

SHORT COMMUNICATIONS

NOTES ON *APHYLLA OBSCURA* (KIRBY, 1899)
(ANISOPTERA: GOMPHIDAE)

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Some intraspecific characters of *A. obscura* are discussed and a redescription is given of the type. *A. elegans* Belle, 1970 is considered conspecific with this species.

INTRODUCTION

Professor Dr. Minter J. Westfall, Jr., who recently examined the holotype, female, of *Cyclophylla obscura* KIRBY, 1899 in the British Museum (Nat. Hist.), wrote to me in a letter (dated August 11, 1975): "The thoracic stripes are obscure but I temporarily restored them on one side with alcohol and they compared favorable with specimens I had from Panama which you said were the *elegans*."

The description of *Aphylla elegans* BELLE, 1970 was based on a single male from Apure, Venezuela, while *A. obscura* was described from a single female taken in La Chorrera, Panama. The original description of the latter species, however, does not allow its specific recognition as already stated by CALVERT (1948).

In the meantime I had in my possession two interesting consignments of Gomphidae collected in Venezuela by Dr. F. Fernández Yépez (Maracay) and Dr. Juan Rácanis (Caracas). The two lots together contained a good series of specimens (one pair taken in copula) of an *Aphylla* species which I have named *elegans*.

During my visit to the British Museum (Nat. Hist.) on April 13, 1976 I studied the female type of Kirby's *obscura* and compared it directly with the female taken in copula by Dr. Rácanis. I found the resemblance between the two

specimens to be so strong that I was induced to consider them not specifically different.

APHYLLA OBSCURA (KIRBY, 1899)

Figures 1-4

Material. — **P a n a m a**: Zona del Canal, Fort Clayton, 5.III.1944, 1 ♂, leg. Arnett, (Museo de Biología, Caracas); Canal Zone, Barro Colorado Island, 29.V.1970, 1 ♂, leg. E.S. Morton, (coll. Donnelly). — **C o s t a R i c a**: Prov. Guanacaste, Hacienda Taboga (100'), 27.VI.1967, 1 ♂; 28.VI.1967, 1 ♂, leg. M.J. & D.N. Westfall, (coll. Belle). — **V e n e z u e l a**: Miranda, Ocumare del Tuy, 15.IX.1957, 1 ♂; Lago de Valencia, Isla El Burro, 12.X.1956, 1 ♂; 13.X.1957, 2 ♂, 2 ♀ (one pair in copula); Barinas, San Silvestre, 23.XII.1957, 1 ♂; 25.XII.1957, 1 ♀, all leg. Juan Rácanis, (Museo de Biología, Caracas); Guarico, Hato Las Lajas, 24-26.VI.1966, 1 ♂, leg. F. Fernández Yépez & A.D. Ascoli; Barinas, Reserva Forestal Ticoporo (230 m), 26-29.II.1968, 1 ♂, leg. F. Fernández Yépez & C.J. Rosales, (Instituto de Zoología Agrícola, Maracay).

R e d e s c r i p t i o n of the female holotype. — Total length 56 mm; abdomen 43 mm; hind wing 35.5 mm; costal edge of pterostigma in fore wing 4.2 mm.

Face brown but labrum with a symmetric pair of green spots, mandibles green at base, postclypeus green on lateral sides and along postclypeal suture. Superior surface of frons brown with green anterior band. Vertex dark brown. Occipital plate green. Rear of head dark brown but pale behind occipital plate and on temporae. Labium and adjacent mouth parts brown.

Pterothorax very obscure owing to postmortem changes. First pale antehumeral stripes confluent with pale collar and second pale antehumeral stripe immediately in front of humeral sutures. The usual three pale stripes on sides of pterothorax well-developed, the third (metepimeral) pale stripe not reaching to posterior border of metepimeron. Paraptera rather pointed.

