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Oshwea dubiosa rediscovered in Uganda

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Abstract

The second known specimen of the genus *Oshwea* Ramme 1929 was captured in Southern Uganda; it appears to be the unknown male of *O. dubiosa*, previously recorded only from West-Central Congo. At present it seems best to retain it in the subfamily Catantopinae, though it differs from other members of that taxon in several anatomical features.

Introduction

In early March 2013 the authors spent a morning in the field together, with the primary aim of photographing typical members of the local grasshopper fauna in their natural environment. The locality was the overgrown verges of an unsurfaced road in the Mabira forest, Uganda, connecting the hamlet of Bwola to the major Kampala/Jinja highway which traverses the forest from East to West. The area and its fauna are well known to us, so we were not equipped for collecting, as we anticipated no unknown species. Later, however, while reviewing photographs taken by Akite, we realised that some showed a completely unfamiliar insect. We therefore returned to the same locality the following morning, and were lucky enough to be able to find what appeared to be the same individual and to capture it; regretably, no other specimens were found. Using Dirsh's 1965 generic key, it was easily identified as a member of the Catantopine genus *Oshwea*.

Oshwea is one of the least known members of the African forest fauna. It was described (Ramme 1929) from a single holotype female specimen of *O. dubiosa*, from the surroundings of the town of Oshwe, in Bandundu Province, West-Central Congo (3°40'S, 19°50'E), with no other data, and to our knowledge has never been reported since. Ramme's description is meagre, and is illustrated only by a very inadequate photograph. The holotype, in the Berlin Museum, was pinned from alcohol, and has little coloration, as already noted by Ramme. Only its black elytra with paler striping appear to reflect the state of the living animal. Fortunately Dirsh had excellent dorsal and lateral drawings of the holotype prepared by G.W. Dalby for his 1965 and 1970 books, which allow one to form a picture of the species.

Our Ugandan specimen is a male; as the unique holotype of *O. dubiosa* is a female, we have no proof that the two specimens are of the same species. However, the genus to date is monospecific, the specimens correspond well, and the male shows the same striped black elytra as Dirsh's figures of the female. We presume, therefore, in the absence of other evidence, that our specimen is the unknown male of *O. dubiosa* Ramme, and present its description here. Certainty would require either a Ugandan female corresponding to the holotype or, more critically, a male from Oshwe corresponding to our specimen. In view of the rarity of the taxon (2 specimens in nearly 100 years), neither is very likely to be forthcoming in the near future.

Methods

Standard taxonomic methods were employed. The pinned specimen was relaxed in water for examination and dissection of the phallic complex. The latter was extracted, macerated in 8% NaOH solution, cleared and neutralised in very dilute acetic acid solution, stained with acid fuchsin, differentiated in water, and preserved in glycerine. Dimensions were measured with a digital stage micrometer used under 25× magnification. Drawings were prepared using a drawing tube on a Wild M5 stereo microscope, digitized, and elaborated using "Photoshop" (Adobe Systems Inc.).

Description

Male paratype: UGANDA: Buganda: Mukono District: Mabira Central Forest Reserve: 1 km S.W.of Bwola, about 2.5 km ENE of Najjembe, coordinates 0° 25'5"N, 33°3'33"E. 10.03.2013 (Akite P., Rowell CHF.) Specimen number 2013012. (BMNH London).

Habitus, Figs 1 & 5.

For details of dimensions, see Table 1.

Medium in size, L (fastigium to subgenital plate) = 18.99 mm.

Antennae filamentous, long, 1.73 × as long as head and pronotum together.

Interocular space narrow, 0.76 × as wide as antennal scape.

Pronotum (P) in midline = 3.78 mm.

Elytra (E) = 11.26 mm, shorter than abdomen, extending to base of supra-anal plate.

Hind femur (F) long, 12.05 mm, and slender, length 4.55 × its maximum width.

Hind foot fairly long, 43% of hind tibia.

Foot formula (*i.e.*, the lengths of the first, second and third tarsal joints, each expressed as a percentage of the total length of the foot) 34:20:46 – second tarsal joint rather short, third tarsal joint almost as long as first and second joints together.

Integument of head and thorax rugose, densely pitted. Integument of legs and abdomen smooth, polished.

