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An unusual new species of *Hedychridium* Abeille from Africa

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Abstract

The species *Hedychridium buffingtoni* Kimsey & Copeland, **sp. n.** is described from two male specimens collected in Kasaala, Kenya. They are distinguished from other species of *Hedychridium* by the strongly transversely carinate metasomal terga II and III, edentate apical rim of tergum III, strongly lobed propodeal tooth, ecarinate frons and darkly pigmented cuspis.

Keywords

Africa, Kenya, eastern Sahel, Kasaala, *Acrotoma*, *Buyssonina*

Introduction

Hedychridium Abeille de Perrin, 1878 is the second most speciose genus of Chrysididae, after *Chrysis* Linnaeus, 1767. In Africa a number of *Hedychridium* species exhibit a diversity of unusual modifications including a transverse carina on the frons, ridged metasomal terga, dentate apical metasomal terga, and lobate propodeal teeth. Many of these oddly modified species were at one time placed in the genera *Acrotoma* Mocsáry, 1902 and *Buyssonina* Mocsáry, 1902. *Acrotoma* proved to be a junior homonym of the gastropod genus *Acrotoma* Boettger, 1881. Kimsey and Bohart (1991) synonymized *Acrotoma* Mocsáry and *Buyssonina* Mocsáry under the genus *Hedychridium*.

Only 45 species of *Hedychridium* have been described from continental subSaharan Africa (see Madl and Rosa 2012), and the vast majority of the described species are from southern Africa, 18 of which were described by Kimsey (1988). Given the diversity of habitats and potential hosts this seems to be a substantial underestimate of the actual species diversity of the genus in Africa.

The new species described below belongs to the *H. dybowskii* group of Kimsey and Bohart (1991). It exhibits extreme modifications of some of the more unusual features seen in African species, particularly modifications of the metasomal terga.

Materials and methods

The type specimens are deposited in the National Museums of Kenya in Nairobi. Terminology follows Kimsey and Bohart (1991). Images were taken with a Leica MC 190 HD camera, mounted on a Leica MZ75 stereomicroscope, using the Leica Application Suite version 4.8.0 and image stacking software Zerene Stacker 64 bit version 1.04.

