in the B.C.-A. show the striking resemblance between the two species; the colour description of *Rhodopygia chloris* fits that of the younger males and females of *Rhodopygia hollandi* fairly well. For example, in the Libellulinae for *Rhodopygia chloris:* "Lippen hell gelb. Gesicht, Stirn und Scheitelblase licht gelbrot mit einen Nuance von grünlich. Thorax hell gelbbraun, Dorsum und die Seiten vorne etwas grünlich gemischt. Abdomen licht gelbrot, die Segmente 1–3 mit einer grünlichen Nuance". In the B.C.-A., for younger males and females of *Rhodopygia hollandi:* "Frons, clypeus, and vertex greenish, lips yellowish. Thorax and abdomen luteous or greenish". The predominantly yellow-green coloration of the body, coupled with the more yellow hind-wing basal spot as stated in the Libellulinae, suggests that young or fairly young specimens of *Rhodopygia hollandi* had served Dr. Ris for his description of the speciens *Rhodopygia chloris.*

The three other specimens of which Dr. Ris (loc. cit.) wrote: "Ferner aus unpräp. Material: 2 ♂, 1 ♀ Surinam" could not be located in the Odonata collection of the Institut Royal des Sciences Naturelles de Belgique, Brussels. They were traced to Dr. F. Ris's own collection, which is still in the Natur-Museum Senckenberg, Frankfurt a/Main. At my request Dr. Elli Franz kindly sent one of the males (cat. no: 30288) and the female (cat. no: 30290) to the Leiden Museum for examination (1961). Both specimens were received broken but well preserved in envelopes provided with labels in Dr. Ris's handwriting: "Rhodopygia chloris ♂ Surinam Coll. Selys" and "Rhodopygia chloris ♀ Surinam Coll. Selys". I was thus able to describe and make drawings of them. The dragon flies were evidently not fully mature specimens, as is clearly seen from the very iridescent wing membranes. The male of *Rhodopygia hollandi* from Cuyaba which was loaned by the Carnegie Museum fits these descriptions and drawings except, of course, as regards the colors. I think these color differences are not specific and that Dr. Ris, being misled by the fact that *Rhodopygia geijskesi* resembles *Erythemis haematogastra* more closely than it does *Rhodopygia hollandi,* treated all the specimens of the last-mentioned species in the collection of de Selys Longchamps as a new species, his *Rhodopygia chloris.* The costal edge of the pterostigma of the front wing of the male from the Senckenberg Museum, collected in Surinam, is 4 mm long (in the female 4.5 mm). This corresponds with my observations of the size of the pterostigmata in the two male specimens of *Rhodopygia hollandi* which I secured in Surinam.