

SHORT COMMUNICATIONS

**TWO NEW GOMPHOIDINE SPECIES FROM BRAZIL
(ANISOPTERA: GOMPHIDAE)**

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Progomphus perithemoides sp. n. (♂ holotype: Utiariti, Mato Grosso) and *Phyllogomphoides cepheus* sp. n. (♂ holotype, ♀ allotype: Sinop, Mato Grosso) are described and illustrated. The former is the smallest gomphid known, while the latter is closely related to *P. cassiopeiae* (Belle).

INTRODUCTION

In the following descriptions two new gomphoidine species from Brazil are introduced. One of them, *Progomphus perithemoides*, is the smallest gomphid ever recorded, while the other, *Phyllogomphoides cepheus*, is so closely related to *P. cassiopeiae* (BELLE, 1975) that it is comparatively described.

PROGOMPHUS PERITHEMOIDES SPEC. NOV.

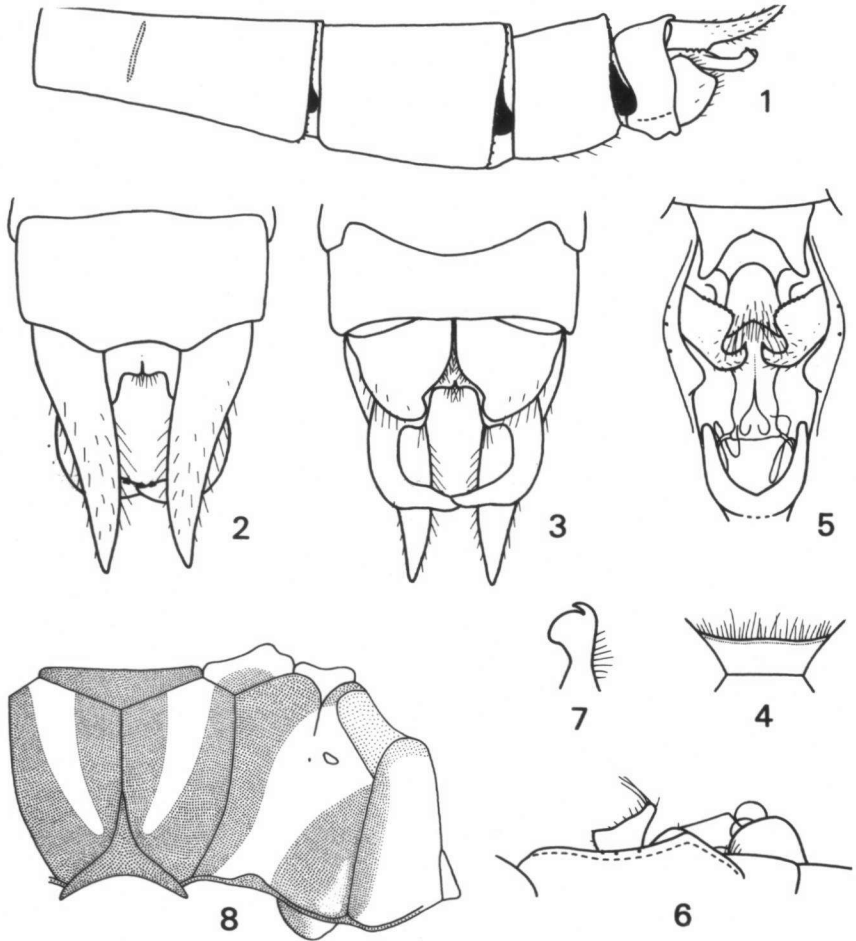
Figures 1-12

Material. — Brazil: Mato Grosso, Rio Papagaio, Utiariti (325 m), VIII.1961, 1 ♂ (holotype, preserved in the collection Machado), K. Lenko leg.

Male (adult holotype; abdomen broken off from thorax and broken between segments 3-4 and 5-6). — Total length 25.5 mm; abdomen 19 mm (caudal appendages included); hind wing 14 mm; greatest width of hind wing 4.1 mm; costal edge of pterostigma in fore wing 2.0 mm.

Face brown but frontal half of labrum, genae, base of mandibles, upper part of anteclypeus, facial lobes of postclypeus, and upper margin of frons yellow. Superior surface of frons largely yellow, the midbasal part brown.

