

A new species of *Phyllogomphoides* from Ecuador (Odonata: Gomphidae)

by

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ABSTRACT. — *Phyllogomphoides brunneus* new species (♂ holotype, Macas, Prov. Morona Santiago; ♀ allotype, Limóncocha, Prov. Napo, both Ecuador) is described and illustrated. Its affinities and the variations among the paratypic series are discussed.

Phyllogomphoides brunneus spec. nov. (figures 1-8)

Material. — Ecuador: Prov. Morona Santiago, Macas (Oriente), 1 ♂ (holotype), date and collector unknown (Carn. Mus. Acc. 7880), Florida State Collection of Arthropods, Gainesville; Prov. Napo, Limóncocha (lake edge), 16.VIII.1971, 1 ♀ (paratype), D. L. Pearson leg., author's collection; Limóncocha (puddles on path in open forest), 16.II.1972, 1 ♀ (allotype), D. L. Pearson leg., collection Paulson, Seattle; Limóncocha, 9.VII.1977, 1 ♂, 1 ♀ (mated pair; paratypes), K. W. Knopf leg., collection Knopf, Gainesville.

Male (holotype; abdomen broken between segments 5 and 6; tip of left fore wing broken off). — Total length 58 mm; abdomen 45 mm (including caudal appendages); hind wing 38 mm; costal edge of pterostigma in fore wing 4.0 mm.

Face dark brown but mandibles reddish brown externally. Superior surface of frons largely green, the extreme base dark brown. Vertex dark brown but green on and behind ridges of lateral ocelli. Occipital plate green, becoming brown on lateral sides, its rear margin slightly convex and fringed with dark brown hairs. Rear of head brown above, brown-yellow below, and green behind occipital plate. Labium and adjacent mouth parts reddish brown.

Prothorax brown, the middle lobe with a brown-yellow spot on either lateral side and on mid-dorsum.

Pterothorax dark brown with yellow stripes, its colour design shaped as shown in accompanying diagram. Mid-dorsal carina yellow.

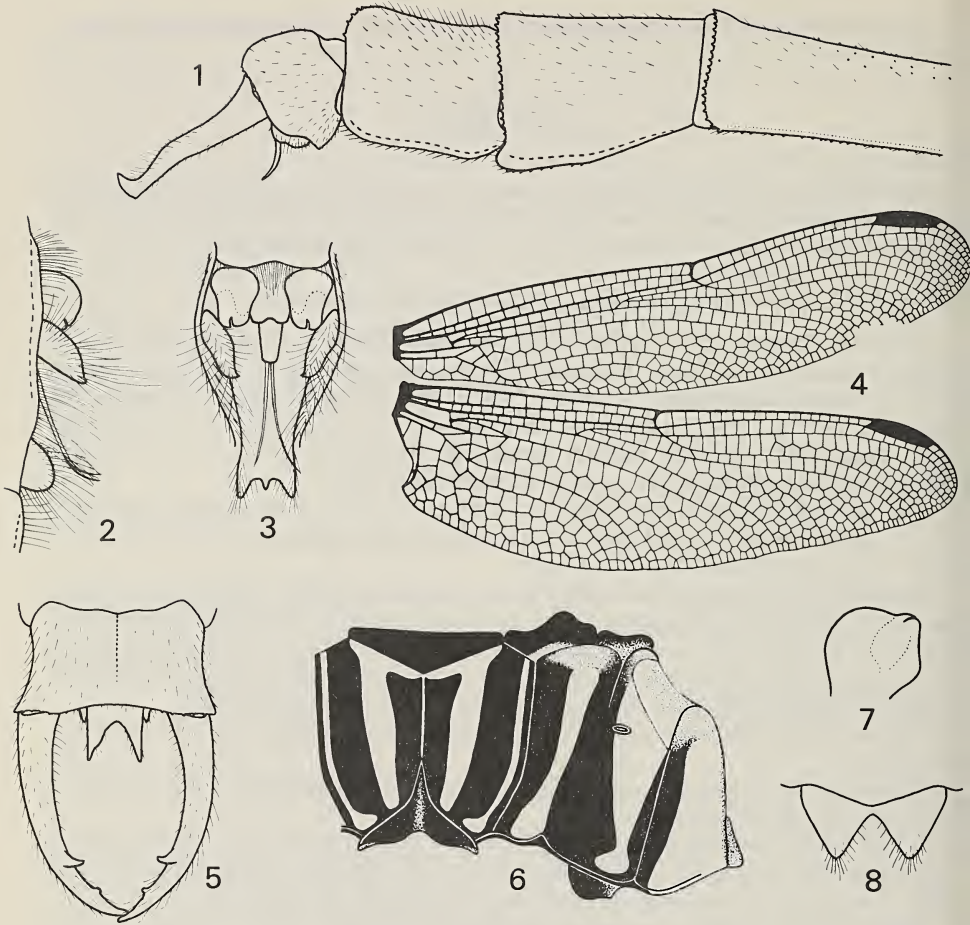
Femora brown, becoming darker distally. Inner side of first femora yellow. Tibiae, tarsi and claws blackish brown. Spines of outer row on third tibiae thickened at base and shorter than those of inner row. Lamina tibialis on first tibiae about a quarter the tibial length.

