

Synopsis of the Neotropical genus *Rhodopygia* Kirby, 1889 (Odonata: Libellulidae)

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Belle, J. Synopsis of the Neotropical genus *Rhodopygia* Kirby, 1889 (Odonata: Libellulidae). Zool. Med. Leiden 72 (1), 11.xii.1998: 1-13, figs 1-33.— ISSN 0024-0672.
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Key words: Libellulidae; *Rhodopygia*; Central and South America.

A synopsis of the genus *Rhodopygia* Kirby is given. Its species are discussed and their diagnostic morphological characters elucidated by figures. The hitherto unknown females of *R. hinei* Calvert and *R. pruinosa* Buchholz are described. A key to the species is provided.

Introduction

The Neotropical libellulid genus *Rhodopygia* Kirby, 1889, occurs in Central and South America. Five species referable to this genus are recorded, viz. *Rhodopygia cardinalis* (Erichson, 1848), *Rhodopygia pruinosa* Buchholz, 1953, *Rhodopygia geijskesi* Belle, 1964, *Rhodopygia hinei* Calvert, 1907 and *Rhodopygia hollandi* Calvert, 1907. They all occur in South America but for *Rhodopygia hinei* there is no published record of a South-American country (Paulson, 1982). This species and *Rhodopygia cardinalis* are the only members which are also known from Central America. I myself have collected a single pair of *Rhodopygia hinei* in Costa Rica and many specimens of the other four species in Suriname.

In this paper it is intended to give a survey of the representatives of the genus *Rhodopygia* and to present a key for their identification. For that goal I have used the existing material in the National Museum of Natural History, Leiden. Males and females of the five known species were kindly placed at my disposal for critical analysis by the Conservator of Odonata Mr Jan van Tol. By courtesy of Dr Kurt K. Günther, Curator of Insects on the Institut für Systematische Zoologie, Humboldt-Universität, Berlin, I was also able to review the male holotype of the type species of this genus. For these, I am profusely grateful to both curators.

All illustrations published in this paper are reproductions of drawings done by the author himself with the aid of a camera lucida except for the figures of the wings. These are based on actual photographs of wings with slightly developed basal spots. For each species there are illustrations of the second and third femora of the male, the genital hamule and the vulvar lamina. The Comstock-Needham terminology of the wing veins is used. CMP stands for Carnegie Museum, Pittsburgh, MAKB for Zoologisches Forschungsinstitut und Museum "Alexander Koenig", Bonn, MCZ for Museum of Comparative Zoology, Harvard University, Cambridge, RMNH for National Museum of Natural History, Leiden, SMF for Senckenberg Museum, Frankfurt-am-Main, and ZMHB for Zoologisches Museum, Humboldt Universität, Berlin.

History

In 1848, Erichson described the first species of *Rhodopygia* and named it *Libellula cardinalis*. The description was based on a single male taken in British Guiana (now

Guyana) during Schomburgk's travelling in that country. The holotype, stored in the Berlin Museum, is a pinned specimen in good condition which bears at the pin the printed white labels "2555" and "Zool. Mus. Berlin", and the written green label "*cardinalis* Er.* Brit. Guyan. Schomb."

Kirby (1889) created the new genus *Rhodopygia* with *Libellula cardinalis* Erichson as type species. In 1907, Calvert described two additional species of *Rhodopygia* in the *Biologia Centrali-Americana*, viz. *Rhodopygia hollandi* from Brazil and Guyana, and *Rhodopygia hinei* from Guatemala and Panamá.

Ris (1911) published the description of a supposed new species of *Rhodopygia* from Pará (?) and Suriname. He named it *Rhodopygia chloris* but it was later shown by Belle (1964) to be a synonym of *Rhodopygia hollandi*. Ris, being misled by the fact that Belle's *Rhodopygia geijskesi* resembles more closely *Erythemis haematogastra* (Burmeister) than *Rhodopygia hollandi* does, considered Belle's species as Calvert's *hollandi* and hence the misidentification.

Navás (1923) published a brief description of a geographical variation of *Rhodopygia cardinalis* from Villavicencio, a site in the centre of Colombia, which he named *colorata*.

Buchholz (1953) described the fourth species of *Rhodopygia* under the specific name *pruinosa*. His material was a male from Bolivia and the male from Brazil (Pará) which Ris, in his monograph of the Libellulinae (1911), considered as being in all probability a colour variation of *Rhodopygia cardinalis*.

In 1964, Belle published the description of the fifth *Rhodopygia*, from a number of specimens (both sexes) collected in Suriname. He named it *Rhodopygia geijskesi* in honor of the nestor Dr D.C. Geijskes who had introduced him to the study of the Surinam Odonata. In the same paper he showed that Ris' *Rhodopygia chloris* is a synonym of Calvert's *Rhodopygia hollandi*.

