

**MACROMIA GAMBLESII SPEC. NOV. FROM THE CENTRAL
AFRICAN REPUBLIC (ANISOPTERA: CORDULIIDAE)**

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M. gamblesi sp. n. is described and figured (♂ holotype [in copula]: Centre d'Elevage, Bouar, Central African Republic, Jan. 23, 1975). It is similar in general appearance to *M. funicularia* Martin, 1906, and some notes on this sp. are provided.

INTRODUCTION

While collecting dragonflies at Bouar, Central African Republic, I found a medium sized species of *Macromia* to be common in the locality. For some time I referred these specimens to *M. funicularia* Martin 1906. However, when a specimen was sent to Dr Elliot Pinhey at Bulawayo, he cast doubts on this identification. This led me to ask the advice of M. Jean Legrand, at the Paris Museum, where the type of *M. funicularia* is located. He replied in considerable detail, figuring the type of *M. funicularia*, and it was clear that the Bouar species differed from it, notably by the shape of the superior anal appendages, which are also unlike other known species of the genus. While the recognition that the Bouar species is new has depended upon the kind cooperation of these specialists, I am naming it after Mr Robert Gambles, in appreciation of the continual help he has freely given me in the identification of my dragonflies.

MACROMIA GAMBLESII SPEC. NOV.

Figures 1 (A, C, E), 2 (A-D, F-G)

Male (holotype). — Labium pale. Labrum ochreous. Clypeus yellow, with a brown patch each side of the midline. Frons with central depression

above, ochreous in front, becoming brown above, with a yellow patch laterally on each side, and a yellow v in the depression above. Vertex dark, bifid. Occiput black, shiny, with tiny denticles on the surface. Posterior border of occiput fringed with fine golden hairs, which extend to the eyes laterally. Prothorax yellowish laterally, black above. Synthorax blackish brown, with a faint metallic sheen, marked with yellow: anteriorly a narrow midline streak not reaching to the top; antealar sinuses bright yellow; a broad antehumeral stripe, incomplete above; a spot at the top of the mesepimeron;

metepisternum with a full stripe including the metastigma, narrowing below it, and a separate spot above the hind coxa; metepimeron with a faint short streak anteriorly and above, and a full yellow stripe posteriorly; ventral surface pale. Anterior surface of synthorax clothed with long golden hairs, except for a bare area adjacent to prothorax.

Coxae pale ferruginous. Legs black, with pale tibial keels on hindlegs.

Wings hyaline. Nodal index
 $\frac{8/14/14/7}{11/9/9/11}$

Arc between first and second Ax. 5 Cuq in Fw, 4 in Hw. Anal loop of 6 cells. Discoidal field one row of cells for four or five cells, then widening. Pt black, 2 mm. Rspl weakly formed, one cell in width.

Abdomen black with yellow markings: I pale laterally, and

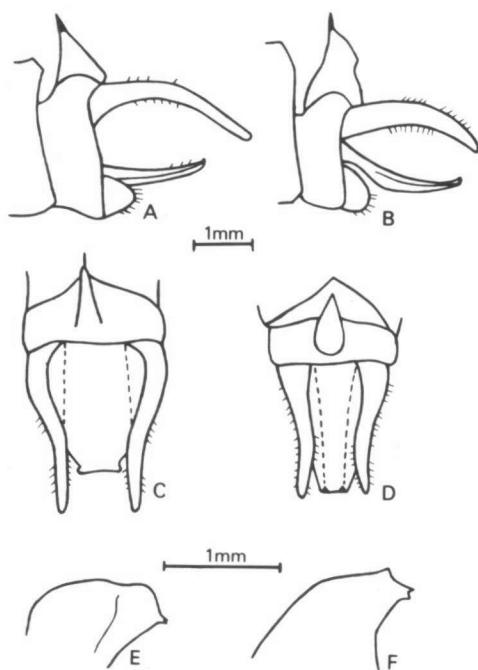


Fig. 1. *Macromia gamblesi* sp. n., paratype male (A, C, E) and *M. funicularia* Martin, Gabon male (B, D, F): (A-B) appendages (lateral); — (C-D) appendages (dorsal); — (E-F) hamule.

a tiny spot above in the midline. A basal annulus on II, widest in the midline, narrowed laterally, then expanding to include the oreillets. Genital lobe yellow with a tongue of black down the middle. Prophallus with two long coiled lashes. Hamule black, curved, with a central depression and a hooked tip, minutely bifid at the point. III-V with a basal annulus, narrowed and finely divided at the midline carina, and a rough triangular spot either side of the midline halfway along the segment, with the jugal mark across the base of the triangle.

VII with a broad and complete ring proximally, crossing the dark jugal marks. VIII-X and appendages black. A tall single cone on X, tipped by a tuft of stout black bristles. Superior appendages 2.5 mm, slender, strongly down-curved and prolonged well beyond the inferior. Inferior pale, shallowly bifid, hooked at each point.

