

SHORT COMMUNICATIONS

**THREE NEW NEOTROPICAL GOMPHIDAE FROM THE
GENERA *ARCHAEOGOMPHUS* WILLIAMSON,
*CYANO*GOMPHUS SELYS AND *EPIGOMPHUS* HAGEN
(ANISOPTERA)**

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A. globulus sp.n. (holotype ♂: Brazil, Paraná, Caviuna, XI-1945; deposited at FSCA, Gainesville), *C. comparabilis* sp.n. (holotype ♂: Brazil, Mato Grosso, Diamantino, IV-1988; coll. A.B.M. Machado, Belo Horizonte) and *E. compactus* sp.n. (holotype ♂: Panamá, Coclé prov., Cerro Azul, 19-V-1979; deposited at FSCA, Gainesville) are described and illustrated, and their affinities are briefly discussed.

INTRODUCTION

The present paper deals with three new Gomphidae, two from Brazil and referable to *Archaeogomphus* Williamson, 1919 and *Cyanogomphus* Selys, 1873, and one from Panamá, belonging to *Epigomphus* Hagen, 1854. The material was sent to me for identification and description by Professor Dr Angelo B.M. Machado, Belo Horizonte and Professor Dr Minter J. Westfall, Jr, Gainesville. For the privilege of studying and publishing these new species I am very grateful. The new dragonflies are described below.

ARCHAEOGOMPHUS GLOBULUS spec. nov.

Figures 1-4

Material. — Holotype ♂: Brazil: State of Paraná, Caviuna, XI-1945 (ex coll. A. Maller [Frank Johnson donor]); — allotype ♀: Brazil: State of Santa Catarina, Corupa, I-1948; — 1 ♂, same locality as the allotype, II-1948. — All specimens in FSCA (Gainesville, FL).

Etymology. — Latin "*globulus*", in reference to the knob close behind the transverse lamella of the vesicle.

MALE (holotype; abdomen broken off and broken between the segments 3-4,

4-5, and 6-7). — **H e a d.** — Face grey-green. Superior surface of frons, vertex and superior surface of occiput very dark brown.

L e g s. — Hind femora largely brown-yellow. Fore and middle femora largely brown. Hind tibiae brown-yellow. Fore and middle tibiae yellow on outer side. Tarsi yellow on outer side. Claws brown.

W i n g s. — No basal subcostal cross-vein. Nodal index 7:13-13:8/8:10-10:7. Two rows of cells near marginal row, between M1 and M2. The single row of cells in the trigonal interspace is 9 (left) and 10 (right) cells long in the fore wings, it is 5 cells long in either hind wing. Two cells along anterior side of Cu1 which do not reach M4. Distance between nodus and pterostigma in fore wings 3 times the length of pterostigma. Hind wings with 5 (left) and 6 (right) cells behind Cu2 and distal to postanal cell, which do not reach posterior wing margin.

A b d o m e n. — Accessory genitalia shaped as shown in Figures 1 and 2.

M e a s u r e m e n t s (in mm). — Total length 38; — abdomen (incl. app.) 29; — hind wing 22; — costal edge of pterostigma in fore wing 2.4.

S e c o n d m a l e. — The male from Corupa has the abdomen broken between the segments 6-7 while the apex of the left exfoliation of the eighth abdominal segment is broken away. It agrees with the holotype in all respects except in the conformation of the vesicle and in some minor characters of the wing venation. The knob on the sternum of the third segment is shrivelled for one reason or another and perhaps correlated with it the lateral sides of the exision of the transverse lamella of the vesicle are slightly convex instead of slightly concave (Fig. 3). The nodal index is 7:11-11:6/8:9-9:7. The single row of cells in the trigonal interspace is 8 (left) and 10 (right) cells long in the fore wings, it is 4 cells long in either hind wing. The hind wings have 3 (left) and 5 (right) cells behind vein Cu2 and distal to the postanal cell, which do not reach the posterior margin of the wing. The length of the hind wing is 21.5 mm