Limongi (1983) described the larva of *Rhodopygia* for the first time in a thesis (De Marmels, 1990a: 13). The description is based on a threesome reared larvae of *Rhodopygia geijskesi* originated from Venezuela (see Limongi, 1991).

De Marmels (1990a) described the larva of *Rhodopygia hollandi* from an exuvia of a reared individual the habitat of which the author gave as that of the larvae of *Rhodopygia geijskesi* collected and described by Limongi in 1983.

Finally, Limongi (1991) published the description of the larva of *Rhodopygia geijskesi* which he had described in his unpublished thesis of 1983.

Genus *Rhodopygia* Kirby, 1889

The species pertaining to this genus are all of about the same moderate size. The head and thorax is greenish, luteous or brownish and often red tinted. The male abdomen is yellowish-red to bright red, the female abdomen brown to reddish-brown.

The head is rather small, the frons has a deep median groove and the frontal tubercle (vertex) is furnished with a superior pair of small conical protuberances.

The hind lobe of the prothorax is not bilobed (fig. 5) but it should be said its frontal upper surface is slightly concave in the middle.

The wings are hyaline but brown or flavescent basally; the basal spots are more

pronounced in the males than in the corresponding females. The fore and hind wings have a stigma of the same size with an elongated underlying cell. The last antenodal cross-vein of the fore wings is not continuous. The arculus is normally situated between the second and third antenodal cross-veins (figs 1-3, 8-9) but occasionally at the second antenodal cross-vein. The sectors of the arculus start with a common stalk which is longer than the lower piece of the arculus. The fore wings have 15 to 20 antenodal and 11 to 15 postnodal cross-veins. The triangle of the fore wing has normally one traversing cross-vein (occasionally two cross-veins) and that of the hind wing is usually uncrossed. The radial planate subtends one row or two rows of cells in both fore and hind wings. The anal loop on the hind wing is long, foot-shaped and has two cells between the posterior angle of the hind wing triangle and the midrib of the anal loop.

The legs are strong and spiny. The armature of the second and third pair of femora is different in the two sexes; in the males, the proximal part of these femora has an outer anterior row of numerous modified spines i.e. spines which are much shorter than the long black spines on the distal part of the same row and for the most part blunt at the tip. The armature of the femora varies somewhat within the species.

The male abdomen is slender with the basal segments dorsoventrally expanded and the middle segments triquetral. The genital hamule is two-branched. The abdomen of the female is shorter and stouter than that of the corresponding male, subcylindrical on the basal half and more or less triquetral on the apical half except for the ultimate segment. The vulvar lamina of the female projects in an oblique direction to rearward.

The position of the genus *Rhodopygia* within the Libellulidae is not clear in all respects. Davies and Tobin (1985) placed this genus in the Sympetrinae but *Rhodopygia* has the arculus between the second and third antenodal cross-veins, an archaic character not occurring in the other members of the Sympetrinae. Otherwise it answers to all characters of this subfamily. In the wings of all examined specimens of *Rhodopygia* I once detected an accessory cross-vein to the bridge in a hind wing (fig. 8) but this discovery is a matter of little account.

The dragonflies of this genus haunt at pools and ditches generally situated in spots sheltered by low and moderately high trees. Their behaviour does not differ from that what is normally met with other libellulids of perching habits at such localities.

Key to the species of *Rhodopygia*

For the specific identification the most striking morphological characters are used. These are clear for the males but the females show but little differentiations. Moreover the differences found in the body and wing coloration of the females are generally slight. Attention should also be called to the number of cells in the second anal interspace column on the hind wing, between the anal vein and the marginal row of cells (figs 1- 2).

The term "usually" as here employed is in the sense of Byers, 1939 (footnote 4 on page 25).

- 1. Usually a single row of cells between Rs and Rpl 2
- Usually two rows of cells between Rs and Rpl 6
- 2 (1). Aged males heavily and conspicuously pruinosed greyish-blue, females and young males pruinosed (sometimes slightly) at least on dorsum of prothorax and dorsum of basal segments of abdomen. [Basal spot on hind wings very small and faintly developed, on fore wings almost lacking. Second anal interspace column on hind wing four cells long in both sexes. Vulvar lamina of female shaped as shown in fig. 22] *R. pruinosa* Buchholz
- Body without any trace of pruinosity 3
- 3 (2). Males 4
- Females 5
- 4 (3). Hind wings with brown-yellow basal spot at least extending to triangle, the basal spot sometimes faintly discernible but generally handsomely developed and often very conspicuous. Second anal interspace column on hind wing five cells long. Four to five cells between A3 and hind wing border, at level of triangle. Inner branch of genital hamule in lateral aspect normally as high as outer branch, strong and curved to rearward (figs 10-11), occasionally small and strongly incurved toward outer branch (figs 12-13) *R. cardinalis* (Erichson)
- Hind wings with small but distinct brown basal spot. Second anal interspace column on hind wing four cells long. Three cells between A3 and hind wing border, at level of triangle. Armature of middle and hind femora shaped as shown in figures 19 and 28 *R. geijskesi* Belle
- 5 (4). Second anal interspace column on hind wing usually four, sometimes five, cells long. Vulvar lamina rather large and shaped as shown in fig. 21 *R. cardinalis* (Erichson)
- Second anal interspace column on hind wing four cells long. Vulvar lamina rather small and shaped as shown in fig. 23 *R. geijskesi* Belle
- 6 (1). Wings hyaline, the venation brown; second anal interspace column on hind wing five cells long in male, four cells long in female. Vulvar lamina of female shaped as shown in fig. 31 *R. hinei* Calvert
- Wings faintly greenish-yellow tinged, the venation pale brown and more or less transparent on basal half of wings; second anal interspace column on hind wing four cells long in male, usually four, occasionally three, cells long in female. Vulvar lamina shaped as shown in fig. 32 *R. hollandi* Calvert