Abdomen 38 mm without appendages, Hw 34 mm. Taken on 23.I.75 at the Centre d'Elevage, Bouar, Central African Empire, while in copula, resting on a tree.

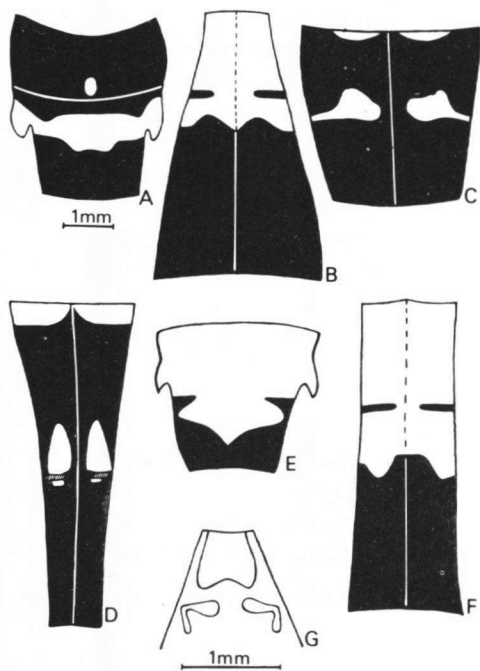


Fig. 2. *Macromia gamblesi* sp. n. (A-D, F-G) and *M. funicularia* Martin (E): (A) abdominal segments I-II, paratype male; — segment VII, holotype male; — (C) segment II, allotype female; — (D) segment III, holotype male; — (E) segment II, Gabon male; — (F) segment VII, allotype female; — (G) vulvar scale and median processes, allotype female.

Variation. — A paratype male, taken on 23.10.77 at the Centre d'Elevage, has a little more yellow on the face, the labrum and anterior aspect of the vertex being yellow, and the dark colour of the anterior frons faintly iridescent. Occiput more hairy than in holotype. Basal annulus on III complete. VI has small triangular spots preserved distally. Wings faintly smoky, due to brown tinting developing around the cross-veins. Nodal index $\frac{6/14/15/6}{8/11/10/8}$. Hw 36.5 mm.

A second paratype male, taken on 20.6.76 at Bessan, near Bouar, has a dark patch on the labium, and more definite iridescence to the dark markings on frons and thorax. Basal annulus on III finely interrupted. VI has the small distal spots. Wings with the faintest of tinting only. Nodal index $\frac{7/15/16/6}{8/11/10/8}$. Hw 36 mm.

A third paratype male, taken on 8.4.75 at Henri Mangin's garden, Bouar, is the specimen with the most pronounced iridescence. Labium with dark central arrowhead spot. Nodal index $\frac{6/15/14/5}{10/11/11/9}$.

Basal annulus on II just complete. Distal spot on VI. Hw 30.5 mm.

The male colouration is very constant. A gradual darkening of the wings and increase in body iridescence occurs with age. Otherwise only minor differences in the extent of abdominal yellow are noteworthy.

Female (allotype). — General appearance similar to male, with only minor differences. Peaks of vertex lower. Occiput hairy; on either side of the occiput behind are two small black horns, pointing upwards, well concealed behind the eyes. Dark markings on synthorax paler than in the male, ferruginous, the effect of black and yellow striping being less striking. Wings smoky; the smokiness is due to tinting developing around the veins, leaving the cells clear in the centre. The discoidal field has two rows of cells. Nodal index $\frac{7/15/16/6}{9/12/12/8}$.

Abdomen: II with small half moon shaped yellow marks each side of the midline, abutting I, and distally an irregular club-shaped mark on either side. III-VI as in male, with tiny distal spots extending to VI. VIII-X and cerci black.

Vulvar scale short, black, posterior border excavated. Median processes right angled, nipped in at the angle. Distal to the median process on each side, in the angle formed by the process, is a small elevation.

Abdomen 43 mm, Hw 40 mm.

Taken in October 1977 at the Centre d'Elevage, Bouar.

Variation. — A paratype female, taken in copula with the holotype male, is a darker insect, the yellow markings on thorax and abdomen all reduced, in part by post-mortem discolouration. It has hyaline wings, except for a tinge of saffron yellow in the forewings, distal to the nodus, extending from the costa back to IR3, and a trace of basal amber. Nodal index $\frac{7/16/16/6}{10/12/11/11}$. Abdomen 40 mm, Hw 38.5 mm.

A second paratype female, taken on 17.4.74 at the Centre d'Elevage, has faintly smoky wings. Its yellow patterning is well preserved, notably on labrum and upper surface of frons. VI has distal spots. Nodal index $\frac{7/15/17/6}{9/11/11/10}$. Hw 38 mm.

