

On the subgeneric placements of *Ceratina foveifera* Strand and *C. labrosa* Friese from Africa (Hymenoptera: Apidae)

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ABSTRACT

Two new subgenera are established for enigmatic species of African small carpenter bees, genus *Ceratina* Latreille (Xylocopinae: Ceratinini). *Ceratina foveifera* Strand is most similar to *Copoceratina* Terzo & Pauly but differs in integumental coloration and sculpturing and absence of supraclypeal ridges, and is here classified in *Xestoceratina* subgen. n. *Ceratina labrosa* Friese is similar to *Ceratina* s. str. and *Eucерatina* Hirashima, Moure, & Daly but differs by the structure of the metasomal terga and male genitalia, and is placed in *Alloцерatina* subgen. n.

Keywords: Anthophila, Ceratinini, identification key, subgenera, Xylocopinae, Afrotropical

INTRODUCTION

The cosmopolitan genus *Ceratina* Latreille is the sole genus of the tribe Ceratinini, or small carpenter bees. These include familiar, sparsely pubescent, typically small bees that nest in pithy stems (Michener 2007). Most species also have some degree of yellow to white maculation on the head or even more extensively over the otherwise dark brown to black or even metallic body. Although there has been considerable interest in the systematics of small carpenter bees and there is a well-developed subgeneric system, there are many species that have as of yet to be placed to subgenus (Michener 2007). This is partly owing to the fact that the type material for many has not been examined to make such a placement. Conversely, there are legitimately several species that simply do not belong to any of the existing subgenera (e.g., in the Neotropical and Afrotropical faunas).

Presented here are brief subgeneric accounts for two enigmatic species of small carpenter bees from Africa. The first, *Ceratina foveifera* Strand, has never been figured and is among the smallest species of the genus, at only 4.0–4.2mm in total length. This species has superficial similarities with the subgenus *Copoceratina* Terzo & Pauly, but can be easily distinguished by a number of important traits. Similarly, *C. labrosa* Friese, although well-figured in the literature (Eardley & Daly 2007) and superficially resembling *Ceratina* s. str., differs in the pattern of graduli and will run more closely to *Eucерatina* Hirashima, Moure, & Daly but differs in the structure of the male terga (i.e., tergum VII not extended) and genitalia (gonostylus not elongate). Both are placed in new subgenera herein. Morphological terminology follows Engel (2001) and Michener (2007).

SYSTEMATICS

Genus *Ceratina* Latreille***Xestoceratina*** subgen. n.

(Figs 1–6)

Type species: *Ceratina foveifera* Strand, 1911 [1912] (Strand 1911 [1912]).

Diagnosis: Minute bees, integument dark reddish brown, without metallic reflections and without maculation (Figs 1 & 2); largely impunctate or at most sparsely punctured (Figs 1–5), metasomal terga with small, scattered punctures more noticeable than elsewhere on body (Fig. 6). Maxillary palpus apparently pentamerous (five palpomeres, but difficult to observe in all available specimens); mandible tridentate; apical margin of labrum straight, with median depression subapically; clypeus of female unmodified, gently and weakly convex, apical margin straight (Fig. 3); supraclypeal weakly and gently convex, without carinae or ridges (Fig. 3); paraocular area above antennal toruli impunctate, without convexity (Fig. 3); supraantennal groove absent (Fig. 3); frons unmodified (Fig. 3); ocelli separated from posterior head margin by 0.9–1.0× median ocellar diameter (Fig. 4); preoccipital ridge rounded (Fig. 4). Pronotum without transverse carina (Fig. 4), dorsolateral angles indistinct, slightly obtuse (Fig. 4), without vertical carina (Fig. 1); axilla rounded (Fig. 4); basal area of propodeum long, about as long as mesoscutellum, finely tessellate (Fig. 5). Forewing with prestigma shorter than distance from base of pterostigma to r-rs; pterostigma wider than prestigma, margins of pterostigma converging basad r-rs (Fig. 1). Pro- and mesotibiae simple; meso- and metafemora without sharp ventral edges; metabasitibial plate (spine) at one-third metatibial length. Metasomal terga II–IV with graduli; apical margins of terga and sterna without rows of specialized setae (Figs 1, 2, 6); metasomal tergum VI of female without mediolongitudinal carina or ridge (Fig. 6); sterna I–V of female with graduli, that of sternum V weak.