Antennae filiform, long (1.73 × as long as head and pronotum together), 21 flagellar segments. Fastigium downward sloping, slightly concave, with weak lateral carinulae towards its base, merging smoothly into frontal ridge. Frontal ridge above medial ocellus

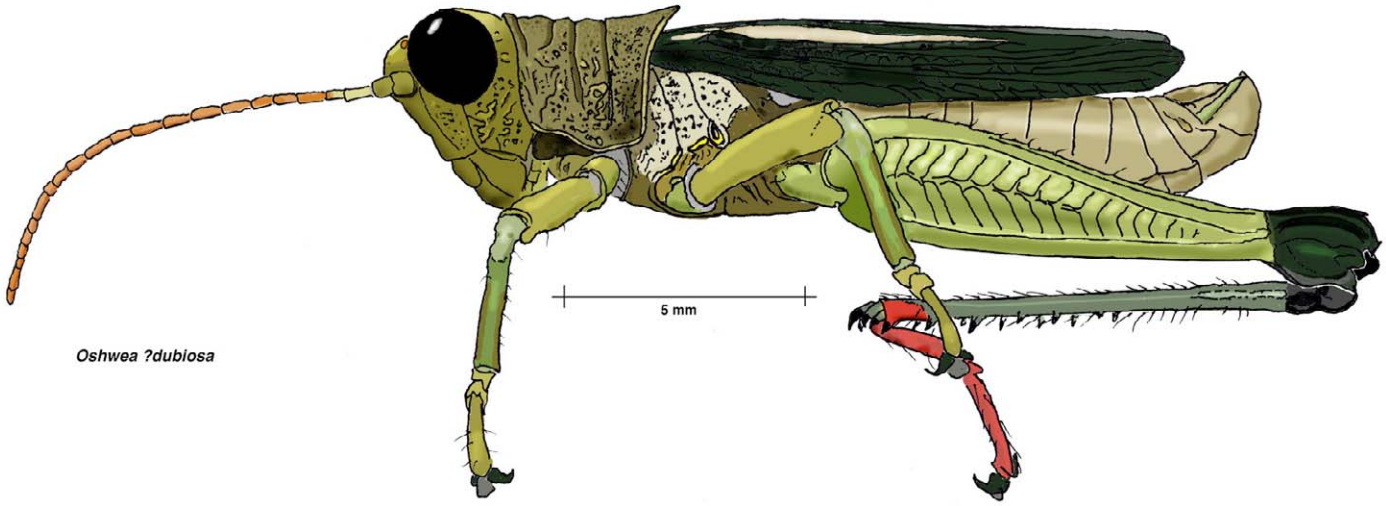

Fig. 1. *Oshwea dubiosa*. Male habitus. For color version, see Plate IV.

wide, not sulcate, pitted; below medial ocellus, increasingly obsolete. Compound eyes protuberant, interocular space narrow, less than width of antennal scape.

Pronotum subcylindrical, medial and lateral carinae absent. Disc of pronotum crossed by three fairly strong sulci. Anterior margin of PN slightly convex, very weakly indented in the midline; posterior margin obtuse-angulate, the apex truncate. Metazona shorter than prozona. The posterior angles of the lateral lobes are slightly flared outwards. Prosternal process short and conical. Mesosternal interspace wide and open at the posterior edge, metasternal interspace narrow and laterally compressed, almost closed posteriorly.

Elytra slightly brachypterous, extending only to base of the supra-anal plate. They are widest at about one third their length, thereafter narrowing towards the tip. They are black in color, with a prominent venation and reticulum; there is a narrow tapering yellow stripe centred on the first anal vein, which does not reach the tip of the elytron. Wings cycloid, opaque blackish brown, somewhat paler at the base.

Pro- and mesothoracic femora somewhat laterally compressed, and widened dorsoventrally. Hind femora long and slender, exceeding both the abdomen and the elytra: medial dorsal carina almost completely smooth, ending at the knee in a minute tooth. Upper knee lobe rounded, lower knee lobe acute angular with a slightly rounded tip. Outer face of hind femur with a fairly prominent chevron pattern. Hind tibia with 6 external and 7 internal spines, including external and internal apical spines (Fig. 2). Hind foot fairly long (43% as long as tibia), foot formula 34:20:46.