FEMALE (allotype; tip of right hind wing shrivelled). — Similar to male holotype in characters other than those of sex but spines on outer row of middle and hind femora twice to three times longer than in male (cf. BELLE, 1982: 40). No pair of postero-lateral knobs or horns on occiput. Posterior margin of tenth abdominal segment entirely (i.e. dorsal, lateral and ventral) denticulated. Nodal index 7:12-11:7/6:9-9:7. The single row of cells in the trigonal interspace is 10 (left) and 9 (right) cells long in the fore wings; it is 5 cells long in either hind wing. Each hind wing with 5 cells behind Cu2 and distal to postanal cell, which do not reach posterior margin of wing. Vulvar lamina shaped as shown in Figure 4, the two slender divisions extending to rearward to beyond ninth sternum.

M e a s u r e m e n t s (in mm). — Total length 36; — abdomen (incl. app.) 27; — hind wing 22.5; — costal edge of pterostigma in fore wing 2.6.

AFFINITIES. — This species is intermediate between *A. infans* (Ris, 1913) and *A. densus* Belle, 1982. It is perhaps more closely allied to the former than to the

latter species and it is distinguishable from both by the following combination of characters:

- Both sexes: (1) Size larger (total length 36-38 mm); – (2) Thoracic colour pattern shaped as in *infans* (cf. BELLE, 1982).
- Male: (3) Sternum of third abdominal segment with a dark coloured knob close behind transverse lamella of vesicle; – (4) Middorsal hind margin of penultimate abdominal segment almost evenly convex; – (5) Conformation of lateral dilatations of abdominal segments 8 and 9 similar to that of *infans*; – (6) Inferior margin of snout-like projection of ultimate abdominal segment armed with teeth on the way as in *densus*.
- Female: (7) Base of vulvar lamina with angulated lateral sides (Fig. 4).

CYANOGOMPHUS COMPARABILIS SPEC. NOV.

Figures 5-8

Material. – **Holotype** ♂: Brazil, State of Mato Grosso, Diamantino (pond in the Cerrado [Savanna] near a gallery forest), IV-1988, E. Furtado leg.; coll. A.B.M. Machado (Belo Horizonte); – 1 ♂ **paratype**: Brazil, State of São Paulo, Igarapava (Canabrava Stream), 6-II-1989, P.A. Machado & A. Costa leg.; RNHL (Leiden).

Etymology. – Latin "*comparabilis*" (= "comparable"), to denote its close resemblance to another species, *C. waltheri*.

MALE (holotype: right legs lost). – **Head.** – Face and upper part of frons bluish green. Vertex brown but chocolate brown between ocelli and with a green marking behind paired ocelli. Occipital plate brown, the posterior ridge straight. Rear of head brown on top, brown-yellow on lower part.