Treatment of the species

For each species are given the main references, type locality and depository, distribution, additional features (in addition to the distinctive ones cited in the key), descriptions and remarks. The colours are derived from dry-preserved specimens; in the living individuals the red colour may be more predominant.

The measurements are given in mm. The given length of the abdomen is inclusive the caudal appendages, that of the pterostigma is the length of the costal edge of the stigma in the fore wing.

1. *Rhodopygia cardinalis* (Erichson, 1848)
(figs 1, 4-5, 10-13, 16-17, 21, 25-26)

Libellula cardinalis Erichson, 1848: 583 (Guyana; type in ZMHB); Kirby, 1889: 299.

Rhodopygia cardinalis Calvert, 1906: 318 (♂ genit. hamule); Kirby, 1889: pl. 52, fig. 10; Ris, 1911: 609, 612-613 (wings, ♂ genit.); Navás, 1923: 9 (var. *colorata* nov.); Buchholz, 1953: 1-5, 7-8 (♂ genit., second & third femora); Geijskes, 1971: 675; De Marmels, 1990b: 341.

Additional features.— Male: abdomen 30-35; hind wing 37-40; pterostigma 3.4-3.7. Labial lobes and free border of labrum yellow. Clypeus and frons red. Frontal tubercle and occipital triangle dark red. Thorax predominantly red, becoming yellow-brown below. Abdomen bright red. Legs reddish-brown. Brown-yellow basal spot of wings generally very handsome. Pterostigma reddish-brown. Occasionally the wings have a doubled cell or two doubled cells between Rs and Rpl.

Female: abdomen 29-31; hind wing 39-41; pterostigma 3.6-4.0. Labial lobes and labrum reddish-yellow. Clypeus and frons yellow-brown. Frontal tubercle and occipital triangle also yellow-brown but darker than face. Thorax, legs and abdomen reddish-brown. Basal spot on fore and hind wings weakly developed. Pterostigma reddish-brown. Vulvar lamina larger than that of other congeners.

Distribution.— Brazil (Amazonas, Mato Grosso, Minas Gerais, Pará), Colombia, Ecuador, French Guiana, Guyana, Panamá, Perú (Loreto), Suriname, Venezuela.

Remarks.— The nodal index of the holotype is 13:18-16:13/13:13-12:15. To the pin of the type I have attached the written yellow label "*Rhodopygia cardinalis* (Erichson) HOLOTYPE Rev. Jean Belle 1997".

Once I have collected a male of *Rhodopygia cardinalis* which, in one hind wing only, has a second anal interspace column with four instead of five cells.

In the collection of the Leiden Museum there is a pinned male of *Rhodopygia cardinalis* from Panamá with the labels "Panama Canal, Barro Colorado, 23.VII.1960, R. Straatman" and "*Rhodopygia* ♂". The wings of this specimen have faintly developed basal spots. In the same collection there are also many males of *Rhodopygia cardinalis* which may be of the same kind as Navás' (1923) variation *colorata*, having extremely well-developed basal wing spots, on fore wings extending to near half way between base of wing and nodus, and on hind wings to near nodus. Between these forms there are many other intermediate ones. Navás' variation is based on a single male taken in Villavicencio, Colombia. I have not had the opportunity to study his male known to be in the collection formerly owned by Navás himself but in the Leiden Museum there are two Andean male specimens from Ecuador with such well-developed brown-yellow basal spots. The locality data of the two Ecuadorian specimens are: "Prov. Morona-Santiago (9-1200m), Río Upano, Cachiyacu (Macas), xi-xii.1952, L. Gomez Alonso leg." Villavicencio lies about 900 km from Macas as the aeroplane flies and it is also situated eastern of the Andean watershed (Amazon slope).