Tenth abdominal tergite completely divided, furcula absent. Male cerci long and slender, extending to the tip of the subgenital plate, inward curving, acutely (and in side view assymetrically) pointed. Supra anal plate triangular, with a weak medial depression basally, the tip rounded. Apex of subgenital plate smoothly rounded in lateral view, with a weak medial carina in apical view (Fig. 3).

Coloration.— (See Figs 1 & 5) Antennae, reddish brown, basal segments greenish. Head and thorax dark olive green, eyes black, palps green. Elytra black with a short yellow longitudinal stripe basally. Mesothoracic episternum and epimeron, and metathoracic episternum, light yellow-green, forming a light patch contrasting with the rest of the head and thorax. All femora, leaf green, hind knee black. Hind tibia blue green suffused with black, the distal tip carmine red. Hind foot carmine red. Tibial spines and spurs, mostly black.

Phallic complex.—(Fig. 4.) Epiphallus bridge-shaped, undivided, quite

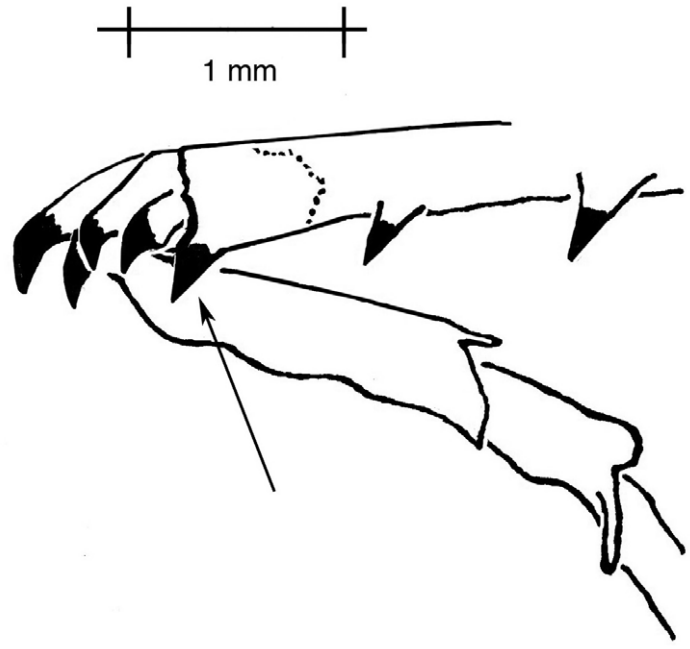

Fig. 2. *Oshwea dubiosa*. Tip of hind tibia. The external apical spine is arrowed.

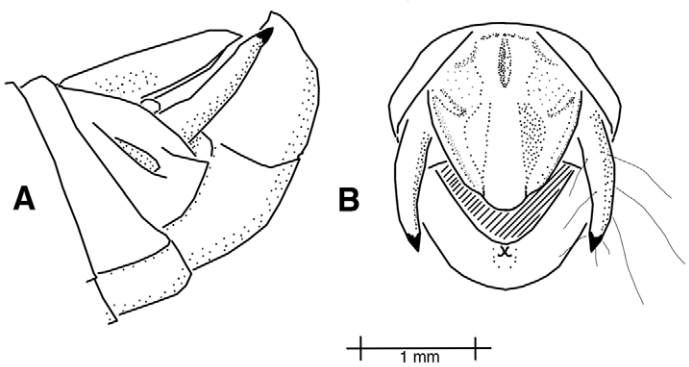

Fig. 3. *Oshwea dubiosa*. Male terminalia. A, lateral; B, dorsal. Hatched area is pallium.