Wings clear, the venation dark brown including frontal margin of costa. Pterostigma brown-yellow, surmounting 4½ (right fore wing) and 6 (other wings) cells. Basal subcostal cross-vein present. Nodal index 16:22-22:16/16:17-15:18. Second primary antenodal cross-vein the sixth in right fore wing, the seventh in other wings. Intermedian cross-veins 11-11/7-8 in fore and hind wings, respectively. Discoidal triangles three-celled. Subtriangles two-celled. Supra-triangles with two traversing cross-veins. Trigonal interspaces starting with two rows of cells from triangle outwards, those in hind wings starting with an extra initial cell at hind angle of triangle. Hind wings with five paranal cells, five postanal cells, a four-celled anal triangle, a three-celled anal loop, and four rows of cells posterior to Cu2.

Abdomen blackish brown with pale markings. Sides of segment 1 yellow to ventral margin. Mid-dorsum of segment 1 brown-yellow. Segment 2 yellow on auricles and on mid-dorsum. Segments 3 to 6 with basolateral yellow spots reaching to supplementary transverse carina. Dorsum of segment 3 with a tiny yellow basal spot. Segment 7 yellow from base to supplementary transverse carinae, followed by a small yellow spot on either side of segment. Sides of segments 8 and 9 with yellowish brown markings. Lateral dilatations of segments 8 narrow, yellow on basal half, black on apical half. Mid-dorsum of segment 10 with yellowish brown spot.

Genital hamules blackish brown but rounded part of anterior hamules chocolate brown. Tip of anterior hamules with a small, narrow notch.

Superior caudal appendages without basoventral spine, with a superior spine at 2/3 the



Figs. 1-8. *Phyllogomphoides brunneus* spec. nov.: 1, apical segments of abdomen of holotype male, right lateral view; 2, accessory genitalia of holotype male, right lateral view; 3, the same, ventral view; 4, right pair of wings of holotype male; 5, tenth abdominal segment and caudal appendages of holotype male, dorsal view; 6, diagram of pterothorax of holotype male; 7, right anterior genital hamule of paratype male, right lateral view; 8, vulvar lamina of allotype female, ventral view.

length and a small internal tooth at $5/6$ the length, almost black but inner side pale between the two ante-apical projections. Inferior caudal appendage dark brown, nearly three times longer than wide and almost parallel-sided, its posterior margin deeply excised V-shaped for about one-third the appendage's length, the divisions, in profile view, slightly curved dorsally.

Female (allotype). — Total length 56 mm; abdomen 43.5 mm (including caudal appendages); hind wing 38 mm; greatest width of hind wing 10.8 mm; costal edge of pterostigma in fore wing 4.2 mm.

Similar to holotype-male but abdomen stouter and coloration differing in some details as follows: Vertex yellow between lateral ocelli and compound eyes, and between posterior ridges of lateral ocelli. Occipital plate almost entirely brown. First pale antehumeral stripes narrower and not connected with pale collar. Metapostepimeron (pectus) brown. Femora very dark

brown but inner side of first femora green. Pale lateral markings of abdominal segments 2 to 7 more extending to rearward. Sides of segment 2 almost entirely yellow. Pale lateral markings of segment 8 reduced. Ventral tergal margin of segment 8 not at all dilated and yellow on its basal 2/3 portion. Segments 9 and 10, including caudal appendages, entirely blackish brown.