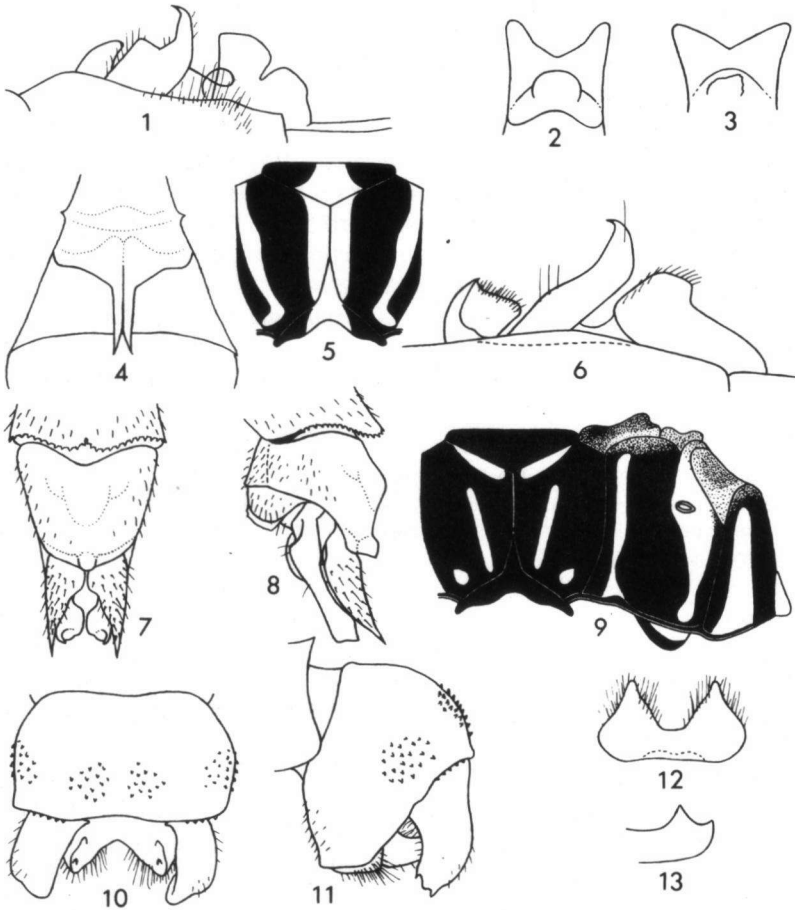
Thorax. – Prothorax dark brown on sides but green and yellow (discoloration?) on dorsal part. Pterothorax dark brown with green stripes.

Legs. – Femora brown, the second and third femora with yellow along inner anterior border. Tibiae large yellow, dark brown along anterior edges. Spination of third tibia shaped as in *C. waltheri* (cf. BELLE, 1980, fig. 3). Tarsi and claws dark brown.

Wings. – Clear. Venation brown including costal edge of costae. Pterostigma brown. Reticulation very similar to that of *C. waltheri*. Basal subcostal cross-vein present. Third paranal cell of hind wings larger than other paranal cells. Nodal index 8:11-12:7/8:10-8:7. Second primary antenodal cross-vein in right hind wing the fourth, in other wings the fifth. Two rows of cells behind Cu2 of hind wings.

Abdomen. – Predominantly brown, becoming brown-yellow on the three apical segments, the tenth segment largely brown-yellow, the caudal appendages pale brown. Accessory genitalia and caudal appendages shaped as shown in Figures 6-8.

Measurements (in mm). – Total length 39; – abdomen (incl. app.) 36; – hind wing



Figs 1-4. *Archaeogomphus globulus* sp.n.: (1) holotype ♂: accessory genitalia, right lateral view; – (2) holotype ♂: transverse lamella, posterior view; – (3) the same, in the second known ♂; – (4) allotype ♀: vulvar lamina, ventral view. – Figs 5-8. *Cyanogomphus comparabilis* sp.n., holotype ♂: (5) diagram of colour pattern of thoracic dorsum; – (6) accessory genitalia, right lateral view; – (7) tenth abdominal segment and caudal appendages, dorsal view; – (8) the same, left lateral view. – Figs 9-13. *Epigomphus compactus* sp.n., holotype ♂: (9) diagram of thoracic colour pattern; – (10) tenth abdominal segment and caudal appendages, dorsal view; – (11) the same, left lateral view; – (12) epiproct, posterior view; – (13) right branch of epiproct, left lateral view.

22.5; – costal edge of pterostigma in fore wing 3.1.

The male paratype is in good condition except that the green colours are largely discoloured and changed to brownish yellow or brown-yellow. The superior

surface of the frons, however, is still greenish. The nodal index is 8:12-12:8/9:9-9:8. Contrary to the holotype the hind wings have three (left) and four (right) extra cells for a third row of cells behind Cu2. For the rest the paratype is very similar to the holotype.

FEMALE—unknown.