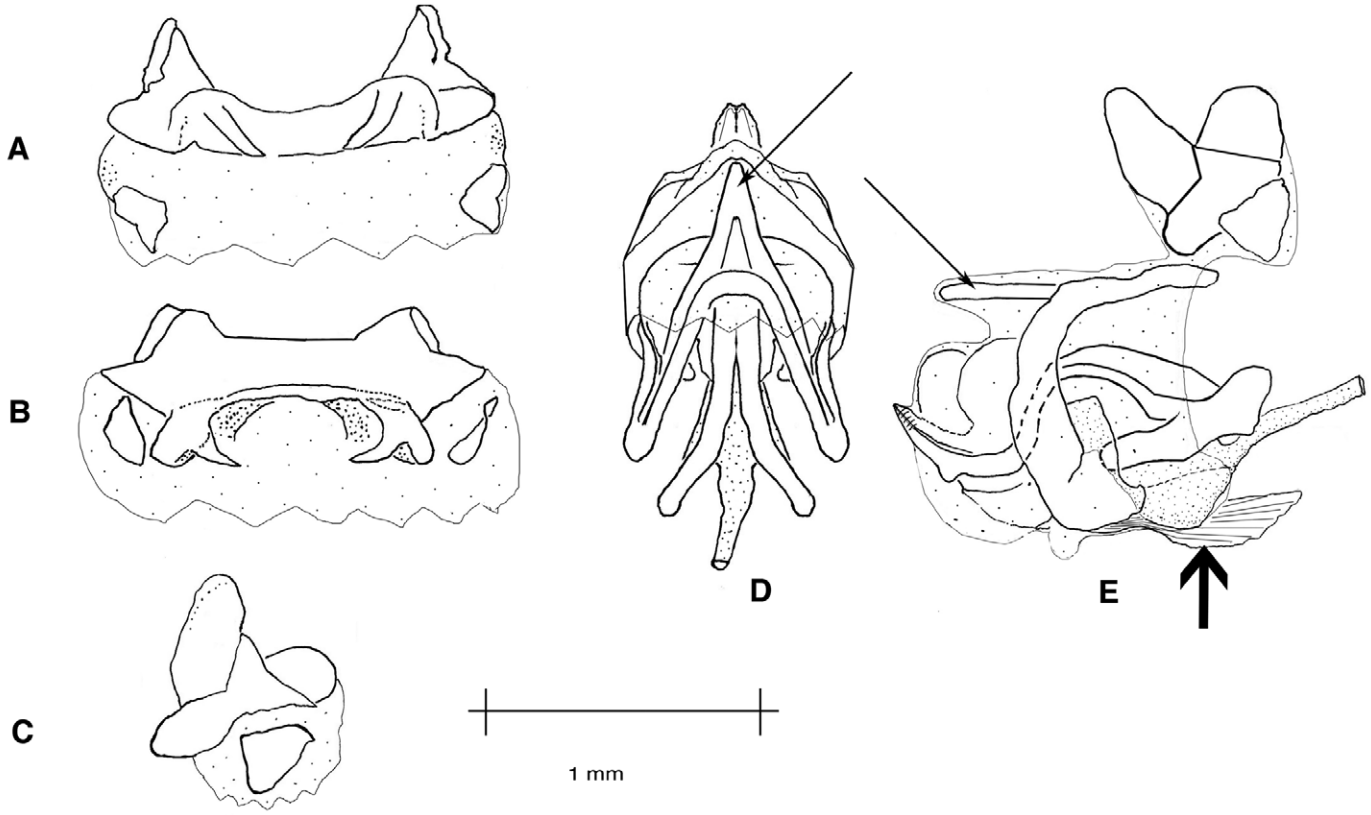

Fig. 4. *Oshwea dubiosa*. Phallic complex. A-C, epiphallus. A, epiphallus, axial view. B, epiphallus, dorsal view. C, epiphallus. Lateral view. Sparsely stippled areas are membrane, heavier dots are sensilla in the membrane. D, phallic complex without epiphallus, dorsal view. The posterior projection of the zygoma is arrowed. E, phallic complex, lateral view. The posterior projection of the zygoma is arrowed. The heavy arrow indicates the ventral retractor apodeme (striated in the Figure), inserting at the tips of the rami. To conserve the unique specimen, the endophallus was not dissected out.

large in relation to the phallus, about as wide as the endophallus is long. Lophi large, erect, triangular, with an outer strip of clear, non-staining cuticle. Ancorae large, pointed, inwardly curved, the membrane near their base densely provided with sensilla. Lateral plates of epiphallus rather small, pointed laterally. Oval sclerites large, roughly triangular, arranged in a "south cone" attitude, with an apex pointing ventrally.