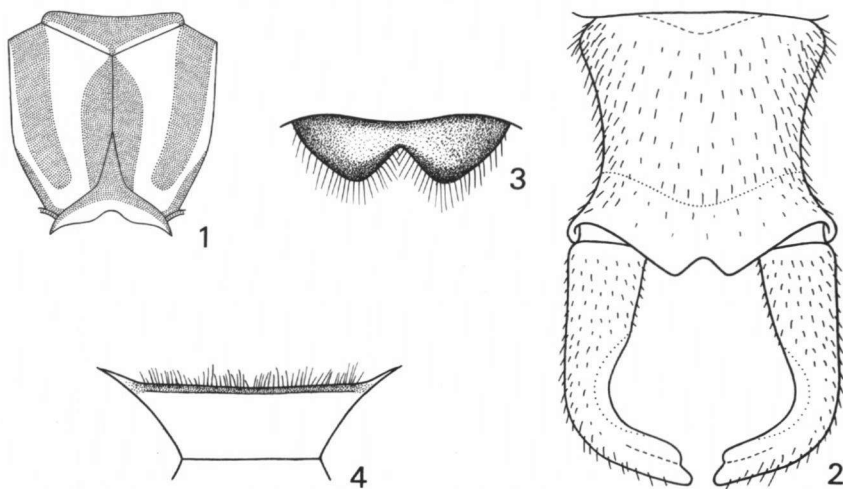
Femora brown. Third femora with short spines along outer border. Tibiae and tarsi black. Third tibiae three-quarters the length of third femora, with 12 (right) and 13 (left) spines along outer border. Third tarsi two-thirds the length of third tibiae.

Frontal margin of costa blackish brown, becoming yellow near nodus except for black marginal teeth. Pterostigma surmounting $5\frac{1}{2}$ - $6\frac{1}{2}$ cells. Antenodal and postnodal cross-veins of first series 13:21-20:14/15:14-17:16 in fore and hind wings, respectively (antenodal and postnodal cross-veins of hind wings different from original description). Second primary antenodal cross-vein the seventh in left fore wing and right hind wing, the sixth in other wings. Intermedian cross-veins 11-11/7-7 in fore and hind wings, respectively. Triangles three-celled. Subtriangle in fore wings two-celled, in hind wings one-celled. Supratriangles with one cross-vein. Trigonal interspace of fore wings starting with three rows of cells, two cells long, from triangle outwards followed by two rows of cells nine

cells long in anterior row. Trigonal interspace of hind wings starting with a row of three cells against triangle followed by two rows of cells five cells long in anterior row. Distance of sectors of arculus near their origin as wide as thickness of each sector or slightly shorter. Hind wings with five paranal cells, four postanal cells, a weakly developed anal loop, and four (proximal) to five (distal) rows of cells in area posterior to Cu2.

Abdomen predominantly dark brown. Segment 7 with a fine pale middorsal line for its entire length, the sides paler on basal two-fifths. Segment 8 three-fifths the length of segment 7, base of sides with an oblique black scar-line, middorsum without green basal spot, lateral dilatations narrow and with six denticles on apical third. Segment 9 about as long as wide, the lateral dilatations narrower than those of segment 8; lateral dilatation of right side with two denticles near middle and one denticle at apex, that of left side with three denticles at apex. Segment 10 widest at base, about as long as it is wide at base, its posterior dorsal margin without denticles in middle but with denticles at level of base of appendages, the dorso-apical rim one-sixth the length of segment.

Caudal appendages conical, acutely pointed, about five-sixths the length of segment 10. Sternite of segment 7 orange on its apical three-fourths, that of segment 8 entirely orange. Vulvar lamina one-sixth the length of ninth sternum, its posterior border medially excised V-shaped for about half the length of vulvar lamina, the bottom of the excision round and the two lobes with round edges.



Figs. 1-4. *Aphylla obscura* (Kirby) from Venezuela: (1) diagram of dorsum of pterothorax in male from Guarico; – (2) tenth abdominal segment and caudal appendages in male from Barinas, dorsal view; – (3) vulvar lamina in female (taken in copula) from Isla El Burro, ventral view; – (4) occipital plate in same female.

The noteworthy differences between the type and the female taken in copula by Dr. J. Rácenis (♀R) are the following:

(1) Posterior dorsal margin of abdominal segment 10 not denticulated in middle; in ♀R entirely denticulated with the exception of a small interruption (one denticle apparently not developed). One of the two other females from Venezuela has the posterior dorsal margin entirely denticulated and one has the posterior dorsal margin denticulated as in ♀R. The denticulation of the posterior dorsal margin of the tenth abdominal segment I have often used as a character for distinguishing species.