Spines of outer row on third tibiae not modified and as long as those of inner row except for apical spines; these are longer than those of inner row. Vulvar lamina a quarter the length of the sternum of segment 9, its posterior margin deeply excised V-shaped, the triangular lobes 100° at tip, the interval between the lobes 80°. Proportional length of abdominal segments 7, 8, 9 and 10 approximately as 39:25:16:10, with the caudal appendages (stylets) 16 on the same scale.

Nodal index 18:23-22:17/19:17-17:17. Second primary antenodal cross-vein the eight in left hind wing, the seventh in other wings. Intermedian cross-veins 12-12/6-7 in fore and hind wings, respectively. All discoidal triangles three-celled. All subtriangles two-celled. All supratrangles with two traversing cross-veins. All trigonal interspaces starting with an extra initial cell at hind angle of triangle. Hind wings with five paranal cells, five (right) and six (left) postanal cells, a weakly developed anal loop of two cells, and four to five rows of cells posterior to Cu₂.

Discussion. — *Phyllogomphoides brunneus* is closely related to several congeners that have the same stature and general type of caudal appendages and genitalia. It is somewhat intermediate between *P. lieftincki* Belle, 1970 and *P. duodentatus* Donnelly, 1979. The male caudal appendages and the vulvar lamina approach most closely those of *lieftincki* but the accessory genitalia approach more those of *duodentatus*. The present species is, however, at once recognizable from these two species in having the labrum entirely brown (hence the specific name *brunneus*). There is a pair of pale lateral spots on the labrum of *lieftincki* and *duodentatus*.

The paratype-male is an old individual with brown-tinged wings. It is a darker specimen than the holotype but the vertical part of the frons has a small green spot on either lateral side. The second pale antehumeral stripe and the pale metepisternal stripe are interrupted near the upper end. The metinfraepisternum is largely blackish brown. The femora are blackish brown but there is a narrow, green longitudinal stripe on the inner side of the first femora. The pale basolateral markings of the abdominal segments 3 to 7 do not reach beyond the supplementary transverse carina. The pale lateral markings of the abdominal segment 8 are developed only on the basal half. The abdominal segments 9 and 10, including the caudal appendages, are entirely blackish brown. The inferior caudal appendage is slightly widened basally; the apical divisions are more curved dorsally than in the holotype. The apical notch of the anterior genital hamules is smaller than in the holotype.

The paratype-female collected on 16.VIII.1971 is somewhat immature. It is a yellowish specimen than the allotype-female but the superior surface of the frons is entirely brown. The inner side of the third femora is largely brown-yellow. The inner side of the first and second femora is largely green. The basolateral pale markings on the abdominal segments 3 to 7 are more extended than those of the allotype. The supratrangles of the fore wings have only a single traversing cross-vein, those of the hind wings have two traversing cross-veins. All subtriangles are two-celled. The discoidal triangles are two-celled (left fore wing and right hind wing) and three-celled (other wings). The second primary antenodal cross-vein is the seventh in the right fore wing, the eighth in the left hind wing, and the ninth in the other wings.

The paratype-female taken in copula on 9.VII.1977 has many irregularities in the venation of the right pair of wings, possibly due to injuries during the larval stage. The second pale antehumeral stripe is interrupted near the upper end. The metapostepimeron has a yellow marking. The femora are very dark brown but the inner side of the second femora is lighter, and the inner side of the first femora is green. The abdominal segment 9 has indistinct, brown-yellow lateral markings.

ACKNOWLEDGEMENTS

For the loan of specimens belonging to the present species I am indebted to Dr. Dennis R.

Paulson (Seattle), Prof. Dr. Minter J. Westfall, Jr. (Gainesville) and Dr. Kenneth W. Knopf (Gainesville).