Ectophallus with robust diverging anterior apodemes, which continue caudally beyond the zygoma and join together to form a prominent V-shaped process overhanging the aedeagus (arrowed in Fig. 4D, E). Rami well developed, encircling the endophallus, but not fused ventrally. Arch not dissected, but apparently large (Fig. 4E) and supporting the dorsal aedeagal valves.

Endophallus not dissected (to preserve the unique specimen). Anterior apodemes laterally flattened, sharply divergent in dorsal view (Fig. 4D). Gonopore processes long and spatulate with rounded tips. Details of flexure not visible, ventral aedeagal valves upwardly slanted at nearly 45° to the horizontal.

Discussion

Both Dirsh (1965,1970) and the Orthoptera Species File online (OSF on-line) (Eades *et al.* 2013) place *Oshwea* in the Catantopinae. There is however no exclusive diagnosis of this subfamily, which historically has been used as a depository for forms that do not fit readily into other established categories (see *e.g.*, remarks in Dirsh 1961: 409) and despite the modern removal of its former New World components it still contains a great variety of rather disparate genera. *Oshwea* has an external apical spine on the hind tibia (Fig. 2), a character which sets it apart from most catantopine genera. The other 9 African catantopine genera possessing this feature are mostly large apterous forest floor leaf-litter dwellers from W. Africa, such as *Mazaea* and *Barombia*; *Oshwea*, however, is a typical light-gap species in its morphology – smallish in size, brightly colored, alate, with long antennae and protuberant eyes. The structure of the hind foot, with its short second tarsal joint, does not suggest a primarily arboreal life style. Its phallic structures are nothing like those of the *Mazaea* group, which in turn differ greatly from those of the "core" Catantopinae such as the genera around *Catantops*. The dramatic triangular posterior extension of the zygoma of *Oshwea* resembles no other acridid we know, and certainly no other Catantopine that we have examined. On the other hand, no other subfamily currently seems more appropriate to contain *Oshwea*.

The distance from Oshwe to the Mabira is approximately 1750 km in a straight line. However, the intervening space was almost entirely occupied by equatorial wet forest until recently, so dispersal of the species over this distance need not surprise, and there are many other acridid genera among the African forest fauna (*e.g.*, *Abisares*, *Chirista*, *Pterotiltus*) which are similarly distributed. The previous lack of records, however, seems to show that it is very uncommon throughout its large range. One of us (Rowell) has collected in Ugandan forests, including the forests on the Congolese border, intermittently since the 1960s, while Akite has worked the Mabira and some other Bugandan forests intensively over recent years. Neither of us has ever encountered *Oshwea* before.

Table 1. Dimensions of male *Oshwea dubiosa*. Abbreviations of characters: L (length from fastigium to tip of subgenital plate). F (length of hind femur). FD (Depth of femur: the maximum width of the hind femur). Tib (length of femur, measured in the folded position). T1, T2, T3 (lengths of the three tarsal segments, with T1 being the most proximal). T1-T3 (total length of the three tarsal segments). E (length of elytron), Ant (length of antenna), IOS (interocular space: the minimal distance between the compound eyes when seen in dorsal view). P (length of the pronotum in the dorsal midline). H + PN (head plus pronotum: their combined lengths).

Specimen no. 2013012				
character	mm		ratios	
L	18.99			
F	12.05			
FD	2.65			
Tib	11.02			
T1	1.62	T1/T1-3	0.34	foot formula
T2	0.95	T2/T1-3	0.20	foot formula
T3	2.19	T3/T1-3	0.46	foot formula
T1-3	4.76	T1-3/T1-3	1.00	foot formula
E	11.26			
Ant	11.11			
IOS	0.34			
P	3.78			
prozona	2.1			
metazona	1.63			
Scape width	0.45			
H+PN	6.43			
IOS/scape			0.76	
T1-3/F			0.40	Size of hind foot
T1-3/tib			0.43	Size of hind foot
F/FD			4.55	Femoral proportions
ANT/H+PN			1.73	Relative length of antenna

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Fig. 5. *Oshwea dubiosa* Ramme 1929, in the wild. Photo P. Akite. For color version, see Plate IV.