(2) Vulvar lamina posteriorly excised V-shaped for about half its length, that of ♀R excised for nearly two-thirds its length but less widely than in the type and with the lobes more swollen (Fig. 3). One of the two other females from Venezuela has the vulvar lamina excised as in the type, the other female has the vulvar lamina excised as in ♀R. The two lobes of the vulvar lamina of the three females from Venezuela are more swollen than in the type but I would not attach much significance to this. The vulvar lamina does not seem to offer specific differences in this genus (NEEDHAM, 1940) except perhaps in *A. edentata* SELYS, 1869 (cf. BELLE, 1972, fig. 15. A typographical error has been detected by me: "edentata" should be read for "dentata").

(3) Occipital plate relatively less wide than in ♀R, its base distinctly less than twice the middorsal length, and its posterior margin slightly convex; in ♀R the base is twice the middorsal length, and the posterior margin is slightly concave (Fig. 4). One of the two other females from Venezuela has the base also twice the middorsal length but the posterior margin straight; the occipital plate of the other female approaches that of the type.

Further, minor differences are found in the relative length of the abdominal segment 10 (in ♀R somewhat shorter, especially in ventral view), the width of the lateral dilatations on the abdominal segments 8 and 9 (in ♀R narrower, and those of segment 8 as narrow as those of segment 9), the number of denticles along the margins of these dilatations (in ♀R no denticles along dilatations of segment 9 except for a single denticle at apex on one side only), the length and width of the pterostigma (in ♀R somewhat longer and wider), the number of spines along the outer row of the third tibiae (in ♀R 16), the distance between the sectors of the arcus near their origin (in ♀R the sectors almost touching each other), the tip of the paraptera (in ♀R less sharply pointed, especially that of the meso-paraptera), and the posterior ridge behind the lateral ocelli (in ♀R somewhat lower).

DISCUSSION

In my opinion the differentiating characters cited here do not afford any clear proof of specific distinctness. This is also in agreement with the experiences of

Dr. Thomas W. Donnelly, who, concerning my *elegans* (now Kirby's *obscura*), quite rightly remarked in a letter (dated November 29, 1971) to me: "This is an interesting and highly variable bug with a large range.". Apparently the variations are linked up and merge but more material from diverse localities is needed to throw further light upon the relations between some intraspecific characters. The specimens from Venezuela are much paler than those from Central America (i.e. the area between lat. 25°N. in Mexico and Panama's border with Columbia). They seem to fit Gloger's rule (cf. MAYR, 1965: 324) since all Venezuelan specimens studied by me are from the savannah zone (Apure, Barinas, Guarico) and the dry woods (Miranda, Lago de Valencia). All these localities lie within the limited zoogeographical area Sabánico of Cabrera & Yepes, 1940 (cf. RAPOPORT, 1968: 69). The specimens from Venezuela have generally the middle lobe of the prothorax largely pale, and in some specimens the pale metepimeral stripe reaches to the oblique hind border of the sclerite. All present specimens have the first pale antehumeral stripe connected with the pale area of the collar and the second pale antehumeral stripe, but these pale areas are very broadly confluent in some specimens from Venezuela (Fig. 1). Further the males from Venezuela have the abdominal segments 1 and 2 generally with a distinct pale middorsal stripe; some males, however, have these segments largely pale.

The male from Miranda is the smallest of the series (total length 53.5 mm; abdomen 41 mm; hind wing 31 mm), that from Costa Rica collected on 27.VI.1967 is the largest one (total length 65 mm; abdomen 50 mm; hind wing 37.5 mm). Curiously enough the wings of the other male from Costa Rica have no basal subcostal cross-vein (= accessory basal antenodal cf. FRASER, 1939). The wings of all other specimens do have a basal subcostal cross-vein.

Finally, striking differences are found in the males regarding the relative length of the tenth abdominal segment, the width of the dorso-apical rim of this segment (the width varies from one-third to two-fifths the length of the segment), and the development of the basal part (shoulder) of the superior caudal appendages (Fig. 2).

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