The possession of saffron yellow wingtips is a feature of young insects. Some teneral females with extensive saffron colour were taken, but were squashed in packaging. The saffron colour is lost with advancing age, and is gradually replaced by a generalized smokiness, developing around the veins.

NOTE ON *MACROMIA FUNICULARIA* MARTIN, 1906

This species was described from a male, from Cameroon. The type was figured by FRASER (1954), who placed in synonymy *M. bredoi* Schouteden, 1934, the type of which (from Bambesa) he had confronted with the type of *M. funicularia*. The species is now much better known on the basis of a series taken in Gabon by Legrand. It is convenient to add a brief description of a male from Gabon, kindly loaned by Legrand.

Labium pale, marked centrally with black. Labrum ferruginous; clypeus grey. Frons ferruginous anteriorly, blackish above and slightly iridescent, without a trace of yellow. Vertex black, bifid. Occiput and prothorax black. Synthorax black, with a lateral pale stripe enclosing the metastigma, and a trace of yellow on the metepimeron posteriorly. No antehumeral or humeral stripe.

Wings hyaline. Two rows of cells in discoidal field Fw. Nodal index $\frac{9/18/19}{13/14/13/13}$.

Abdomen largely black, with few yellow markings. Hamule black, curved, slight angulation before apex, which is distinctly bifid. II broadly yellow, proximally including the oreillets, distally a diamond shaped mark confluent with the proximal band. Tiny faded yellow triangles anterior to the jugal marks on III, IV, VII with yellow square proximally, not extending beyond jugal marks. VIII-X and appendages black. Tall single cone on X, which has distinct shelf in the posterior border. Superior appendages curved, not extending beyond inferior to any great extent.

Abdomen without appendages 42.5 mm, Hw 37 mm.

Taken on 4.II.73 at Mbess Km 23, Makokou, Gabon, by J. Legrand.

AFFINITIES OF *MACROMIA GAMBLESII* SP. N.

M. gamblesi is a medium sized member of the genus, with a rather dull colouration, despite being unequivocally striped. It thus falls in between the dry savanna species of *Macromia*, which tend to be boldly striped, and the forest species, which tend to be largely black.

The chief characteristic of *M. gamblesi* is the length of the superior appendages, which project far beyond the inferior, and are strongly downcurved. The superiors of *M. funicularia* barely exceed the inferior in length, and are straighter. Other differences between the two species are that *M. funicularia* is a larger and darker insect than *M. gamblesi*, with more antenodals, and less yellow marking on face, thorax, and abdomen. *M. funicularia* lacks an obvious antehumeral stripe, the amount of yellow on VII is less, and the pattern on II is different. The hamules of the two species are

very similar, but that of *M. funicularia* is more deeply bifid apically. The cone on segment X of *M. funicularia* has a shelf posteriorly which is not present in *M. gamblesi*.

The male of *M. funicularia* has two rows of cells in the discoidal field of the forewing. In *M. gamblesi* the male has a single row of cells, but the female has two rows. FRASER (1954) considered the number of rows of cells in the discoidal field to be an important taxonomic point in the genus. Plainly, however, since in the new species the number of rows differs merely according to sex, caution must be exercised in using it as a character to subdivide the genus.

NATURAL HISTORY OF *MACROMIA GAMBLESII* SP. N.

While *M. gamblesi* is undoubtedly widespread around Bouar, it is never numerous, and, like other *Macromia* species, is a swift flier, and difficult to net. It is usually met with hawking away from water, sometimes on a regular beat, sometimes passing apparently at random. Occasionally males are seen patrolling up and down a stream.

Two specimens were taken in December 1977 at the Landjia fishfarm in Bangui, 400 km southeast of Bouar, and there seems no reason to doubt that the species occurs across all the intervening countryside. It appears likely however that it requires gallery forest, and will not be found to extend into the dry northern savanna.

Almost certainly its larvae live in leaf and stick debris in the small streams around Bouar. A number of larvae of appropriate size were obtained from this habitat, but none was successfully bred out in captivity in Bouar. Where and in what manner the eggs are laid, how long the larva lives, and when it emerges, remains unclear.

The other common species of *Macromia* at Bouar, *M. insignis* (Kirby) and *M. kimminsi* Fraser, appear not to be on the wing in the dry months, first being seen in March and April with the early rains, and only exceptionally noted after October. They show, therefore, at least a loose form of annual cycle. *M. gamblesi*, on the other hand, is found in greatest numbers at Bouar in December and January. At this season it is not uncommon to see small groups of immature individuals floating lazily around a tree away from water, generally high up and well out of reach. The only in copula record is also from this time of year. Records come from December-April, June, and October. It may be that there is an annual cycle, with peak emergence in December, but the data are insufficient to be certain.

ACKNOWLEDGEMENTS

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