Vertex brown. Postocellar ridges touching each other on middle line, laterally ending in an erect, acute tubercle. Occipital plate pale yellow, its posterior margin slightly convex in middle and fringed with pale brown hairs. Rear of head brown with yellow markings on temporae. Labium and adjacent mouth parts pale brownish yellow.



Figs. 1-8. *Progomphus perithemoides* sp. n., holotype male: (1) apical segments of abdomen and caudal appendages, left lateral view; — (2) tenth abdominal segment and caudal appendages, dorsal view; — (3) the same, ventral view; — (4) occipital plate; — (5) accessory genitalia, ventral view; — (6) the same, right lateral view; — (7) left anterior genital hamule, left lateral view; — (8) diagram of pterothorax pattern.

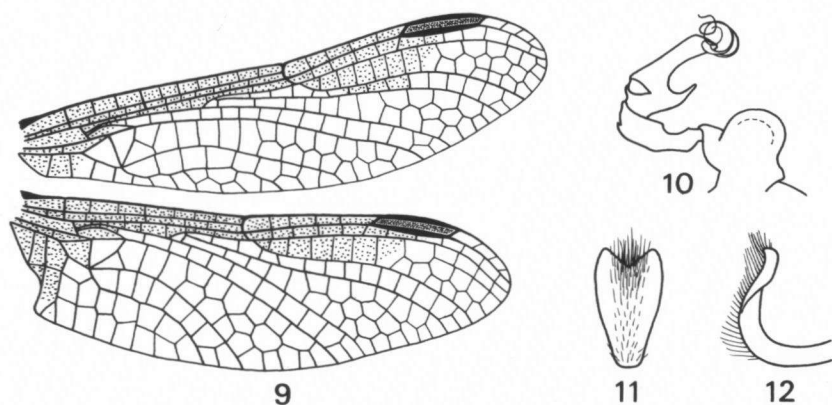
Pterothorax brown with yellow markings. Colour pattern partly obliterated by post mortem changes but chiefly shaped as shown in Figure 8. Antealar sinus, middorsal carina, and carina of collar pale. First pale antehumeral stripes wedge-shaped and reaching to collar. No second pale antehumeral stripe or antealar spot. Sides of pterothorax with broad pale midlateral stripe. Metepimeron largely pale, brown along metepisternum. Metapostepimeron yellow.

Legs brown but inner side of femora yellow. Third tarsus as long as third tibia. Lamina tibialis of first tibia one-sixth the tibial length.

Wings yellow-brown between costa and A, M123, M12, and M2 to level of pterostigma. In fore wings also yellow brown: Two basal cells of anal field, proximal half of supratriangle, proximal cell between M4 and M123, cells between Rs and M2 from nodus to level of pterostigma; and in hind wings: Anal triangle, second anal interspace except for distal marginal cell, subtriangle, supratriangle. For the rest the wings are clear. Venation of wings brown but frontal margin of costa bright yellow. Pterostigma brown-yellow, surmounting $3\frac{1}{2}$ -4 cells. Brace vein present. Basal subcostal cross-vein present. Antenodal and postnodal cross-veins of first series 4:10-10:4/3:6-7:4 in fore and hind wings, respectively. Second primary antenodal cross-vein the fifth in left fore wing, the fourth in other wings. Intermedian cross-veins 4-4/3-2 in fore and hind wings, respectively. One cubito-anal cross-vein in addition to inner side of subtriangle. Subtriangles, supratriangles and discoidal triangles uncrossed. Trigonal interspace starting with two cells against triangle followed by one row of cells, five cells long in fore wings, two cells long in hind wings. Middle fork strongly askew forward. One row of cells in anal field of fore wings. Hind wings with four paranal cells, two postanal cells, two rows of cells posterior to Cu₂, and a three-celled anal triangle.