REFERENCES

- Belle, J., 1970. Studies on South American Gomphidae (Odonata) with special reference to the species from Surinam. — *Stud. Fauna Suriname* 11: 1-158; pls. 1-21.
- Donnelly, T. W., 1979. The genus *Phyllogomphoides* in Middle America (Anisoptera: Gomphidae). — *Odonatologica* 8 (4): 245-265.
- Onder de Beumkes 35, 6883 HC Velp, the Netherlands.

PERSONALIA

Op 14 juli 1980 overleed op 91-jarige leeftijd ons erelid dr. C. B. Williams F.R.S. Hij werd in 1951 gekozen tot erelid op grond van zijn verdienstelijk werk op het gebied van insekten-, in het bijzonder vlindertrek.

Op 20 juli 1981 is overleden ons lid W. Hellinga. Hij was sedert 1954 lid van de vereniging en vervulde van 1963-1975 de functie van secretaris. Zijn belangstelling ging vooral uit naar Coleoptera.

Op 26 juli 1981 is mevrouw A. F. E. Gravestein-Raaff overleden. Sinds 1972 was zij huisgenoot-lid van de NEV.

De "All-Union Entomological Society of the USSR" heeft tijdens haar vergadering van 5 december 1980 ons lid, tevens erelid, prof. dr. J. de Wilde gekozen als honorair buitenlands lid van hun vereniging, wegens zijn verdienstelijk werk aan de fysiologie en oecologie van insekten.

Op 30 oktober 1981 promoveerde ons lid G. van der Velde tot doctor in de Wiskunde en Natuurwetenschappen op een proefschrift getiteld „Studies in Nymphaeid-dominated systems (with special emphasis on those dominated by *Nymphoides peltata* (Gmel.) O. Kuntze (Menyanthaceae)”. Promotor was prof. dr. C. den Hartog.

HET PARINGSRITUEEL VAN PIERIS BRASSICAE (LINNAEUS) (LEP., PIERIDAE). — In 1978 was *Pieris brassicae* (Linnaeus) vrij gewoon in grote delen van ons land. Bij toeval kreeg ik de gelegenheid om tweemaal in dat jaar het paringsritueel van deze vlinder gade te slaan in mijn tuin te Melick. Op 8 augustus zag ik een paartje om elkaar heen fladderen, ca. 2 meter boven de grond. Het ♂ dook af en toe naar beneden, maar als het ♀ niet mee kwam, vloog het weer omhoog. Op een gegeven moment landde het ♀ op een blad van een braamstruik en bleef erop zitten met opgeklapte vleugels. Het ♂ landde vlak naast haar, met zijn kop in dezelfde richting als die van het ♀. Daarna boog hij zijn achterlijf naar dat van het ♀ en werd het contact gemaakt. Toen vlogen ze weg (het ♂ vloog) en landden vervolgens toch weer op de braam, nu tegenover elkaar met gestrekte achterlijven. Op 24 augustus zag ik nog een copulatie, die echter iets anders verliep. een ♀ zat op de *Buddleja* te zuigen, toen er een ♂ bij haar kwam zitten. Het ♀ spreidde de vleugels uit en stak haar achterlijf omhoog, waarschijnlijk om lokstoffen te verspreiden. Het ♂ vloog toen op, en bleef om het achterlijf van het ♀ fladderen. Het ♀ vloog weg en ging even verder op de grond zitten. Hetzelfde ritueel herhaalde zich, totdat het ♂ achter het ♀ ging zitten, dus met zijn kop bij haar achterlijfspunt. Mogelijk is dit om de geur waar te nemen. Weer vlogen ze samen op, dartelden om elkaar heen en na een tijdje landde het ♀ in een conifeer. Het ♂ ging onmiddellijk naast haar zitten en de copulatie kwam tot stand. Vervolgens vlogen ze op (het ♂ vloog) en bleven afwisselend vliegen en uitrusten, waarna ik ze nog geruime tijd op een uitgebloeide *Buddleja*-tros zag zitten.

M. Franssen, Parklaan 20, 6074 CL Melick.

TER OVERNAME: Ernst Mayr, 1969, Principles of Systematic Zoology, 468 bladzijden. Tegen elk aannemelijk bod.

R. Marcelis, p.a. E. van Beinumlaan 21, 6815 GC Arnhem.

CORRECTIE. p. 143 (1 september), regel 20 van onderen: 9 moet zijn 29.