Taxonomy

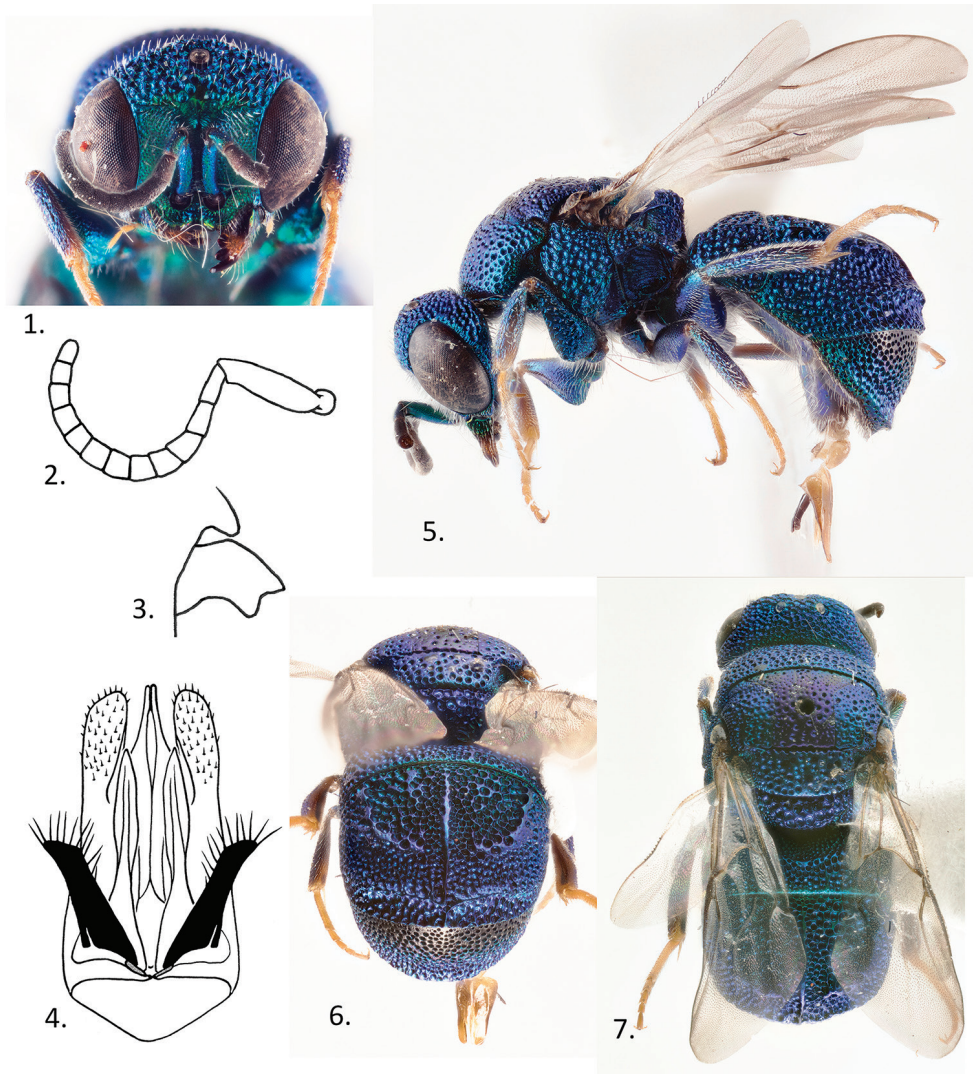
Hedychridium buffingtoni Kimsey & Copeland, sp. n.

<http://zoobank.org/748558CD-40A1-46FA-917D-F9D927D5E86F>

Figs 1–7

Diagnosis. This species is characterized by the lack of a transverse frontal carina, strongly lobate propodeal tooth, sharply angulate mesopleuron, expanded and ventrally carinate forefemur, metasomal tergum II with an elevated medial carina, elevated U-shaped subbasal welt, a subapical transverse, punctate ridge, metasomal tergum III with a subapical ridge and edentate apical rim. It resembles *H. arnoldi* (Edney, 1940) based on the very short malar space. It belongs to the *H. dybowskii* group of species, but can be distinguished from other members of the group, which includes *H. arnoldi*, *H. braunsii* (Mocsáry, 1902) and *H. dybowskii* du Buysson, 1898 by the edentate apical rim of metasomal tergum III and the lack of a transverse frontal carina on the face. The darkly pigmented cuspis of the male genitalia is unusual in *Hedychridium*.

Male description. Body (Figs 5–7): length 3.5–4.0 mm. Head (Fig. 1): frons without transverse frontal carina, with large, contiguous punctures, changing abruptly in scapal basin to tiny punctures separated by 0.5–1.0 puncture diameters, basin covered by decumbent silvery setae, with medial, asetose band of fine, transverse carinae occupying medial fourth; distance between midocellus and antennal sockets equal to narrowest interocular distance; subantennal distance 1 midocellus diameter long; malar space 0.1 midocellar diameter; antenna (Fig. 2), flagellomeres I, II 1.3x as long as broad; flagellomeres III and IV as long as broad. Mesosoma: pronotal punctures large, separated by 0.2–0.5 puncture diameter, intervening areas finely shagreened; scutum



Figures 1–7. *Hedychridium buffingtoni* Kimsey & Copeland, sp. n. **1** Front view of face **2** Lateral view of antenna **3** Oblique lateral view of propodeal tooth **4** Ventral view of male genital capsule **5** Lateral view of body **6** Dorsal view of metasoma **7** Dorsal view of body.