Abdomen very slender and predominantly brown. Coloration of first four basal segments partly obliterated. Segment 1 without midventral process of any kind, the sides yellow on lower part. Sides of segment 2 yellow between auricles and basal margin. Auricles yellow and armed with numerous minute black denticles. Ventral tergal margins of segment 2 yellow, with three (right side) and two (left side) minute black denticles. Accessory genitalia shaped as shown in accompanying figures. Middorsum of segments 5 to 7 with yellow basal spot. Lower part of sides of segment 7 and sides of segments 8 to 10 yellow. Pleural membrane between apical segments yellow. Nodules of segments 7 to 9 large and black. Posterior margin of segment 10 devoid of denticles, concave on middorsum. Caudal appendages brown. Inferior margin of basal externo-lateral dilatations of superior appendages with five minute black teeth. Apical two-thirds portion of superior appendages conical, the acute tips slightly upcurved. Branches of inferior caudal appendage beyond supero-external anteapical tooth strongly incurved and

armed with a superior row of four (right branch) and five (left branch) black teeth. Anal tubercles yellow, without conspicuous apical process, the supero-external margin of right tubercle with two black denticles, that of left tubercle with a single black denticle.



Figs. 9-12. *Progomphus perithemoides* sp. n., holotype male: (9) right pair of wings; — (10) penis, right lateral view; — (11) penis guard, frontal view; — (12) the same, right lateral view.

Discussion. — *Progomphus perithemoides* is a most extraordinary gomphoidine species by the strongly uncrossed subtriangles, supratrangles and discoidal triangles. The wings could as well be referred to the Epigomphinae (cf. BELLE, 1979). The conformation of the caudal appendages and accessory genitalia, however, leaves no doubt about the generic allocation of the species. *P. perithemoides* is also the only gomphoidine species with a single row of cells in the trigonal interspaces. The specific name refers to the colouring of the wings which approaches that of some members of the libellulid genus *Perithemis* HAGEN, 1861.

The new species is the smallest gomphid hitherto recorded. Its congener *P. perpusillus* RIS, 1916, formerly the smallest gomphid recorded, has an abdomen of 20 mm and a hind wing of 15 mm but the measurements were derived from a very teneral male and the dimensions of a fully mature specimen may be larger.

PHYLLOGOMPHOIDES CEPHEUS SPEC. NOV.

Figures 13-18

Material. — Brazil: Mato Grosso, Sinop (350 m; 55°37' W., 12°31' S.), X.1975, 3♂, 2♀ (holotype ♂, allotype ♀ and paratypes, preserved in the collection Machado) - 1♂, 1♀ (paratypes, preserved in the collection Belle), all specimens M. Alvarenga leg.

Phyllogomphoides cepheus sp. n. is closely related to *P. cassiopeiae* (BELLE, 1975) but it is a smaller and darker species. The differences may be seen from the following comparison:

(1) Size smaller. The average measurements are: Total length, male and female 52 mm; abdomen, male 40 mm, female 41 mm; hind wing, male 29 mm, female 30 mm; costal edge of pterostigma in fore wing, male 4.0 mm, female 4.4 mm. The measurements in *P. cassiopeiae* (holotype male, allotype female) are: Total length, male 58 mm, female 57 mm; abdomen, male 44 mm, female 43 mm; hind wing, male and female 34 mm; costal edge of pterostigma in fore wing, male 4.7 mm, female 5.0 mm.

(2) Face black, the following pale: a symmetric pair of spots on labrum, base of mandibles, posterior part of anteclypeus, and lateral sides of postclypeus; in *P. cassiopeiae* the face is green with a black band along free border of labrum only.

(3) Dorsum of prothorax black; in *P. cassiopeiae* with a pale twin-spot.

(4) First pale antehumeral stripes of male not or not distinctly united with pale collar; in *P. cassiopeiae* confluent with pale collar.

(5) Second and third femora entirely brown or sometimes with a pale stripe along outer side of third femora; in *P. cassiopeiae* the outer side of second femora with a pale longitudinal stripe and that of third femora with two or three pale longitudinal stripes.

(6) Hind wings of male with area posterior to Cu2 four cells wide; in *P. cassiopeiae* five to six cells wide.

(7) Abdominal segments 8 and 9 black but pale along attachment of black lateral dilatations, abdominal segment 10 entirely black; in *P. cassiopeiae* the abdominal segments 8 and 9 have large pale markings while the abdominal segment 10 has a pale dorsal marking.

(8) Lateral dilatations of abdominal segment 8 narrower than in *P. cassiopeiae*, especially those of female.