AFFINITIES. — The two males were taken in localities about 650 km remote from each other. The nearest relative of the species is *C. waltheri* Selys, 1873 from which it notably differs by the following three characters: (1) Thoracic dorsum with a broad pale (= green) middorsal stripe but without first pale antehumeral stripes (Fig. 5); in *C. waltheri* with first pale antehumeral stripes but without a broad pale middorsal stripe (only middorsal carina partly pale) (cf. BELLE, 1980, fig. 1); — (2) Tibiae mainly pale (= yellow); in *C. waltheri* black; — (3) Tip of branches of inferior caudal appendage for the most part convex on the upper part and with a small but deep excavation at apex (Figs 7 & 8); in *C. waltheri* the whole upper part of the tip is deeply hollowed out.

EPIGOMPHUS COMPACTUS SPEC. NOV.

Figures 9-13

Material. — **Holotype** ♂: Panamá, Coclé prov., Cerro Azul (Site No. 13), 19-V-1979, K.W. Knopf leg.; FSCA (Gainesville, FL).

Etymology. — Latin "compactus", in reference to the compact caudal appendages.

MALE (holotype). — **H e a d.** — Mandibles greenish white on outer basal half, black on apical half. Labrum black with a symmetric pair of small greenish white lateral spots. Clypeus and vertical part of frons brown. Superior surface of frons brown with a broad grey anterior band which is interrupted in middle. Vertex and top of occiput brown, the latter with a corrugated elevation at either lateral side. Rear of head brown above and brown-yellow below. Labium and adjacent mouth parts pale greenish white.

T h o r a x. — Dark colours brown. Middle lobe of prothorax with a large yellow lateral spot on each side and a yellow twin-spot on middorsum. Colour pattern of pterothorax with the first pale antehumeral stripe not connected with the pale mesothoracic "half collar" and the second pale antehumeral stripe reduced to a dorsal spot. Pale lateral stripes of pterothorax rather narrow (Fig. 9).

W i n g s. — Clear. Venation black-brown. Pterostigma very dark brown. Basal subcostal cross-vein present in all wings. Nodal index 13:20-18:13/14:16-15:15. Second primary antenodal cross-vein the eighth in left hind wing, the seventh in other wings. Intermedian cross-veins 6-6/4-4. All supratrangles, subtriangles and discoidal triangles free from cross-veins. Number of cubito-anal cross-veins in right hind wing 2, in other wings 3.

L e g s. — Blackish brown. Spines on outer anterior margins of third tibiae

and first two joints of third tarsi in the usual way modified. First tibiae without lamina tibialis.

Abdomen. — Dark brown with pale (= yellow) markings as follows. Segment 1 with a pale middorsal spot, the sides largely pale. Segment 2 with a narrow pale middorsal stripe, the sides pale except for lower half of auricles and area close behind auricles. Segment 3 with a pale basal stripe on middorsum and a pale basal spot on each side; these three pale markings elongate and becoming narrower toward rear of segment. Segment 4 to 6 with a pale basal spot on middorsum and on lateral sides, the middorsal basal spot becoming successively smaller on rear segments. Segment 7 pale on basal half, the pale basal part on lateral sides medially interrupted by a transverse brown stripe. Segment 8 with a small pale basal spot on each side. Segment 9 and 10 without pale markings. Caudal appendages dark brown and shaped as shown in Figures 10-13. Accessory genitalia of the usual type.

Measurements (in mm). — Total length 52; — abdomen (incl. spp.) 39; — hind wing 35; — costal edge of pterostigma in fore wing 4.

FEMALE unknown.

REMARKS. — In the Coclé province of Panamá Dr K.W. Knopf was able to secure two *Epigomphus* males, referable to two different new species. One of these I have recently described under the specific name *jannyae* (cf. BELLE, 1993). The male of the present species has very aberrant caudal appendages. They are short and compact, the stocky branches of the inferior appendage (epiproct) are vertically upraised and in a side view of the abdomen they are only discernible to a small extent (Figs 10 & 11).

With the publication of this taxon the total number of *Epigomphus* species comes to 28, of which 21 occur in Central America. This figure, however, cannot be regarded as final, since dragonflies of this genus are hard to find in the field. (cf. BELLE, 1981).

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