One of the Ecuadorian males exhibits some striking deviations if compared with the male of nominal *Rhodopygia cardinalis*. Each of the fore wing triangles has two traversing cross-veins instead of one cross-vein, while the triangle on the left hind wing is once-crossed instead of open. The greatest width of the hind wings is near the base and measures 13 mm against 11.5-12.5 mm in other males. The inner branch of the genital hamule is small and strongly incurved toward the outer branch (figs 12-13), in

other males as high as the outer branch, strong and curved to rearward (figs 10-11). But the armature of the middle and third femora does not exhibit any difference that may justify a specific or subspecific distinction (figs 17, 26). The measurements of this male are: total length 50, abdomen 34 (incl. app. 2.2), hind wing 40, pterostigma 3.6.

2. *Rhodopygia pruinosa* Buchholz, 1953
(figs 2, 14, 18, 22, 27)

Rhodopygia pruinosa Buchholz, 1953: 3-6, 8 (Bolivia; type in MAKB); ♂ genit., penis, second & third femora)

Additional features.— Male: abdomen 32-34; hind wing 38-41; pterostigma 3.4-3.9. Labial lobes and labrum yellow-brown but free border of labrum orange. Face greenish-brown. Frontal tubercle dark brown. Upper surface of occiput dark reddish-brown. Prothorax and pterothorax brown, the lower parts yellow-brown. Legs brown, becoming darker toward claws which are almost black. Abdomen red. Thorax and abdomen of aged specimens heavily pruinosed.

Description of the female (hitherto unknown).— Abdomen 30-31; hind wing 40-41; pterostigma 4.0. Labial lobes and labrum yellow. Face greenish-brown. Frontal tubercle dark brown. Thorax and abdomen brown. Prothorax heavily pruinosed. Also slightly pruinosed on metepimeron along subalar carina and on dorsum of the basal segments of abdomen. Pterostigma dark brown. Nodal index 12:19-18:12/14:14-14:16. All wings with a single row of cells between Rs and Rpl. Legs brown, becoming darker toward claws, the outer anterior surface of first tibiae almost black. Vulvar lamina shaped as shown in fig. 22.

The locality data and depository of the first described female are: Suriname, Distr. Suriname, Zanderij, Pontjibrug, 5 December 1957, Jean Belle leg., RMNH.

Distribution.— Bolivia, Brazil (Minas Gerais, Pará), Guyana, Suriname.

Remarks.— In the collection of the Leiden Museum there is a fully mature male of *Rhodopygia pruinosa* from Brazil. The specimen is in excellent condition (only the apex of the right fore wing is somewhat damaged) and bears the printed pin labels "Nd. MINAS GERAIS R. Mucury Meiring. 10-20.II.1925", "d. W. Scheler Berlin 1925" and "Museum Leiden ex verz. M.A. Lieftinck", and the written pin labels "*Rhodopygia cardinalis* Er. d. Lieftinck 26 var. ?" and "*Rhodopygia pruinosa* Buchh. ♂ det. D.C. Geijskes 68".

Rhodopygia pruinosa is so very closely allied to *Rhodopygia cardinalis* that caution should be made in determining young specimens. The presence of a (often slight) pruinosity on the prothoracic dorsum and other body parts may be points of recognition, and regarding the males, also the number of cells in the second anal interspace column on the hind wing.

3. *Rhodopygia geijskesi* Belle, 1964
(figs 3, 15, 19, 23, 28)

Rhodopygia hollandi; Ris, 1911: 610-611 (♂ genit.).

Rhodopygia geijskesi Belle, 1964: 48-55 (Suriname; type in RMNH; ♂ genit., ♀ vulv. lam.); Limongi, 1986: 108; 1991: 415-417 (larva); De Marmels, 1990b: 341.

Additional features.— Male: abdomen 30-33; hind wing 35-40; pterostigma 3.5-3.8. Labial lobes yellow. Labrum brownish-yellow. Clypeus and frons greenish-brown. Frontal tubercle and occipital triangle dark greenish-brown. Thorax greenish, abdomen dull red. Legs reddish-brown. Basal spot on fore wing almost lacking. Basal spot on hind wing dark brown, extending to anal crossing and to just beyond posterior end of membranule. Basal spot on fore wing almost lacking. Pterostigma reddish-brown.

Female: abdomen 27-31; hind wing 34-37; pterostigma 3.5-4.0.

Labial lobes and labrum yellow. Clypeus and frons greenish-brown. Frontal tubercle and occipital triangle greenish-brown but somewhat darker than face. Thorax greenish, abdomen yellowish-brown. Legs brown. No basal spot of fore wing. Basal spot on hind wing yellow and extending to anal crossing and to posterior end of membranule. Pterostigma reddish-brown. Vulvar lamina shaped as shown in fig. 23.

Distribution.— Brazil (Amazonas, Pará), Guyana, Suriname, Venezuela.