(9) Superior caudal appendages of male more slender than those in *P. cassiopeiae*.

Some venational features of the present new species are:

Discoidal triangle fore wing	4-celled in 0 wings ♂, 2 wings ♀
	3-celled in 6 wings ♂, 4 wings ♀
	2-celled in 2 wings ♂
Subtriangle fore wing	3-celled in 5 wings ♂, 5 wings ♀
	2-celled in 3 wings ♂, 1 wing ♀
Supratriangle fore wing	3-celled in 2 wings ♂
	2-celled in 6 wings ♂, 6 wings ♀
Discoidal triangle hind wing	3-celled in 6 wings ♂, 6 wings ♀
	2-celled in 2 wings ♂
Subtriangle hind wing	3-celled in 0 wings ♂, 1 wing ♀
	2-celled in 6 wings ♂, 5 wings ♀
	1-celled in 2 wings ♂

Supratriangle hind wing 3-celled in 1 wing ♂
 2-celled in 7 wings ♂, 5 wings ♀

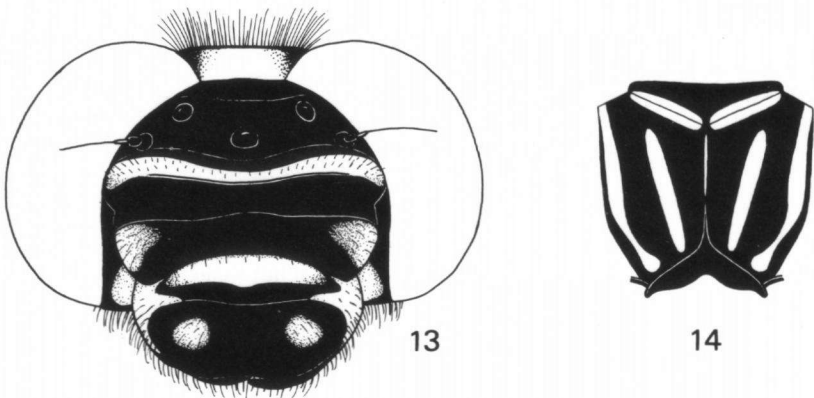
The holotype, male, and the allotype, female, may be recognizable by some special particularities in structure mentioned below.

Male (holotype; abdomen broken between segments 3-4 and 4-5). — Total length 51 mm; abdomen 30 mm (including caudal appendages); hind wing 29.5 mm; costal edge of pterostigma in fore wing 4.1 mm.

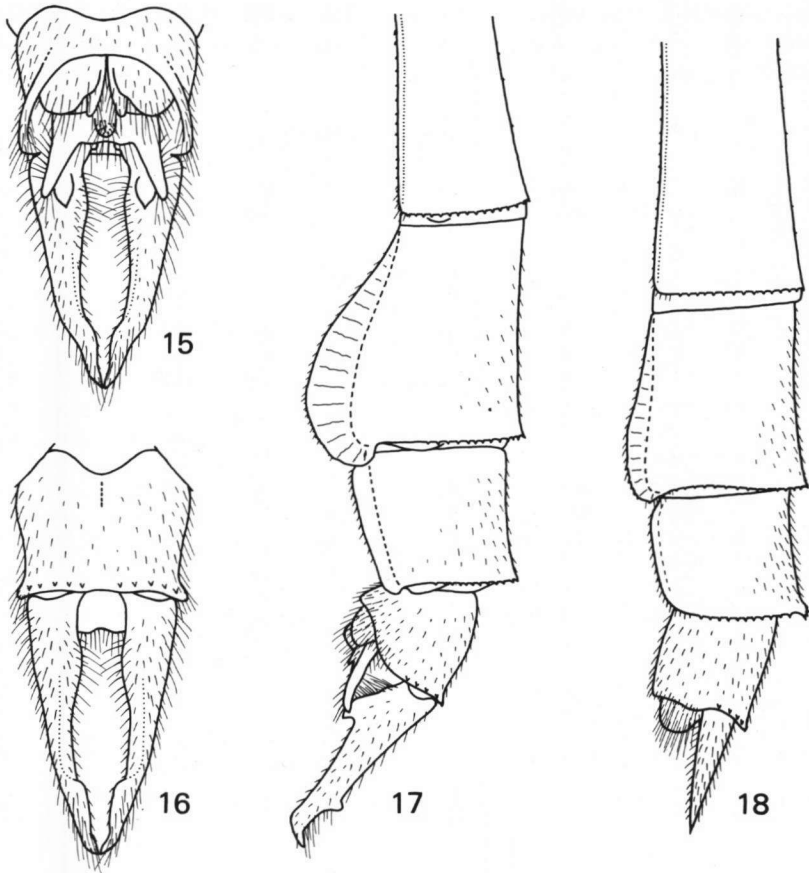
Wings hyaline, lightly tinged brown on extreme base. Venation of wings dark brown but frontal margin of costa with a fine yellow line from base to nodus. Pterostigma dark brown, surmounting $5\frac{1}{2}$ - $6\frac{1}{2}$ cells. Basal subcostal cross-vein present. Antenodal and postnodal cross-veins of first series 10:15-16:10/10:12--12:11 in fore and hind wings, respectively. Second primary antenodal cross-vein the fifth. Intermedian cross-veins 9-8/6-6 in fore and hind wings, respectively. Supratriangles two-celled. Discoidal triangles two-celled. Subtriangles two-celled in fore wings, one-celled in hind wings. Trigonal interspace starting with two (fore wings) or three (hind wings) cells against triangle followed by two rows of cells. Hind wings with four paranal cells, four postanal cells, a two-celled anal loop, a four-celled anal triangle, and area posterior to Cu2 three to four cells wide.