with punctures separated by 0.5–1.0 puncture diameters, punctures smaller and more widely separated between notauli, finely shagreened in between; scutellum with large punctures separated by 0.2–0.5 puncture diameters, finely shagreened in between; mesopleuron sharply angulate with well-developed omaulus, scrobal sulcus and verticulus, posterior surface finely rugose; metanotum angulate in lateral view; forefemur subbasally expanded and flattened, with ventral carina; propodeal tooth with large ventral lobe (Fig. 3); hindfemur with slightly depressed elongate dark brown triangular patch on inner surface; forewing Rs about one-third as long as R1; medial vein broadly

curved reaching M+Cu at oblique angle. Metasoma: tergum II with well-developed longitudinal medial ridge, basal third with transverse U-shaped, punctate ridge or welt opening basally, with subapical, transverse, punctate ridge or swelling becoming narrowly V-shaped medially; tergum III without medial ridge or apical dentition, with transverse, punctate subapical ridge, apical margin translucent brown. Color: body overall dark metallic blue, becoming purplish on scutellum between notauli; legs metallic blue, except tarsi yellowish; wing veins dark brown, membrane untinted; tegula brown, external metasomal sterna metallic blue. Male genitalia (Fig. 4); cuspis darkly pigmented, blackish; digitus broadest subapically; paramere apically rounded, with short, marginal setae.

Female. unknown.

Type material. Holotype male; Kenya: Eastern Prov., Kasaala area, 733 m, 2.07836°S, 38.22517°E, Malaise trap, 5–19 July 2015, R. Copeland, No. 0693–0722 [image numbers], (National Museums of Kenya, Nairobi). Paratype male: same data as holotype, except 8–22 Oct. 2015, No. 3083–3103 [image numbers] (National Museums of Kenya, Nairobi).

Etymology. This species is named for our friend Matt Buffington, expert microhymenopterist with whom RSC has had the pleasure of working both in Kenya and in the United States.

Remarks. This is a very unusual looking *Hedychridium* due to the strongly tri-ridged metasomal tergum II. In addition, it is unusual for a species to be collected in both the dry (Fig. 9) and wet (Fig. 10) seasons in a site, but this one was. The holotype and paratype were collected in a Malaise trap in the Kasaala area of eastern Kenya (Figs 8–10). This area falls within the easternmost extension of the Sahel which extends southward through most of eastern Kenya and into northeastern Tanzania (Coe et al. 1999). According to Pratt et al. (1966) it belongs in ecological zones IV/V, semi-arid to arid habitats with only “marginal agricultural potential”, and where natural vegetation includes dry woodland and bushland, usually characterized by the presence *Acacia* and *Commiphora* species, and often shrubby. These zones correspond to Thornthwaite’s (1948) moisture indices of -20 to -40 and -40 to -60 for semi-arid and arid climates, respectively. Rainfall data is not available for the Kasaala area but the region is known for its hot climate and marginal rainfall. Maize is often planted, but because it is associated with a high percentage of crop failure, it is usually cultivated together with sorghum (*Sorghum bicolor* (L.) Moench), finger millet (*Eleusine coracana* Gaertn.) and pearl millet (*Pennisetum glaucum* (L.) R.Br.), grains suitable for areas with low rainfall and relatively high evaporation rates, and with the similarly drought-resistant legume, pigeon pea (*Cajanus cajan* (L.) Millsp.). The area in which the Malaise trap was set has remnant and disturbed plots of mixed woodland/bushland and wooded grassland (Pratt et al. 1966), with considerable farmland separating these plots. Vegetation is dominated by deciduous, often thorny, plants, providing a stark contrast when viewed during dry or wet periods (Figs 9–10).



8.



9.



10.

Figure 8–10. 8 Map of collecting site in Kasaala, Kenya 9–10 Malaise trap where *Hedychridium buffingtoni* Kimsey & Copeland was collected in the dry season (9) and wet season (10).

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