Remark.— This species is superficially very similar to Burmeister's *Erythemis haematogastra* owing to its same size and small brown basal spot on the hind wings which extends to the anal crossing and to the posterior end of the membranule. As a result many misidentifications are made by dragonfly hunters. In the collection of the Leiden Museum I found several specimens of *Erythemis haematogastra* which were referred to the genus *Rhodopygia*.

4. *Rhodopygia hinei* Calvert, 1906 (figs 6, 20, 29, 31)

Rhodopygia hinei Calvert, 1906: 318-319 (Guatemala; type in MCZ; ♂ genit. & genit. hamule); Paulson, 1982: 258.

Additional features.— Male: abdomen 31-33; hind wing 38-42; pterostigma 3.5-4.1. Labial lobes and labrum yellow. Clypeus, frons, frontal tubercle and occipital triangle red. Thorax reddish-brown, abdomen bright red. Legs red-brown, the apical tarsal segment and claws darker. Basal spot on wings brownish-yellow; on fore wing weakly developed and extending to near triangle; on hind wing large, extending posteriorly to wing margin and distally to triangle. Pterostigma reddish brown.

Description of the female (hitherto unknown).— Abdomen 32.5; hind wing 41; pterostigma 4.2. Labial lobes and labrum yellow. Clypeus and frons red. Frontal tubercle and occipital triangle brownish-red. Thorax and abdomen reddish brown. Legs reddish-brown, the apical tarsal segment and claws darker. Basal spots on wings as in male but faintly discernible. Pterostigma reddish-brown. Nodal index 14:19-19:13/14:14-13:16. The two rows of cells between Rs and Rpl is four cells long in both fore wings and five cells long in the left hind wing. The right hind wing has two doubled cells between Rs and Rpl. Vulvar lamina shaped as shown in fig. 31.

The locality data and depository of the first described female are: Costa Rica, Prov. Guanacaste, Palo Verde Nac. Parq., Río Tempisque, 31 July 1986, Jean Belle, RMNH.

Distribution.— Guatemala, Costa Rica, Panamá, South America (Paulson, 1982)

Remarks.— The specimens which I collected in Costa Rica are significantly larger than Calvert's specimens from Guatemala and Panamá.

The locality data of the single male taken in Costa Rica are: Prov. Guanacaste, Corobicí, 20 August 1986, Jean Belle.

5. *Rhodopygia hollandi* Calvert, 1906
(figs 7-9, 24, 30, 32)

Rhodopygia hollandi Calvert, 1906: 319 (Brazil [Mato Grosso]; type [Guyaba ♂ taken in January] in CMP; ♂ genit. hamule); Belle, 1964: 48-51 (♂ genit.); De Marmels, 1990a: 13-14 (larva); 1990b: 341. *Rhodopygia chloris* Ris, 1914: 611-612; Belle, 1964: 54-55.

Additional features.— Male: abdomen 32-35; hind wing 33.5-37; pterostigma 3.8-4.2. Labial lobes yellow. Face, frontal tubercle and occipital triangle greenish-red. Thorax and legs brown-yellow. Abdomen clear red. Wing membrane faintly greenish-yellow tinged (hence Ris' specific name *chloris*). Venation of wings pale brown and more or less transparent near base of wings. Basal spot on wings yellow and small, on fore wing weakly developed and not extending to anal crossing, on hind wing somewhat darker and extending to just beyond anal crossing and to beyond membranule.

Female: abdomen 33-34; hind wing 37.5-40; pterostigma 4.0-4.3. Coloration of body and wings similar to that of male but abdomen brown-yellow and basal spot on wings less developed. Vulvar lamina shaped as shown in fig. 32.

Distribution.— Brazil (Mato Grosso, Pará), Perú, Suriname, Venezuela.

Remark.— The male of *Erythemis haematogastra* (Burmeister, 1839) superficially resembles *Rhodopygia hollandi* due to its same size, red abdomen and presence of a brown patch on the base of the hind wings although the brown colour is paler in *Rhodopygia hollandi*. The most striking morphological difference between the two species is found in the conformation of the dorsoventrally expanded basal segments of the abdomen which is more swollen in *Erythemis haematogastra*. A striking difference in the female sex is also found in the vulvar lamina which is projecting at a right angle to the abdomen in *Erythemis*, projecting in an oblique direction to the rear in *Rhodopygia*. Further, *Erythemis haematogastra* has the arculus between the first and second antenodal cross-veins, one row of cells between Rs and Rpl, one cell between the posterior angle of the hind wing triangle and the midrib of the anal loop, the fore wing with 14-16 antenodal cross-veins, the labium with a black median band, the hind femur of the male with an outer row of 20-25 modified spines on the proximal half, and the outer branch of the genital hamule of the male much longer than in *Rhodopygia hollandi* (fig. 33). The latter species has the arculus about half-way between the second and third antenodal cross-veins, two rows of cells between Rs and Rpl [twenty-one specimens have been studied. In only one wing (a hind wing) the radial planate subtends a single row of cells (fig. 9)], two cells between posterior angle of hind wing triangle and midrib of anal loop, the fore wings with 17-18 antenodal cross-veins, the labium unmarked with black, and the hind femur of the male with an outer row of 5-12 modified spines on the proximal third. But as already stated in the historical review anteà, *Rhodopygia geijskesi* resembles more closely *Erythemis haemato-*