The new subgenus is similar to *Copoceratina* and will run to that subgenus in the key of Michener (2007) owing to the non-metallic integument, absence of a mediolongitudinal carina or keel on tergum VI, and absence of apicolateral bands of white plumose setae on terga I–IV. Unlike *Copoceratina*, however, the integument is dark reddish brown (black in *Copoceratina*), the punctuation is exceedingly sparse (comparatively dense in *Copoceratina*), and the supraclypeal area unmodified (with transverse carina or ridge in *Copoceratina*).

Etymology: The new subgeneric name is a combination of the Ancient Greek adjective ξεστός (*xestós*), meaning, ‘polished’ or ‘smoothed’, and *Ceratina* [itself composed of the Ancient Greek noun κέρας (*kéras*) (meaning, ‘horn’) in its genitive κέρᾱτος (*kératos*), and the suffix –ίνα (–*ína*), which is added to masculine nouns to make them feminine]. The gender of the name is feminine.

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Alloceratina subgen. n.Type species: *Ceratina labrosa* Friese, 1905 (Friese 1905).

Diagnosis: Large bees, integument black, without metallic reflections, with maculation on clypeus, pronotal lobe, tibial bases; densely and deeply punctured,



Figs 1–2. — *Ceratina (Xestoceratina) foveifera* Strand, ♀, from Ghana: 1, Lateral habitus; 2, Dorsal habitus.

but punctures never wholly contiguous, noticeably sparse on central disc of mesoscutum. Maxillary palpus hexamerous (six palpomeres); mandible of female tridentate, mandible of male bidentate; labrum of female with subapical tubercles; clypeus of female flat, broad, apical margin concave, more dramatically modified in larger individuals such that apical margin deeply concave medially and apicolateral corners rounded and more pronounced and overlapping labral and mandibular articulations; supraclypeal area flat, without carinae or ridges; paraocular area above antennal toruli punctate, slightly convex; supraantennal groove absent; frons unmodified; ocelli separated from posterior head margin by $1.5\text{--}1.7\times$ median ocellar diameter; preoccipital ridge rounded. Pronotum without transverse carina, dorsolateral angles indistinct, obtuse, without vertical carina; axilla rounded; basal area of propodeum short, slightly longer than metanotum, coarsely sculptured basally and medially, otherwise more finely sculptured. Forewing with prestigma shorter than distance from base of pterostigma to r-rs; pterostigma wider than prestigma, margins of pterostigma converging basad r-rs. Pro- and mesotibiae



Figs 3–6. — *Ceratina* (*Xestoceratina*) *foveifera* Strand, ♀, from Ghana: 3, Facial view; 4, Dorsal view of vertex and mesosoma; 5, Dorsal oblique view of basal area of propodeum, metanotum, and mesoscutellum; 6, Apical metasomal terga.

simple; meso- and metafemora without sharp ventral edges; metabasitibial plate (spine) at metatibial midlength; legs of male generally unmodified except metatibia with simple outer spur and narrow brush medioventrally. Metasomal terga II–IV with graduli; apical margins of terga and sterna without rows of specialized setae; metasomal tergum VI of female with mediolongitudinal carina; sterna I–IV of

female with graduli; tergum VI of male with subapical tubercle; sterna I–VI of male with graduli, apical margin of sternum V of male simple; apical margin of sternum VI of male with short, narrow emargination medially, with small paramedial tubercles on either side of base of emargination, apical margins on either side of emargination extended as rounded, paramedial convexities.

This subgenus will run to *Ceratina* s. str. in the key of Michener (2007) only if couplet 10 is ignored as the gradulus of tergum V is absent; if one follows on with the absence of the gradulus, then the species runs to couplet 14 but does not fit either option. Refer to Eardley & Daly (2007) for images of *C. labrosa*.

Etymology: The new subgeneric name is a combination of the Ancient Greek adverb ἄλλως (*állōs*), meaning, ‘other’, and *Ceratina* (for derivation of *Ceratina* see Etymology for *Xestoceratina*, *supra*). The gender of the name is feminine.

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