

**THE FEMALE OF *APHYLLA SILVATICA* BELLE
FROM PERU
(ANISOPTERA: GOMPHIDAE)**

S.W. DUNKLE

Biology Department, Collin County Community College,
2800 E. Spring Creek Parkway, Plano, TX 75074, United States

Received May 18, 1993 / Revised and Accepted June 1, 1993

The ♀ of the sp., previously known only from the ♂ holotype from Ecuador, is described (allotype ♀: Peru, Loreto Dept., 80 km NE Iquitos, 28-VIII-1989; deposited at FSCA, Gainesville, FL, USA). It is similar to *A. robusta* Belle, but has the pale lateral stripes of the thorax wider than the intervening dark stripes, black tibiae, and oblong lobes on the subgenital plate. *A. robusta* ♀ has dark stripes widest, red-brown tibiae, and rounded subgenital lobes.

INTRODUCTION

The species of *Aphylla* are remarkably alike, the females especially so. For example, the dorsal head structure offers no practical taxonomic characters, no doubt because the male epiproct is vestigial and does not interact with the female vertex during mating. Likewise the male secondary genitalia are uniform, and therefore so are the female subgenital plates. BELLE's (1992) revision of the 16 known species of South American *Aphylla* was a leap forward in our knowledge of this taxonomically difficult group.

In August of 1980, Kenneth Knopf and I, collecting at Limoncocha, Ecuador, erected a Malaise-type flight trap for Tabanidae flies across the Rio Playaco, a forest stream about 4 m wide. Later, Dr Knopf took a beautiful male *Aphylla* that was perched on that trap and which became the holotype of *A. silvatica* (BELLE, 1992). In 1989 and 1992 I collected two female *Aphylla* 80 km NE Iquitos, Peru, and after comparing them with the holotype of *silvatica*, concluded that they were the same species, as described below.

DESCRIPTION

Material. — **Allotype** ♀: PERU, Loreto Dept., Explorama Lodge 80 km NE Iquitos, rivulet tributary to Yanamono River near Amazon River, 28-VIII-1989, S.W. Dunkle leg., deposited at FSCA, Gainesville, FL, USA; — Second ♀, same data, but 12-VIII-1992, SWD coll.

FEMALE (allotype). — In life compound eyes olive green, body dark brown marked with bright yellow-green as follows: Labrum brown with a pair of pale lateral spots, brown stripes across lower half of postclypeus and lower antefrons, postfrons brown posteriorly, antennae and vertex brown with pale spot posterior to median ocellus. Dorsal occiput pale, rear of head brown with pale central spot on rear of occiput and shading to pale along lower edge of compound eyes. Labium pale, its median lobe slightly arcuate distally but nearly straight in its central part. Vertex with transverse ridge between lateral ocelli, this ridge shallowly V-notched medially. Occiput with straight, slightly raised, brown posterior rim fringed with brown setae.

Prothorax brown with posterior part of median lobe pale. Pterothoracic pattern as shown for male *silvatica* by BELLE (1992, fig. 4), but with brown stripes slightly wider. Thus first pale antehumeral stripe expands below to cover collar and connects above with wide pale second antehumeral stripe. Brown lateral thoracic stripes widest dorsally but narrower than corresponding pale stripes in their ventral halves. Underside of thorax brown. Legs brown to knees, black beyond, except underside of first leg pale to knee. Hind tarsi 2/3 length of hind tibiae.

Wing venation including front of costa and pterostigmata brown. Wing membrane tinted amber-brown. Forewing triangles and subtriangles 3-celled. Hindwing triangles 2-celled, subtriangles 1-celled, anal loops 2-celled. Second antenodal brace vein the seventh in all wings. One doubled cell beyond pterostigma in each hindwing, one double cell in right hindwing posterior to distal end of pterostigma.

Abdomen nearly all brown, but segments 1 and 2 with narrow dorsal and wide lateral pale stripes, the latter extending to position of transverse carina of segment 3. Tergites 2-8 paler below lateral carinae. Flanges of 8-9 narrow, rim-like, orange brown, edged with sparse black denticles in their posterior halves. Cerci tapered to a point, slightly shorter than segment 10, tergite 10 denticulated around bases of cerci. Sternite of segment 8 paler than other sternites, subgenital plate with wide V-notch extending about 3/4 to base, edges of notch cornered, plate shaped as shown for *A. producta* Selys by BELLE (1992, fig. 19).

Measurements (in mm). — Total length including cerci 66; — abdomen 50; — hindwing 44; — all pterostigmata 6.

VARIATION. — The 1992 female has brown of labrum tinted with orange, pale lateral stripe of abdomen extends to position of transverse carina on segment 4, no doubled cells beyond or posterior to pterostigmata. However, first pale antehu-

meral stripe not connected to collar or second pale antehumeral stripe as in fig. 1 of BELLE (1992), giving a superficially very different appearance from allotype. [BELLE (1992) notes of *Aphylla* in general that "The colour pattern of the dorsum of the pterothorax [...] can strongly vary in the individuals of some species."] Total length 67 mm, abdomen 51, hindwing 43, pterostigmata 5.5.

DISCUSSION

The only non-sexual differences of the females noted from the holotype male of *A. silvatica* were the more extensive brown of the labrum, longer pterostigmata (5.2 mm in male), and brown underside of the thorax (pale in male). BELLE (1992, fig. 8) shows the distal edge of the medial lobe of the labium slightly emarginate in the male.

The closest known relative of *A. silvatica* is *A. robusta* Belle, which also occurs in Peru. Female *silvatica* key to *robusta* in BELLE's (1992) key, but data from BELLE (1976, 1992) show that female *robusta* are slightly larger (abdomen 53-55.5 mm), and have the pale lateral stripes of the thorax narrower than the dark stripes, the tibiae red-brown rather than black, and the lobes of the subgenital plate rounded rather than oblong (BELLE, 1976, fig. 5). BELLE (1976) implies that the labia are brown rather than pale in both sexes of *robusta*.

A. boliviana Belle occurs syntopically with *A. silvatica* at both Limoncocha, Ecuador, and the Explorama Lodge, Peru, but females of *boliviana* are generally smaller, with the antefrons and most of the postclypeus brown. In life *boliviana* is mostly black marked with dark green, the compound eyes dark green, the lateral black thoracic stripes slightly wider than the green stripes. However, a female *Aphylla* in my collection from Lago Agrio, Napo Prov., Ecuador, which is apparently *A. boliviana*, has a thoracic pattern like that of the 1992 female of *silvatica*.

The allotype of *A. silvatica* was caught as she flew slowly for at least 10 m along a rivulet in dense rain forest undergrowth. She was probably dropping (not dipping) eggs into the water. The second female *silvatica* was similarly taken when she appeared over a shaded seepage rivulet. All other species of *Aphylla* known to me utilize open sunny habitats such as lakes and slow rivers, and BELLE (1992) also mentions temporary ponds. If the larvae of *A. silvatica* do inhabit forest rivulets, this large species must be one of the top predators in that habitat.

ACKNOWLEDGEMENTS

Many thanks are due to DAVID NICKLE of the United States National Museum and JAMES CASTNER of the University of Florida who invited me to participate in their Earthwatch expeditions to Peru.

REFERENCES

- BELLE, J., 1976. A new species of *Aphylla* Selys, 1854 from Peru (Anisoptera: Gomphidae). *Odonatologica* 5: 371-374.
- BELLE, J., 1992. A revision of the South American species of *Aphylla* Selys, 1854 (Odonata: Gomphidae). *Zool. Meded.* 66: 239-264.