gastra than *Rhodopygia hollandi* does. Among the material of the Leiden Museum I sometimes found males of both species in the same triangular envelope and often specimens of *Erythemis haematogastra* referred to *Rhodopygia hollandi*.

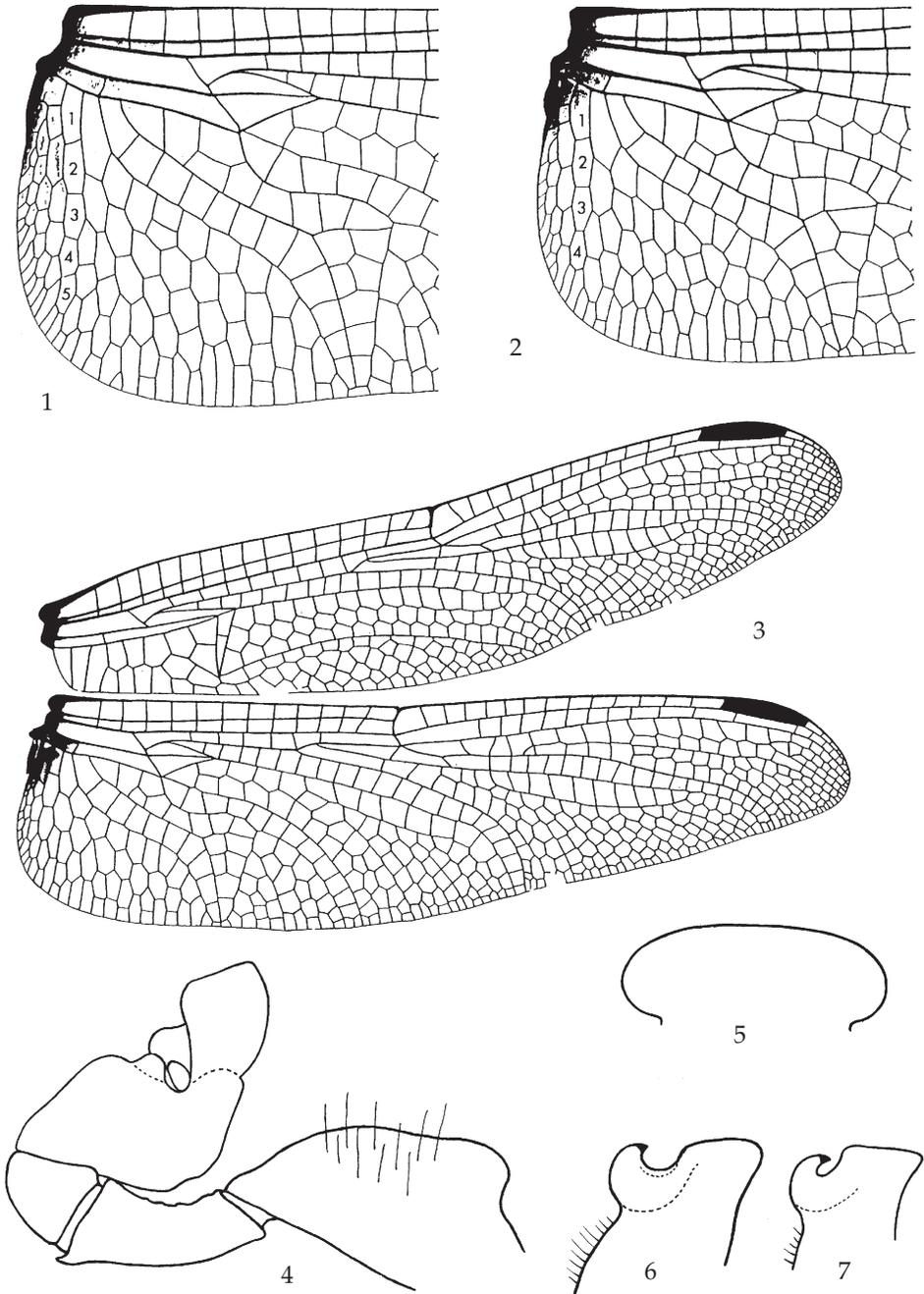
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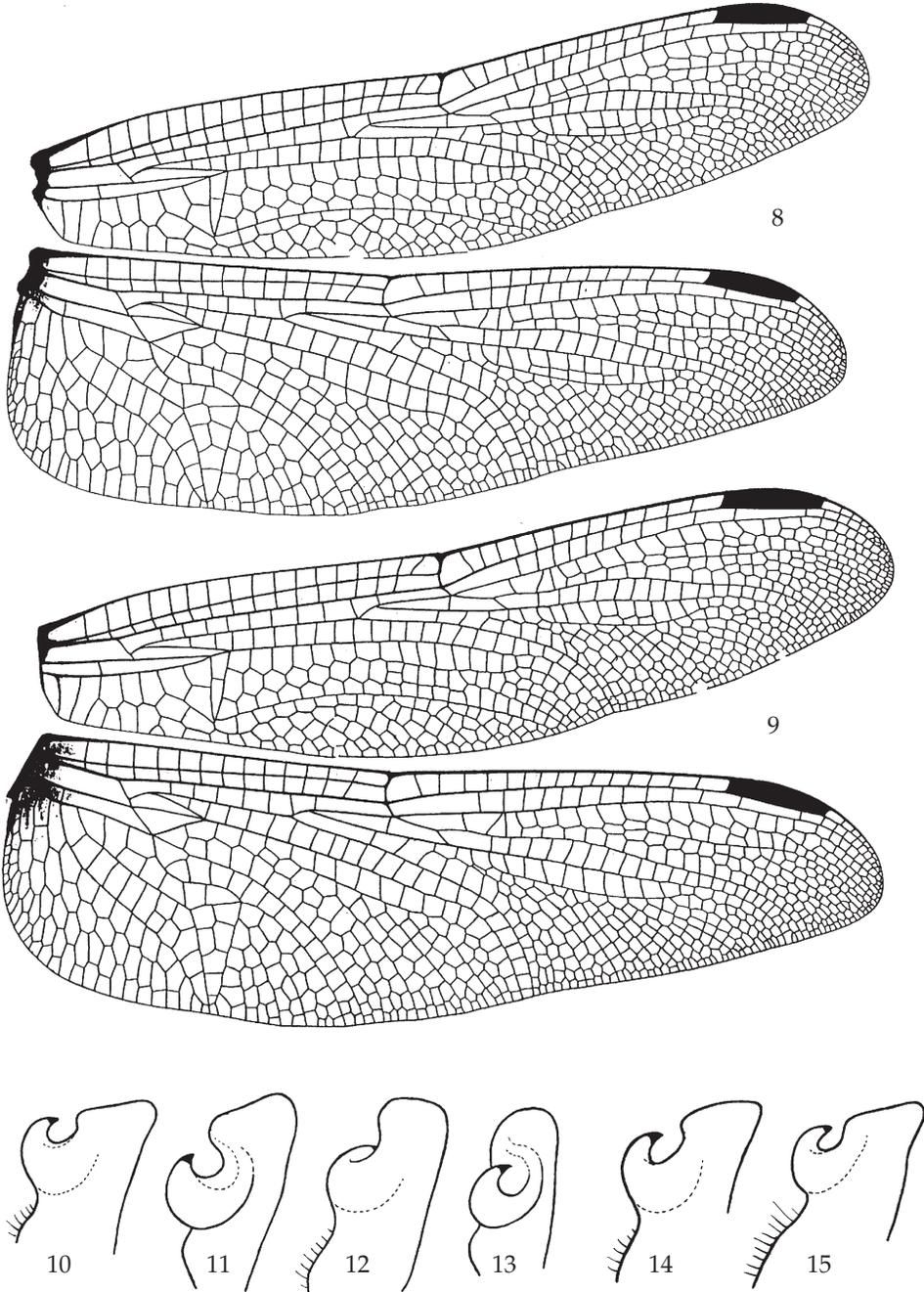
Received: 5.ix.1997