Female (allotype). — Total length 52 mm; abdomen 41 mm (including caudal appendages); hind wing 31 mm; costal edge of pterostigma in fore wing 4.5 mm.

Wings hyaline, lightly tinged brown on extreme base. Venation of wings dark brown including costa. Pterostigma dark brown, surmounting $5\frac{1}{2}$ - $7\frac{1}{2}$ cells. Basal subcostal cross-vein present. Antenodal and postnodal cross-veins of first series 10:17-18:10/10:13-12:10 in fore and hind wings,



Figs. 13-14. *Phyllogomphus cepheus* sp. n., holotype male: (13) head, frontal view; — (14) diagram of colour pattern of dorsum of pterothorax.



Figs. 15-18. *Phyllogomphoides cepheus* sp. n.: (15) tenth abdominal segment and caudal appendages of holotype male, ventral view; — (16) the same, dorsal view; — (17) apical segments of abdomen and caudal appendages of holotype male, left lateral view; — (18) apical segments of abdomen and caudal appendages of allotype female, left lateral view.

respectively. Second primary antenodal cross-vein in right fore wing the sixth, in other wings the fifth. Intermedian cross-veins 10-11/6-6 in fore and hind wings, respectively. Supratrangles two-celled. Discoidal triangle four-celled in fore wings, three-celled in hind wings. Subtriangle three-celled in fore wings, two-celled in hind wings. Trigonal interspace in fore wings starting with three rows of cells, two cells long, from triangle outwards, followed by two rows of cells, that in hind wings starting with a row of three cells against triangle followed by two rows of cells. Hind wings with five

paranal cells, five postanal cells (the fifth paranal cell is the first postanal cell), two rows of cells in second anal interspace, and area posterior to Cu2 four to five cells wide.

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REFERENCES

- BELLE, J., 1975. Two new gomphine species from Paraguay (Anisoptera: Gomphidae). *Odonatologica* 4 (3): 129-135.
- BELLE, J., 1979. An attempt at the subfamily classification of the Gomphidae based on some new interpretations of wing venation (Anisoptera). *Odonatologica* 8 (1): 43-46.
- HAGEN, H.A., 1861. *Synopsis of the Neuroptera of North America*. Smithsonian Inst., Washington.
- RIS, F., 1916. Libellen (Odonata) aus der Region der amerikanischen Kordilleren von Costarica bis Catamarca. *Arch. Naturg.* 82 (9): 1-197; 2 tabs.
- SELYS LONGCHAMPS, E. de. 1854. Synopsis des Gomphines. *Bull. Acad. r. Belg.* 21 (2): 23-112 (3-93 sep.).