Accepted: 30.iii.1998

Edited: C. van Achterberg



Figs 1, 4, 5, *Rhodopygia cardinalis* (Erichson); 2, *Rhodopygia pruinosa* Buchholz; 3, *Rhodopygia geijskesi* Belle; 6, *Rhodopygia hinei* Calvert; 7, *Rhodopygia hollandi* Calvert. 1-2, base of right hind wing of ♂; 3, right pair of wings of ♂; 4, penis, right lateral aspect; 5, prothoracic hind lobe, frontal aspect (hairs not drawn); 6-7, right genital hamule, right lateral aspect.



Figs 8-9, *Rhodopygia hollandi* Calvert; 10-13, *Rhodopygia cardinalis* (Erichson); 14, *Rhodopygia pruinosa* Buchholz; 15, *Rhodopygia geijskesi* Belle. 8, right pair of wings of ♂ (SMF # 30288); 9, the same of ♀ (SMF # 30290); 10, 12 (in an Ecuadorian ♂), 14-15, right genital hamule, right lateral aspect; 11, 13 (in an Ecuadorian ♂), ventral aspect.

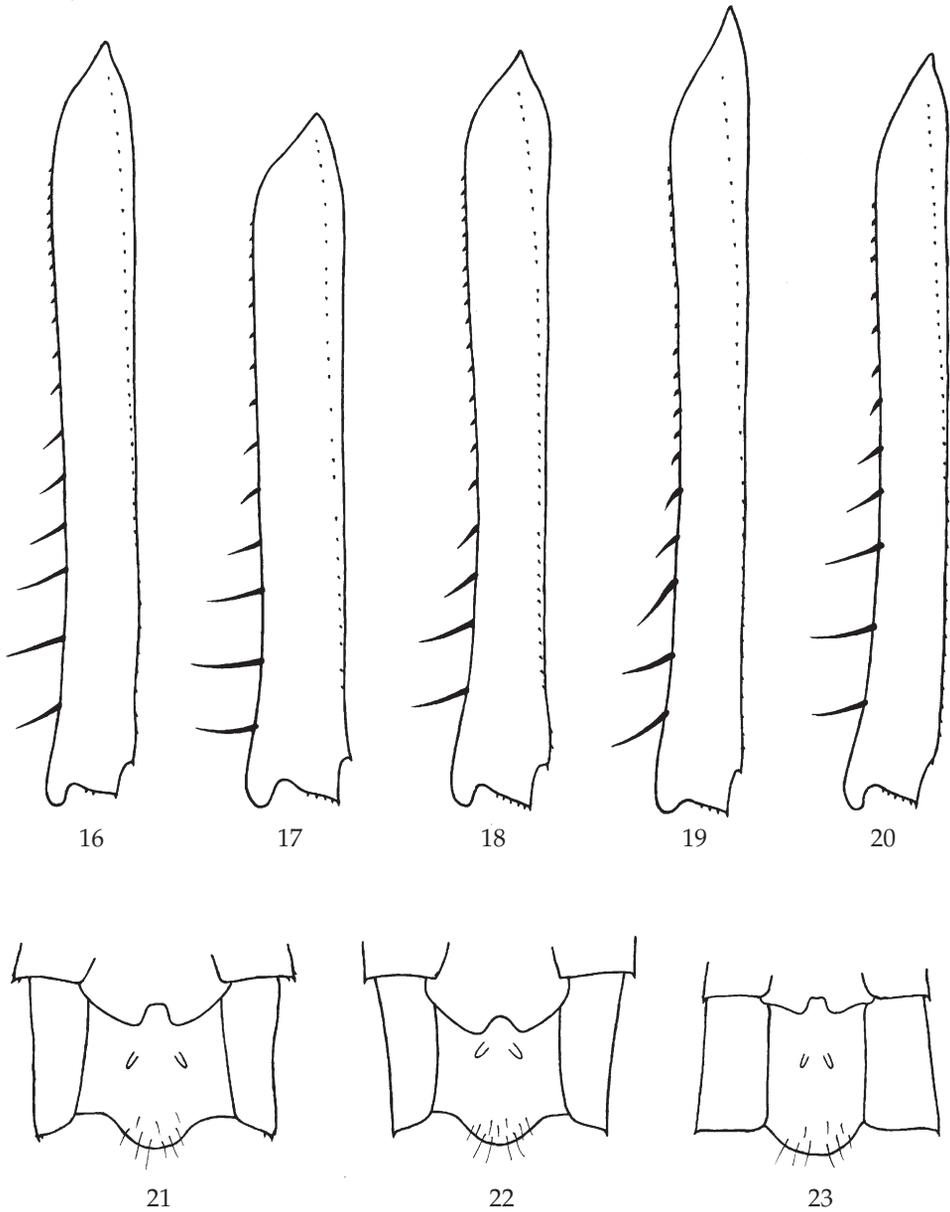


Fig. 16-17, 21, *Rhodopygia cardinalis* (Erichson); 18, 22, *Rhodopygia pruinosa* Buchholz; 19, 23, *Rhodopygia geijskesi* Belle; 20, *Rhodopygia hinei* Calvert. 16, 17 (in an Ecuadorian δ), 18-20, left hind femur of δ , left lateral aspect; 21-23, vulvar lamina, ventral aspect.

Figs 24, 30, 32, *Rhodopygia hollandi* Calvert; 25-26, *Rhodopygia cardinalis* (Erichson); 27, *Rhodopygia pruinosa* Buchholz; 28, *Rhodopygia geijskesi* Belle; 29, 31, *Rhodopygia hinei* Calvert; 33, *Erythemis haematogastra* (Burmeister). 24, left hind femur of δ , left lateral aspect; 25, 26 (in an Ecuadorian δ), 27-30, left middle femur of δ , left lateral aspect; 31-32, vulvar lamina, ventral aspect; 33, right genital hamule, right lateral aspect.

